

Electronic Transcripts: Past, Present, and Future

BY SARAH HARRIS, ANDREW HANNAH, DAVE STONES, AND ROBERT MORLEY

In April 2008, AACRAO's vice president for records and academic services appointed an ad-hoc task force to evaluate the current state of technology regarding electronic transcripts. The committee was charged with producing a report that would describe the options that new and current technologies provide for electronic transcripts, note current best practices, and forecast future development.

INTRODUCTION

Electronic transcripts are no longer a concept awaiting definition. They are here to stay. Although paper transcripts remain the standard—at least in terms of volume—an ever-increasing number and eventual majority of students and alumni will expect if not require electronic transcripts. Our obligation to maintain the accuracy and security of transcripts is obvious, absolute, and permanent. Electronic transcripts are just the latest in a long line of technological advances that registrars have embraced at first with caution but then with open arms.

Delivery of paper transcripts by postal or even expedited services is coming to be considered too slow. In fact, paper as a medium for the conduct of business—whether in admissions, financial aid, banking, employment, taxes, social networking, etc.—is fast becoming an anachronism.

Over the last two decades, and particularly during the last eight years, a small but effective set of electronic delivery methods has emerged that supports registrars' transmitting of transcripts. In most cases, the delivery method determines the medium in which the transcript is to be produced (or vice versa).

TWO SCENARIOS

An alumna is applying for a job with a small graphic arts company located in another state. A transcript is needed "within minutes" to inform an interview. An electronic transcript is acceptable, but it must be in a format the personnel director's PC will accept. The personnel director is neither a programmer nor an IT geek, and there's a hefty firewall around his systems. These conditions inform the registrar as to what kind of electronic transcript to produce and how to transmit it.

After attending community college part time for several years, a student is applying to a bachelor's degree program at the state's land-grant university. Although this is a life-changing event for the student, it is a routine business transaction for the community college registrar: Her student system is a member of a network to which all the state's public colleges and universities belong. The transcript that passes

between the two schools is not so much a document as a data file that is compiled, encoded, and encrypted by the community college, transmitted via a secure Internet protocol, then retrieved automatically by the university's systems, which decode and load the data into the student's electronic portfolio in the admissions office.

SUMMARY OF CURRENT ELECTRONIC TRANSCRIPT TECHNOLOGIES

The electronic technologies currently used by registrars for the production of official transcripts are as follows:

- **PDF** (Portable Document Format via Adobe) and other image files (TIF, GIF, JPG) are, in effect, electronic pictures of the paper document. This format allows ease of delivery as attachments via the Internet; as web-hosted unique objects (URLs), they can easily be uploaded into imaging file systems. A drawback is that as “pictures,” they cannot easily be “scraped” by automated systems for specific data elements used for filing or subsequent evaluations (*i.e.*, “data mining”).
- **Standard Coded Data EDI** (Electronic Data Interchange) in the format developed and maintained by the AACRAO-SPEEDE Committee is an “open-source” format for transcript data output from student information systems. EDI allows one computer to send data to another computer which in turn may process the data unambiguously. This is an excellent method for distributing transcripts to schools, agencies, and other parties within networks or partnerships that use common technological resources for the automated reception, processing, and subsequent evaluation of transcript information.
- **Standard Coded Data XML** (Extensible Markup Language) via the “College Transcript Schema” developed by the AACRAO-SPEEDE Committee is another “open-source” format now commonly available and becoming integrated as “native” into student information systems and other vendor-supplied software. XML can provide a less expensive option for automated evaluation and processing.

This article focuses on EDI, XML and PDF transcript production and delivery methods in postsecondary education, including for transfer student and graduate and professional school admissions.

