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Spring 2007

Exploring the utilization of identification technologies on college and university, K-12, and corporate campuses

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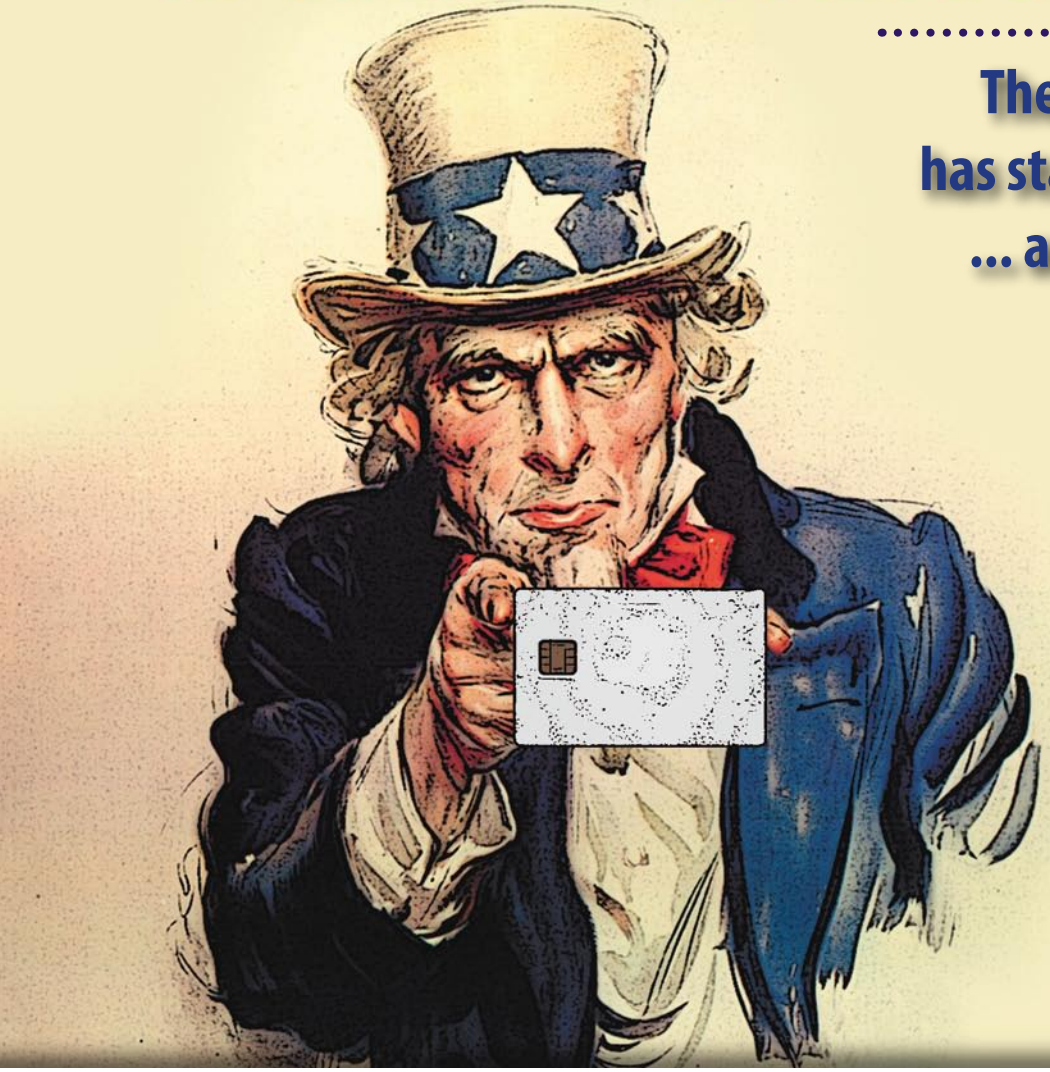

The U.S. government has standardized its IDs ... and campuses may follow their lead

Plus:

