

## EdUnify

Imagine liberating a fraction of the estimated \$50 Billion spent on information technology (IT) supporting education to dramatically improve collaboration and reuse of technology investments. One target for savings is the fifty percent of costs associated with integration and data exchange spent keeping systems patched together using private methods because there is no industry alternative or shared vision to unify the industry.

**Background:** Today the nation faces enormous economic challenges. Institutions are threatened by changing business models, global competition and the speed of change. No industry is immune. Proprietary methods of commerce are breaking down. New business models with shared networks and communications continue to emerge, unimpeded by physical boundaries. Knowledge transfer, the evolution of technology, and the perception of value delivered through technology are challenging norms of business. Supply, demand and elasticity are now social and political issues, not just an economic theory, that are radically changing the private public partnership.

The education industry is a diverse ecosystem intertwined with government, industry and commerce. 7% of our gross domestic product is contributed and impacted by the education industry. Most would agree, education is a long term investment that pays dividends to a society regardless of program concentration, institutional attendance or method of instruction. Like health care, it is a massive service-based industry with costs escalating faster than the rate inflation.

Retooling educational processes bridging stakeholders is very difficult given competing self interests. Yet, if we can achieve some level of community will, we can increase productivity, save money and create better outcomes. Retooling is a process of reevaluating how things are accomplished. The process begins by looking at how the parts work together and interoperate and works to reduce duplication and eliminate incongruent methods. The retooling process strives to produce a better

product or service by creating uniformity, high standards of quality or volume correlated to a dominate strategy. Just mentioning uniformity and the inferences created will dissolve any will to cooperate. As each industry evolves to meet market forces, adaptation must take place to avoid obsolescence. So, how we, as an industry pursue the opportunities to retool is under our control. We need to realize, technology is only one part of the process and is a resource. Governance, policy and operational perspectives are varied. What is most important, is we need leadership and direction focused on a shared vision respecting differences and energizing self interests through market drivers.

The internet's new forms of commerce are rising faster than the old ones die out. This is a disruptive time. News, printing, photography, health care, transportation, energy, banking, agriculture, distribution, manufacturing, aerospace, military and even education have been affected by the new forms of commerce. Considering the impact on the education industry more specifically, one needs to question the industry's reliance on proprietary data management and definitions which are a root cause of the lack of application connectivity.

Driven by good intentions and purpose, education data is heavily relied upon across policy, governance and operation interests. Data is collected, modified, customized, adapted, and exchanged across thousands of systems, hundreds of thousands of applications and millions of people. Data is intertwined in almost everything. Yet, data managed across the education eco-system reveals a significant challenge and burden to address.

The call for better data management is powerful, whether at the macro level serving policy and governance or at the micro level serving learners. Yet, developing comparable data measures and managing data movement has never been harder or more costly to the industry. The burden of present systems employed throughout the industry is immense. As a result of the distributed nature of

computer systems and the autonomy of those charged with them, the education industry is limited by the lack of collaboration, reuse and transparency of data.

What if disparate and incompatible infrastructures could be overcome and bridged? What if elements, processes and outcomes to improve academic productivity could respect the differences and nuances offered by the variety of institutional missions and practices? What if the funds spent on one-off data extractions, movement, and duplication could be significantly reduced? What if institutions could free themselves from the proprietary burdens of past practices that only escalate costs, saddle technical resources with marginal return and restrict innovation?

**SIFA, IMS and PESC:** We have three specific industry non-profit organizations focused on data exchange specifications and communities of interest supported by membership involvement. There are additional efforts expended in other non-profit organizations not specially formed as a standards body as well. Major vendors vie within their installed base to augment integration and data exchange tools governed by proprietary interests. The work products developed by each entity overlap naturally, have different models of development and convey differing goals and objectives as a result of their audience. SIFA is focused on K-12 and application and data interoperability. IMS is focused on learning management interoperability across tools employed by K-12 and postsecondary education. PESC is an umbrella postsecondary education organization aggregating administrative-oriented, data exchange specifications and an industry data dictionary.

The education industry lacks significant adoption of data exchange methods and protocols for several reasons:

1. Adoption is not reinforced by market interests or demand. Data exchange standards evolve through adoption and practical use. Specifications developed by SIFA, IMS and PESC have paved the way in isolated areas, but lack the economic drivers to reinforce adoption to unify education

on their own merits. Voluntary efforts to create specifications are slow and not well funded, reflecting a lack of priority and the competing self-interest of stakeholders to retain the status quo.