TASKFORCE WORK AND METHODOLOGY

In February 2009, AACRAO surveyed¹ all of its educational institutional members (admissions and registrars' offices). More than 721 institutions responded: 171 respondents (24%) indicated that they *received* some type(s) of electronic transcripts; 123 (17%) indicated that they *sent* electronic transcripts in at least one format. In spring 2010, the task force followed up with fourteen of the institutions that had commented in 2009 that they “hoped to be exchanging within the year.” Three of the fourteen responded; two indicated that they had added electronic delivery to their transcript services.

The task force agreed that by failing to move forward into the era of electronic exchange, AACRAO members limit themselves, their institutions, and the students and alumni they serve.

In January 2010, the Task Force distributed a survey to vendors that provide services related to electronic transcripts. The survey asked a variety of questions ranging from what and how services are provided to cost and pricing models. Specific questions included:

- Does your product require the school to create its own EDI/XML transcript?
- Is software made available to assist the school in creating its EDI/XML transcript?
- Does vendor software resident at the school create the EDI/XML transcript?
- Does the vendor accept transcript data from the school and assemble the EDI/XML transcript at its site?
- Are EDI/XML transcripts sent via e-mail?
- Are EDI/XML transcripts sent via the Texas server?
- Is a network registry of vetted receivers required?
- Is a secure Web service provided such that receivers can receive transcripts?
- Are data sent through some form of secure FTP? Are data encrypted?
- Is a TS131 (acknowledgment) required?
- Can the system deliver to multiple mailboxes at a single school/organization?
- Can the system deliver in batch?
- Can the system deliver in real time?

¹ For the survey instrument and analysis of the results, please go to <www.aacrao.org/About-AACRAO/governance-and-leadership/leadership/transcripttaskforce.aspx> and click on “Final Report.”

- Are students notified that their transcripts have been delivered?
- Is the sending institution notified that transcripts have been delivered?
- How long do transcripts reside on servers or in mailboxes?
- Are reporting and auditing functions available?
- Is assistance provided (or can it be purchased) that will interface into a school's SIS?

Because of the proprietary and confidential nature of some of the information requested by the survey (e.g., that related to pricing, copyrighted material, and patented technologies), some vendors² were reluctant to complete the survey. Some vendors also were concerned about how their submissions would be compiled, compared, and published.

CONCERNING EDI AND XML

Where EDI allows one computer to send data to another computer that may unambiguously process the data, XML represents the next generation of information exchange between systems, being more web-savvy and eventually cheaper. EDI has a large base of users, thanks to more than two decades of operation under the guidance of the AACRAO SPEEDE Committee. Together, EDI and XML support solutions that are fully automated. They represent a strategic vision to decrease cost and increase speed and efficiency. EDI and XML deliveries are supported by the University of Texas–Austin server, a free service available since 1995 to all education institutions.

SPEEDE AND EDI

The attention given to electronic transcripts over the past several years is considered somewhat amazing by those who have been involved with SPEEDE and EDI. These new services—typically commercial options—do provide opportunities to serve new niches, including deliveries to individuals and companies. But press announcements often tout these products as the “first-ever” electronic delivery systems. They are not. The homely but reliable SPEEDE transcript machinery quietly chugs along, providing security as well as cost and time savings, for a growing number of schools trading transcripts.

² For the individual vendors results, please go to <www.aacrao.org/About-AACRAO/governance-and-leadership/leadership/transcripttaskforce.aspx>.

The AACRAO SPEEDE Committee was first appointed in 1988. The initial version of the SPEEDE format for electronic transcripts was released in 1990, and the SPEEDE Committee has been developing and promoting student electronic data standards ever since.

SPEEDE works! The University of Texas (UT) at Austin began operating a free standard-format electronic document server in September 1995. As of June 2010, the server has delivered more than 22 million transaction sets, including more than 6 million transcripts, as well as acknowledgments, admission applications, test scores, and requests for transcripts. Hundreds of schools benefit monthly, and these deliveries have not cost those schools a dime beyond the minimal internal costs to deploy the technology.