- **The campus card's future is handheld**
- **Instantly issue Visa and MasterCard on-campus**
- **Off-campus programs grow on-campus spending**

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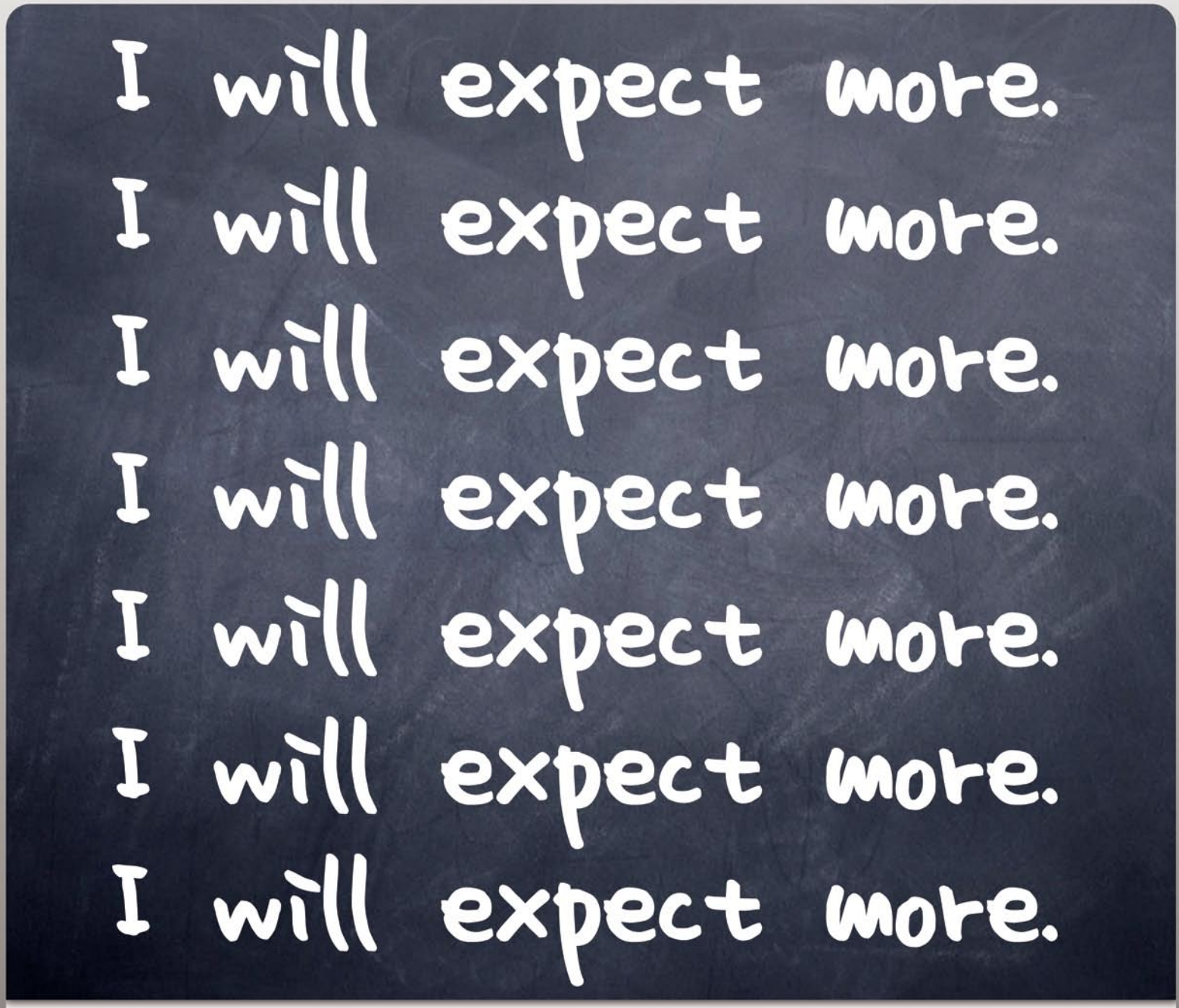

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Spring 2007

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Our next great crossroads

The card program's role on campus is in jeopardy

Chris Corum
Executive Editor, AVISIAN Publications

The campus card industry is at its next great crossroads. Our cover story hints to this speculating how the new government-wide ID standard may impact our programs in the not-too-distant future. I have long shouted that our campus card program's relevance would diminish if we did not take a leadership position on identity management and logical security. Campus IT departments *are* addressing identity management and token- or certificate-based network security … and we *should* be participating.