2. Protocols and a mechanism to unify data management connections are obscured by complexity, volume and details, sapping the positive energy, will and governance needed to drive development and adoption of data exchange specifications. The delegated role of data management is isolated in operational functions. The strategic value of data which can so positively impact policy and governance decision making is missed.
3. Data exchange and movement is viewed as a technical part of system development and deployment, rather than a strategic orientation. Retooling and optimizations, inside and across the education industry, are not taking place.
4. Uniformity in data and measures is viewed as intrusive to self-interests of functional stakeholders, instead of as a means to support their differentiation and purpose. The needed interconnections are not top of mind. As a result, integration and data exchange is always an afterthought or add-on, creating further resistance for specifications developed.

**Solution Requirements.** The benefits to consolidate integration and data exchange efforts include lowering the spend on integration and data exchange, enhancing and improving the level of collaboration, and improving productivity. Ideally, systems and applications could be architected to work together, span provider to provider and allow for coordinating efforts in the management and attention to details. But, given the complexity and fragmentation of the industry, the decentralized computing resources managed by stakeholders driven by their own interests, it is nearly impossible to do this proactively. So, it leaves us with the need to work on a solution given present market forces. In general, what are the requirements?

## Solutions for Education

- A solution must leverage and stimulate competing self interests to work together.
- A solution must reinforce the evolving methods to develop common data management protocols. There is not just one way of doing things. Change is inevitable.
- A solution must address how applications and systems can interoperate if engaged to do so, through reusable components.
- A solution must support retooling, but not require it.
- A solution must provide some form of a lookup service as a means to find the “touch points” that are available by institution or supporting stakeholder. By having an industry lookup service for integration and data exchange, the education industry could begin to coalesce around reuse and specifications instead of bridging incompatible systems with brute force and transformation.

**What is EdUnify?** EdUnify<sup>i</sup> is a vision to create an industry public private partnership to create a data exchange registration and lookup service recognizing all the efforts spread across the education industry. Any stakeholder<sup>ii</sup> in the education industry would be able to publish, locate and utilize data exchange methods and protocols “advertised” through a community managed gateway. This “buy versus build” option provides the means to avoid expensive one-off efforts and to focus on the value of data movement with uniform definitions, which would improve clarity and transparency through systematic and sustainable methods.

A data exchange registration and lookup service would bring together data exchange methods and protocols while offering a means to significantly modify the economics of systems and applications working together. Like the transition from paper memo to email, data movement is a key function of systems and applications today. Applications and systems can be retooled to work together if we align

or leverage self interests of stakeholders when they see how things work together better. Thus, the lookup service would drive and motivate stakeholders to publish their efforts for others to find.

**What does EdUnify include?** EdUnify's registration and lookup service will be a standards based system much like DNS. DNS changed the internet from an obscure set of digital connections between government and universities by creating a scalable platform for all industries. It formed the framework of managing the publication and lookup of domains and services through a common protocol built on a public private partnership. Instead of using a browser with obscure locators, a user, through a browser unknowing to them, call the lookup service to access structured HTML documents which convey the unique content of publishers. EdUnify will be architected as a federated set of servers and services with redundancy, fault tolerance and security - to do what DNS accomplished for the internet, targeted for data exchange methods and protocols.

EdUnify will have a self service registration component, regression test component, sand box component, lookup service component and monitoring component managed as a community gateway and nonprofit partnership. Implementation guides will evolve to address how to submit, test and deploy single and hierarchical services rendered by one, two or many institutions or stakeholders.

EdUnify will allow any education stakeholder to explore and employ automated data sharing services.

**What is the Rationale?** The technical complexity of integration and data exchange in education is due in part to the disparity and decentralization of services spanning thousands of computer servers and hundreds of thousands of applications. Large stakeholders (universities, colleges, districts, schools, etc.) have hundreds of servers with discrete applications. Small schools or colleges may have dozens. Add the touch points outside the institution where data is moved, shared or accessed, and the numbers geometrically scale. The complexity of finding and interacting with automated services is massive, and usually ends with tightly coupling point to point integrations that are fragile and proprietary.

Communities of interests have created additional systems that are not compatible.

- States and governance boards have created frameworks for data collection, transcript exchange and student unit record systems. With the onset of longitudinal data stores and warehouses expanding to P20, new forms of data movements will evolve and overlap.
- Associations have created forms and measures such as the Voluntary Accountability System, developed to show a comparable view of institutional attributes gathered through independent means and methods with unique to each institution.
- Software vendors and publishers have created various integration and data sharing strategies such as connecting learning management systems with administrative systems.
- External SaaS vendors and organizations have created shared repositories, balance score cards, data warehouses and other online services in an attempt to unify institutional processes and content such as e-portfolios, refund management, e-commerce, classroom video streaming, etc.
- The U.S. Department of Education through legislation and regulations will be publishing requirements for IPEDS, Net Price Calculators and other tools to help learners, parents and sponsors understand institutional attributes and differences on individual provider websites or consolidated sites, e.g., College Navigator (COOL) website. (NOTE: PESC intends to create the means to bring together a unified resource and framework for the education industry.)