The UT Austin server delivers huge numbers of electronic documents and files for statewide operations among most of the public schools in British Columbia, Florida, Iowa, Oregon, and Texas. Significant numbers are exchanged monthly in Arizona, California, North Carolina, South Carolina, and Tennessee. Volume has increased considerably in Alabama, Arkansas, and New Jersey and between a few schools in Mississippi, Virginia, and Wyoming. The server delivered 1,071,864 transcripts in 2009—25 percent more than in 2008.

In addition, networks in California, Florida, Maryland, Ohio, New Jersey, and Ontario carry volume transactions not reflected in the University of Texas's counts. Some schools (San Jose State, for example) use both the statewide network and the UT Austin server.

EDI systems in statewide projects enable high schools to deliver transcripts in volume to colleges in Arkansas, Florida, and Texas via statewide mandates. Contracts for statewide service have been signed in several other states.

SPEEDE AND XML

The EDI data standards currently in use were approved through the American National Standards Institute (ANSI). Given the stability of this technology and these formats, the SPEEDE Committee turned its attention to the newer XML schema, which provides a quicker, easier, and ultimately less expensive way for some schools to join the exchange process. SPEEDE and AACRAO chose to use the Postsecondary Electronic Standards Council (PESC) to approve the XML data standards. An XML schema/

format for the postsecondary transcript (paralleling the EDI Transaction Set TS130) was approved by PESC in May 2004. Another benefit is shared data definitions and structures among testing, transcribing, admissions, financial aid, and the National Center for Education Statistics. SPEEDE Committee members are leading some PESC workgroups' development of additional XML schema for the high school transcript, degree audit data, admission application, reporting, and request/response for transcript. One workgroup is considering ways to embed an XML file in a PDF.

Georgia and Tennessee already have had dozens of schools test XML transcripts, also through the UT server. The XML format is built into the eTranscript California effort, and XML is an option in several other of the commercial opportunities (as, for example, that used in Kentucky). Another exciting development is the beta test status of an XML to EDI converter at the UT Austin server. This should allow newer XML-sending schools to deliver to the hundreds of EDI-receiving schools.

Implementation of SPEEDE-EDI or PESC-XML exchanges either state-/province-wide or within groups of trading partners continues to be an important strategic initiative. Use of standardized formats and codes allows quick production of electronic transcripts in large batches and supports the possibility of near-instantaneous logging, uploading, and evaluation of these transcripts by receiving schools. This sometimes depends on SIS functionality (some have it, and others need to be encouraged). It makes sense that all schools will want to maintain EDI-XML exchanges as a long-term goal.

ONGOING SPEEDE AND XML ISSUES

With the deployment fifteen years ago of the UT Austin server, "the problem" was solved...for about ten years. With near-zero delivery cost, schools had a system for exchanging transcripts with a single site registration per school, multiple supported delivery methods, privacy enforced by encryption, and no need to worry about which network trading partners were using.

Then the scope of the project changed, and many of the "problems" from the 1980s and 1990s re-emerged. EDI/XML was not pervasive, even for school-to-school exchanges, due to SIS lags, lack of large-volume trading partners, institutional development and integration costs

(which truly were minimal), and other factors. Attention also came to be directed toward the large number of transcripts sent to individuals and businesses and the wish for fast, secure delivery.

SPEEDE and the UT server strove to be ahead of the curve. Their solutions continue to represent best practice ("best fits," as this report details) for many institutions exchanging transcripts. Meanwhile, new technologies have allowed services to be developed for other niches. These new methods are promising. As SPEEDE has guided EDI and PESC XML to be "team players" with AACRAO, so it is hoped that the technologies that have developed mostly outside the SPEEDE domain likewise "play well," working alongside, complementing, and in all likelihood eventually being integrated with EDI/XML solutions.