I believe food service, payment, issuance, privilege and access control are extremely important functions. Unfortunately, many IT departments view our programs as diversions or obstacles to what they deem their 'real' security-related efforts. And thus, work is underway that will undermine the role of the campus card if we don't get involved and mark our territory.

It is analogous to the increased importance of physical security on campus in the last decade. Institutions were leaving access control decisions with physical plant, campus police, or departmental rule. Campus card programs and vendors stepped up to claim their rightful role as issuer of the credential. If we had remained on the sidelines, our industry would look nothing like it does today. We rose to this challenge but I warn you … the ensuing battle will be more difficult and more crucial for our future.

Why? IT departments have the big budgets and they have the ear of the President. No doubt, IT should be a major part of the process. In fact, they can drive the process but the card program needs to be on the bus. If you wait to be asked to get on the bus the good seats are all but taken. We must get proactive.

So how does this relate to our cover story? A government-wide initiative has standardized a credential and a logical security architecture that could be in the hands of 20% of all U.S. adults in the next decade. Can our campuses expect to be isolated from this mainstreaming of ID technology? I don't believe we can. Perhaps this can be the wake-up call to get our industry ready for the new world of identity, credentialing, and security.

Switching gears …

I will spend March 3-5 in Atlanta at the 14th Annual NACCU Conference. To this very date, 12 years prior, I attended my very first NACCU conference … the association's third annual held in Orlando in 1996. It doesn't seem that long ago. I can still remember meetings I had with some of the original industry pioneers like it was yesterday. In the past 12 years, I have made many friends through NACCU and I have taken a little something from almost every relationship. I know there are many others out there who feel the same way.

To all NACCU veterans, I ask you to remember the good work of those that paved the way and take a newcomer under your wing. Other people are attending their first of many conferences this year – just as I did back in 1996. We have the opportunity to make their experience meaningful, just as prior veterans made, and continue to make, mine.

Join me at NACCU on Tuesday at 3:15 to discuss in more detail the opportunities and threats we face with this federal government ID standard.