**How will EdUnify work?** EdUnify will support reuse of existing data exchange methods and resources for the benefit of the education industry. No one vendor, government agency, institution or organization providing systems or component applications today offers such a industry registration and lookup service or enough independence to be trusted by all the stakeholders in the industry. The vision of EdUnify must be governed by an industry and community focused organization that represents all stakeholders.

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Annually, stakeholders would publish and renew data exchange services through authorized EdUnify Managers (perhaps SunGard, Oracle, Microsoft, AcademyOne, Datatel and NSLC, as examples). EdUnify Managers would offer registration, administration, testing and deployment services through a federated system following a community developed set of specifications.

The EdUnify Managers will do the bulk of the work to set the stage and, in turn, will be afforded a major share of the revenue generated from the fees to cover their costs. A pricing model and delivery system still needs to be worked out in detail. The revenue share is expected to more than cover costs and offer EdUnify Managers significant service opportunities and profits outside of their current business.

The EdUnify Managers would manage the services, collect the fees and perform the add-on services requested by stakeholders. Each EdUnify Manager will pay the agreed upon uniform revenue share monthly in addition to their other normal membership obligations or commitments to EdUnify (a non-profit organization or division of an existing nonprofit) which would then fund the development of work groups and specifications.

The EdUnify vision would enable SIFA, IMS and PESC and the education industry (not just the members of SIFA, IMS and PESC) to evolve a managed, validated and approved utility that can save billions of dollars spent annually on application integration, data extractions and movements between stakeholder systems. Stakeholders can avoid the competitive and proprietary interests that have long obscured the true potential of interface and integration computing.

This automated and global lookup service would be public and federated, supporting a secure and common framework to transport data through the forms of integration already developed and mentioned or new ones created by stakeholders as they adopt and promote their integration and data exchange services compatible with the SIFA, IMS or PESC work group specifications.

## Solutions for Education

EdUnify provides an independent delivery platform offering cost savings and productivity benefits to the education industry. EdUnify will be independent and will offer an industry “sandbox” where institutions, vendors or other stakeholders can work through all the ramifications of establishing an industry framework to support application interoperability and data exchange proactively. Then, once the conformance and regression testing is completed, the data services can be published to the lookup service and stakeholders can uniformly access it.

EdUnify will drive stakeholder adoption by creating circumstances reinforcing application and system evolution similar to what has transpired with the development of DNS and the internet. The education industry’s demand for the data bridges will fuel progress. The influences of such a vision will alter proprietary data exchange and integration patterns that have long inhibited adoption of open data exchange specifications. This does not mean SIFA, IMS or PESC replace or delivers the integration or data exchange services. These organizations help create the specifications by areas of need.

Institutions and supporting organizations would publish standard system services such as a requests for IPEDS segments, transcripts, invoices, enrollment applications, etc. External organizations, including associations and government agencies’ application programs would call the lookup service to locate the available data exchange service(s) and then interface with them, according to the published specifications.

In addition, a conformance process would be integrated into the EdUnify sandbox. This process would allow software vendors and authors to test their planned and evolving data exchange services by version on behalf of their institutional clients. An oversight process will validate and publish the integration or data exchange. The result will significantly lower the industry spend on integration and data exchange due to release management and deployment.

**When will EdUnify be operational?** We believe it is realistic to achieve the first phase of technical feasibility by the second half of 2010 where education stakeholders (schools, government agencies, vendors, partners, providers, agents, etc.) can start registering their data exchange methods according to specification and alter systems and applications to utilize the lookup service.

In summary, EdUnify is an actionable vision which will deliver great economic and technology benefits to the education industry. Through reusing resources data integration will cost much less and afford an ability to share across providers that is not possible today. At a time when resources are at such a premium, EdUnify's time has come.

Any questions and thoughts would be appreciated. Please forward them to [dmoldoff@academyone.com](mailto:dmoldoff@academyone.com) or call my office at 610-436-5680 ext 301

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<sup>i i</sup> This vision is called EdUnify (a trade name and domain reserved by AcademyOne). It would be established as a nonprofit or associated with an existing nonprofit such as PESC.

<sup>ii</sup> Stakeholder is the term used to represent any organization involved or related to delivery of education, services to educational institutions or have interfaces with educational processes to support their mission.