PDF TRANSCRIPTS

The ubiquitous Adobe Acrobat® PDF reader software that comes with every new PC or Mac established a common platform for reading electronic transcripts—no matter which school they came from (as long as they were saved as PDFs)—and indicated a common methodology for inserting levels of security and authentication into the process of transmitting and receiving documents. Most current versions of vendor-provided student information systems can print a transcript to a PDF. Registrars have determined that this technology can be integrated with transcript business practices, and several vendors have established services to enable its use on a large scale.

- *Simple* benefits of PDF transcripts: They are cheaper than hardcopy transcripts, requiring no paper, printers, toner cartridges, postage, nor the salaries of clerical staff to handle the above. Moreover, PDF documents can be saved indefinitely.
- *Advanced* benefits of PDF transcripts: They can be distributed securely via the Internet and soon will be embedded with XML, allowing "header record" data for routing. Student information systems can generate and distribute PDF transcripts automatically.
- *Obvious* benefits of PDF transcripts: They are the simplest type of electronic transcript to produce and can be delivered to anyone anywhere with a PC or Mac. More and more recipients *want* electronic transcripts. By asserting and demonstrating that PDF transcripts generated by registrars and their SISs can

(and should) be considered “official,” vendors will assist in their production and delivery in a certifiably secure manner. Some schools have implemented PDF solutions for official transcripts (without utilizing vendors) through their own internally supported production and distribution methods.

Clients for PDF Transcripts

The availability of and access to PDF transcript solutions is growing: Vendors with a long history of service to registrars are providing new PDF solutions at either a per “transaction or document” fee, a standing contract rate, or both; in-house PDF solutions are possible if information technology staff are willing to collaborate with registrars. Yet what registrars are not paying for paper, envelopes, printers, toner, maintenance fees, and postage (and labor) they may well be paying for vendors’ contracts and transactional services. Those costs may be passed along as a “convenience” fee to students/alumni who order PDF transcripts. Registrars need to carefully weigh their budgets, current expenses (including labor), and the volume of transcripts they are producing against the fees charged by vendors and the costs students should bear for what could be argued are “custom” services.

Although the demand for PDF transcripts is apparent, there are as yet no standards, guidelines, or published “best practices” for their receipt and handling. The different methods employed by vendors in the distribution of PDF transcripts can be confusing. They may include

- two e-mails, one with a URL and another with a password which by copying and pasting allows a user to log in to a secure URL containing the unique content of a PDF transcript;
- logging into a secure “virtual” mail folder for which the recipient must set up a password-protected secure account; or
- no special security features at all beyond the assertion that if the PDF is retrieved from a URL with a specific domain in its address, it must be official.

Registrars who produce PDF transcripts and admissions officers who receive them should work together to establish recommended technologies (plural) for their schools. As for the third set of clients—students and alumni—the application forms they complete and the instructions and

FAQs they read should indicate preferred methods and addresses for them to communicate to their registrars as they order electronic transcripts. If a single electronic standard is required (as is common), then instructions must be provided should the sending institution be unable to comply. Instructions and FAQs should never direct the requestor to comply with only one technology or standard.

CURRENT PDF TRANSCRIPT SOLUTIONS

As of October 2010, three models for PDF transcripts were common:

- *Internal:* The school generates and transmits them to designated recipients via secure Web service (https) using unique URL and password combinations e-mailed to the recipients. The transcripts are considered official only as they are delivered, not for subsequent copying or sharing, etc. The provenance of the original URL domain establishes the authenticity of the document. Beyond that, the receiver must testify to that authenticity as the document is moved “downstream.”
- *“Virtual” Mailbox/Exchange Partnerships:* The school establishes that its vendor has a “partnership” arrangement with the school/agency to which the transcript is to be delivered. A transcript is generated and securely delivered to a virtual mailbox maintained by the vendor for the recipient school. Employees or systems of the recipient school, either upon e-mail notice from the vendor or by routinely checking the mailbox, retrieve its contents and then file or route the PDFs internally as needed.
- *Direct Distribution to Individuals:* The school generates a PDF transcript and delivers it along with the e-mail address of the recipient to the vendor. The vendor notifies the recipient that the transcript is waiting, usually separating into two e-mails the unique URL for the PDF and the password needed to open it.

Any of these solutions can accommodate PDFs that are digitally signed—that is, where proprietary technology embeds hidden security features and permissions into the data stream of the individual PDF so that recipients can confirm its authenticity and any alterations either are immediately apparent or cause the PDF to be unreadable.

Vendors now are providing turn-key suites of e-transcript services featuring PDF transcripts: They host the ordering of transcripts as student log-ins to their campus portals are authenticated and transferred to their servers. They accept credit card payments. They connect with the school's SIS to submit the order information (perhaps via XML) and then receive the PDF transcripts from the SIS. Some arrange for the PDFs to be digitally signed. Finally, they deliver the PDFs to the designated recipients. For the registrar, the reduction in staffing and logistical costs is significant.

ON SECURITY

The most secure transcript is the one that never is sent. Registrars must be confident that the electronic technologies utilized to create and distribute transcripts remain as secure as traditional technologies. In fact, this comparison is a canard: Traditional technologies actually lack in comparison to electronic methods. Consider the paper transcript that

is lost without the registrar or the requestor ever becoming aware. A paper transcript can be altered, particularly if it is "unofficial." We still hear of third parties accepting—even encouraging the submission of—"unofficial" transcripts. All of the special features that registrars have added to paper transcripts—latent images, chemical agents, impressed seals, hologram stickers—are for naught if the receiver of the transcript doesn't know to expect them. Never mind the clever forgers (of which there are many) who provide attractive yet bogus alternatives.

Transcripts should never be sent or accepted as unencrypted e-mail attachments. Beyond that, any method for securing electronic transcripts should be audited and approved by the institution's IT security units. Even given the well-documented protocols of EDI/SPEEDE, routine internal audits should be conducted to ensure that all PCs, servers, and networks within the institution are secured. Registrars should request from vendors documentation relating to the independent audits they have had done on



There's always an
opportunity
for Change...

Jobs Online

AACRAO's Jobs Online is the only employment site specialized for registrars, admissions, enrollment management, student service and other higher education administration professionals.

To find or post a job, visit at www.aacrao.org/jobs/ or e-mail us at jol@aacrao.org

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their systems; such documentation should be scrutinized in turn by the institution's IT security professionals. *Registrars must partner with their IT colleagues.*

Standard procedures: All new registrar and admissions office and IT staff with access to transcript data and transcript-ordering software and related hardware should undergo a background check when they are hired. They also should be required to sign "appropriate use" statements relating to data and software access. FERPA training—including annual "refreshers"—should be standard operating procedure.

FERPA: How does any electronic transcript solution comply with FERPA? In short, FERPA is neutral on the subject of electronic transcripts and technologies used to distribute confidential information. Nevertheless, it specifies that students must properly authorize the release of transcripts; such authorization may be established via a properly administered electronic signature. Given registrars' obligation to maintain the security of the confidential information with which we are entrusted, we should be overly zealous in ascertaining how that level of security continues—or degrades—as the electronic transcripts we produce travel through the Internet. Our obligation is to deliver transcripts in an adequately secure manner as authorized by students to the specific parties they have indicated. If we are not convinced that manner is sufficiently secure, then we cannot release the transcripts. *Any electronic transcript plan should be reviewed by an institution's legal counsel before it is implemented.*

Technical standards: Considering the technical security applied to each step of the electronic transcript process is a constructive task that again requires consultation with IT professionals. Each of the following steps may require a unique security protocol:

- Student log-ins to the campus portal, including the initial distribution of network IDs and passwords
- Web forms for ordering transcripts
- Uploading or transcribing orders to SIS
- Security of SIS
- Security of PCs used by registrar's office staff
- Network environment and firewall of the institution
- Network security as order information and e-transcripts (EDI, XML, PDF) are transmitted to vendors

- Security of the vendor's hardware
- Security of the vendor's software
- Optional use of digital signatures for PDF transcripts
- Receipt acknowledgments for EDI/XML transcripts
- Communications among schools, vendors, students, and recipients
- Transaction logs of all of the above steps

THE BEST FITS

In considering the types of transcripts, their destinations, the volume produced by individual registrars' offices, and the nature and size of their respective institutions, certain commonalities—what the task force called "best fits"—emerged that informed the electronic transcript technology that likely would be most efficient.

Electronic Sender–Destination Combinations

- *College sends large volumes of transcripts to one or more other colleges or higher education agencies:*

Best Fit = EDI/XML

Likely scenarios include registrars of community colleges and public (and perhaps private) institutions with large numbers of students who transfer to other colleges or universities. These schools may belong to state systems, consortia, partnerships, or other groups whose members routinely exchange electronic information—not just transcripts—for administrative, research, and pedagogical purposes. EDI/XML transcripts are incorporated into this routine exchange of data—in a secure manner—to expedite the movement of student record information from one SIS to another or to an admissions system, mitigating needs for the overhead of transcriptions and paper handling and augmenting assessment of the information for service to students as well as institutional research.

- *College receives many transcripts from one or more other colleges:*

Best Fit = EDI/XML

Likely scenarios are undergraduate transfer admissions offices or scholarship-/grant-providing agencies that routinely receive many hundreds or even thou-

sands of college transcripts. Again, being part of a state system or consortium increases the likelihood that the common software to “decode” the EDI and XML data formats can be integrated with administrative systems. In-house or vendor-provided IT resources are required, but the specialized knowledge of IT staff to support these solutions is becoming widely available.

- *College sends transcripts to individuals or businesses:*

Best Fit = PDF

- PDF solutions are appropriate for schools where large percentages of transcripts go to individuals, usually prospective employers; this is often the case for proprietary or professional schools and where transcripts accompany applications to graduate schools, in which case they likely are addressed to individual chairs or admission committees. These “individual” receivers likely still function with the applicants’ transcript “documents” in front of them. The PDF transcript can be delivered directly to an individual and can be viewed and/or printed and used as if it were delivered in a traditional manner. Better, it can be saved with other electronic documents for subsequent retrieval, sharing, or archiving. Security of the PDF remains as important—if not more so—than that of paper transcripts as they are received, copied, shared, and filed.

- *College receives few transcripts from a variety of locations:*

Best Fit = PDF

- Admissions offices receive, unsolicited, electronic transcripts from any number of sources and in all the formats (and more) mentioned in this report. Unless an office wishes to stipulate that only one or certain electronic format(s) will be accepted (in which case it must be prepared to routinely accept that or those formats)—and so to risk alienating prospective students whose current institution is unable to produce transcripts in that or those format(s)—it can’t be surprised if transcripts continue to be delivered in multiple electronic formats. Transcripts in PDF are by far the easiest electronic option both for a registrar to produce and for an admissions office to receive and/or retrieve.

- *College sends small volumes of transcripts to many colleges—pending budget and resources:*

Best Fit = Hardcopy or PDF

- *College receives small volume of transcripts from a wide variety of individuals or institutions:*

Best Fit = Hardcopy or PDF

ELECTRONIC TRANSCRIPT “HOME RUNS”

Depending on the core technology a school utilizes for electronic transcripts, the task force envisions two types of “home runs”—the ultimate use of state-of-the-art tools to accommodate students’ and institutions’ needs for official transcripts. While these constitute pure speculation, each step references a technology now in use by AACRAO members. Combining them into a seamless “package” is how we define the “home run.”

- The EDI/XML home run:
 - ▶ Students log in to campus portals, authenticate themselves via LDAP, and indicate that they wish to “order transcript.”
 - ▶ The log-in is transferred to the e-transcript vendor’s servers via Shibboleth.
 - ▶ Students place transcript orders there and pay via credit card.
 - ▶ Order information is transferred to the campus SIS via the XML transcript-order schema.
 - ▶ Campus SIS checks for holds and notes if the recipient is listed in a set of “partnered” institutions or is a registered UT server client. If so...
 - ▶ An EDI or XML transcript is sent via secure FTP (or https or other secure protocol) to the UT server, where it is placed in the recipient’s “mailbox.”
 - ▶ The recipient automatically retrieves the EDI or XML transcript, which is downloaded into its database and from which evaluations and institutional research reports can be run.
- The PDF home run:
 - ▶ Students log in to campus portals, authenticate themselves via LDAP, and indicate that they wish to “order transcript.”
 - ▶ The log-in is transferred to the e-transcript vendor’s servers via Shibboleth.

- ▶ Students place transcript orders there and pay via credit card.
- ▶ Order information is transferred to the campus SIS via the XML transcript-order schema.
- ▶ Campus SIS checks for holds; finding none, it generates a PDF transcript.
- ▶ The PDF transcript is sent to the vendor server via secure FTP or secure protocol.
- ▶ Vendor may arrange for digital signage security to be incorporated into the PDF.
- ▶ Vendor communicates retrieval instructions to the recipient.
- ▶ Recipient retrieves the PDF.
- ▶ Potential enhancement: As the PDF is generated by the campus SIS, corresponding XML transcript data are embedded into the PDF. As the PDF is received subsequently by the recipient, the XML data can be used to route the document via header information to specific folders or other destinations, and the rest of the XML body can be downloaded into the recipient's database for evaluations and data mining.

FORECASTS FOR THE FUTURE OF ELECTRONIC TRANSCRIPTS

- As more admissions offices/agencies discover the benefits of e-transcripts, they will encourage students/alumni to order them...some to the exclusion of paper.
- As more e-transcripts are requested and produced, registrars will struggle to understand how to be cost effective.
- The marketplace will drive down the costs of electronic transcripts.
- Only a small number of nationwide (or worldwide) vendors with extensive resources (or government backing) or a “killer app” may remain.
- Depending on the number of surviving vendors and their profit margins, the costs to registrars will be affected. If there is competition, we can only hope that costs will decrease (or at least remain low).
- EDI and XML College-Transcript will become standard “currency” for exchanging transcripts between higher education institutions and agencies. “Translators” will convert EDI to XML and back again. An inexpensive medium for distribution, *i.e.*, the Texas server, will be priceless for AACRAO members.
- PDF transcripts will be commonplace for “individuals” (as opposed to agencies and admissions offices) receiving transcripts.
- For admissions offices and financial aid agencies, loading an EDI, XML, or PDF transcript into an electronic portfolio will become standard operating procedure. The transcript will never be printed.
- Registrars, particularly at larger institutions, will be able to produce and distribute all three types of transcripts—hardcopy, PDF, and EDI/XML—simultaneously and seamlessly.

Recommendations

- AACRAO should advocate for the acceptance of electronic transcripts in the marketplace and in the day-to-day business of registrars and admissions officers. The agencies to which registrars send large volumes of transcripts (*e.g.*, LSDAS, AMCAS, NSF, Fulbright-Hays, etc.) should readily accept electronic transcripts and should publish in their application materials directions for submitting them.
- AACRAO should continue its efforts to bring together key stakeholders (registrars, admissions, and IT) to identify best practices and synergies among their respective areas for requesting, producing, receiving, and processing e-transcripts, specifically for undergraduate transfers, graduate/professional admissions, and applications for scholarships, fellowships, and grants.
- The “Registrars Transcript Guide” should continue to be updated as transcript technology evolves; sections on electronic transcripts, including EDI, the Texas server, the XML transcript-related schema, PDFs, and e-transcript security, should be expanded.
- AACRAO should maintain a public registry, accessible via the Web, that lists the official transcript sending and receiving protocols in use by its members. Entries could be confirmed/updated annually. The SPEEDE Committee could investigate and recommend a structure for such a registry. Many e-transcript players—*e.g.* community colleges, technical schools, etc.—are not AACRAO members; their involvement should not be ignored.
- AACRAO should develop and publish guidelines for distributing and receiving e-transcripts. AACRAO members should be encouraged to follow these guidelines as they develop their own e-transcript services. In

a broad sense, this will serve to maintain the level of security and authenticity that registrars are obligated to provide; in a narrower sense, it ensures that the proper individuals and offices and their addresses at each institution are identifiable by whoever needs to know them.

KEY LINKS/REFERENCES:

- University of Texas-Austin SPEEDE: <<http://registrar.utexas.edu/speede/>> for server, Q&A, etc.
- AACRAO SPEEDE: <www.aacrao.org/speede/> for state progress, state contacts, RIPS (& AACRAO Resource Center)
- *Electronic Data Exchange Primer* (AACRAO 2008)
- *AACRAO Transcript Guide*
- Postsecondary Electronic Standards Council: <www.pesc.org>—watch activities of work groups on this.

Task force members include Judy Cavin Brown, Five Branches University (2008–09 chair); Sarah Harris, University of Iowa (2009–10 chair and task force member 2008–09); Andrew Hannah, University of Chicago (member 2008–10); Dave Stones, Southwestern University (TX) (member 2008–10); and Bob Morley, University of Southern California (member 2009–10). *Note: Some sections of this article reflect information presented by Task Force members at the AACRAO conferences in Chicago and New Orleans.*

For a thorough review of the technologies (including terminology and notes on implementation), consult AACRAO's *Electronic Data Exchange Primer* (2008) and the latest version of the *AACRAO Transcript Guide*.

About the Authors

SARAH HARRIS has served at the University of Iowa for the past 24 years, the last nineteen years in the Office of the Registrar where she currently holds the position of Senior Associate Registrar. She serves as the coordinator for the transcript division and is actively involved in the discussions of new technologies and how to use them, especially as UI builds a new student records system. She has attended eight AACRAO annual meetings since 2002 and has been a presenter over the last five years. In 2008, she joined the Student Academic Records committee in Group III: Records and Academic Services where she served for four years. Active also in UMACRAO (Upper Midwest), she currently holds the position of secretary and has presented at those conferences.

ANDREW HANNAH has served the University of Chicago as Assistant, Associate, and Acting Registrar during the last 30 years. In that capacity, he was integral in many of Chicago's innovative developments related to transcript security and technology, including security paper, online ordering, electronic signatures, and especially the many variants of "E-Transcripts" which include PDFs, and XML. Active in the CIC (Big Ten) Registrars Group and a founder of the Chicago Area Registrars Group, he is also a frequent presenter on registrar issues at AACRAO and AACRAO-Tech, including several workshops on E-Transcripts. During AACRAO-Tech at Reno in July 2011 he served on a panel discussing the future of the registrar profession.

DAVE STONES managed the Student Information Systems staff at the University of Texas from 1979 to 2000, and has been Registrar at Southwestern University since 2000. He has served on numerous AACRAO committees, including the initial SPEEDE Committee, which developed the standard EDI format for electronic transcripts and applications. He coordinated the first two AACRAO Technology Conferences in 2003 and 2004, and has served as President of both SACRAO (Southern) and TACRAO (Texas).

ROBERT MORLEY has served as Associate Registrar at the University of Southern California for the past 30 years. Active in PACRAO and AACRAO, he served as the first Vice President for Information Technology in both organizations, served on and chaired the SPEEDE committee, served as the AACRAO representative to PESC (Postsecondary Education Standards Council) Board of Directors, and was a participating author on the past two AACRAO Academic Record and Transcript Guides as well as the 2010 AACRAO Retention of Records Guide. Mr. Morley has made well over 100 regional and national presentations on such topics as applied technology, FERPA, and scheduling, among others.

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