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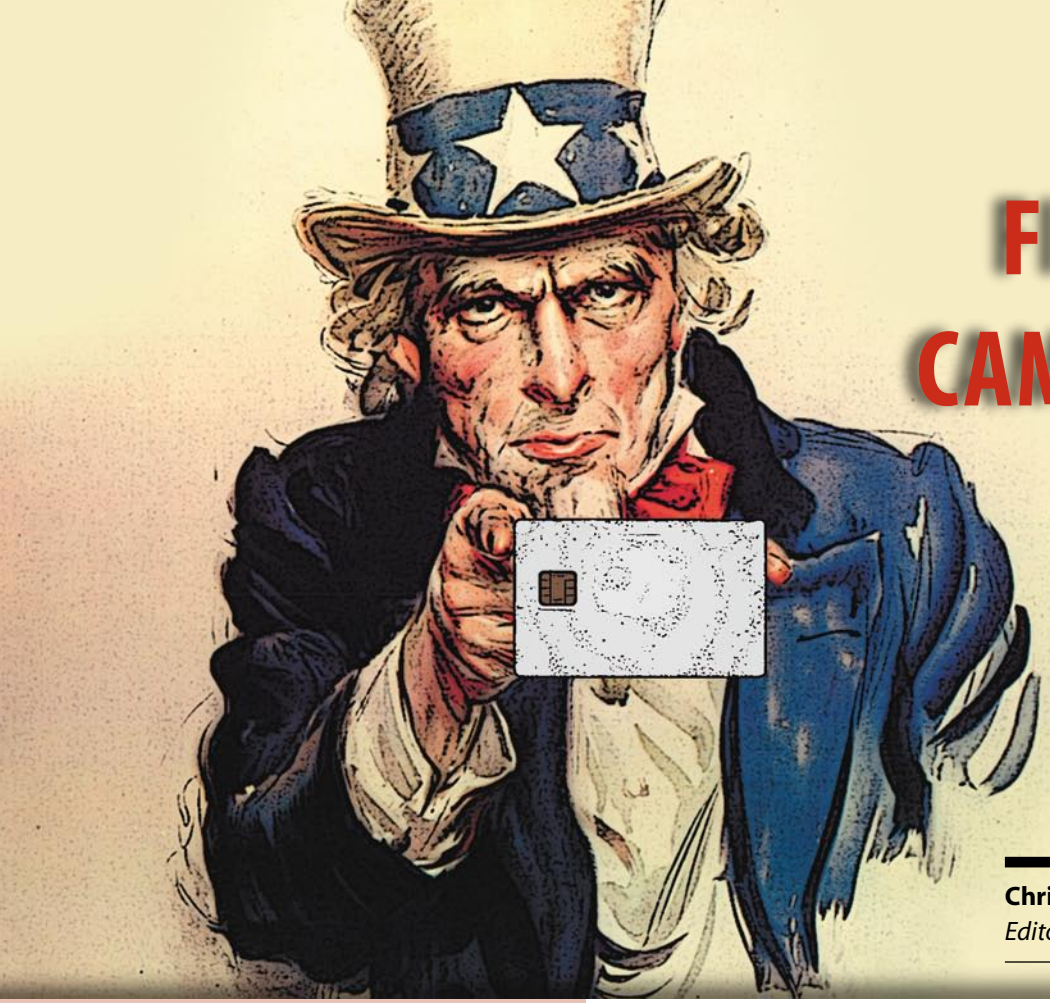

FIPS 201 AND CAMPUS CARDS

With every government agency in the U.S. issuing a standardized secure ID, will your campus card feel the pressure to follow their lead?

Chris Corum
Editor, AVISIAN Publications

Editor's note:

It preparing this article, I found it impossible to leave out a bit of editorial bias. Out of fairness, I am admitting it up front. I also know that some of our readers will not like the premise of the article because, despite the adage that change is good, it is usually good for some but not for all. I will be disappointed if this piece does not generate some fervent debate– as I believe the topic is among the most revolutionary changes we could face in campus card circles. I also believe that it presents a tremendous opportunity for us to radically improve certain elements of our campus card industry. Finally, I think it presents a real opportunity for our vendor community to grow new markets for their products. So here it is … let me have it. Don't hold back as I am ready to take the arrows for the sake of healthy debate.

Every federal government agency is currently issuing a standard ID card to their employees and contractors. Some of the brightest minds from security and IT in the U.S. government have been working on this project for the better part of a decade. Because of the massive scale and perceived national security implications, they had at their disposal input from some of industry's brightest minds. This work is already in process to be codified as an international standard by ISO, the Organization for International Standardization. If you think your campus card program will not be impacted by this effort, some would call you naïve … others would call you crazy.

A bit of history …

The government credentialing effort goes by several names, FIPS 201, HSPD-12, PIV, and soon ISO 24727. The process has been a work in progress at least since the late 1990s when pioneering work was underway by individuals responsible for the Department of Defense's Common Access Card and the Government Smart Card Interoperability Specification.

But things kicked into high gear in August 2004 when President Bush issued Homeland Security Presidential Directive 12 (HSPD-12). Its purpose was to initiate "a mandatory, government-wide standard for secure and reliable forms of identification issued by the Federal Government to its employees and contractors."

HSPD-12 dictated extremely aggressive time lines. Within six-months, a new federal standard was to be in place. Everything was now on the fast track.

This new standard became the Federal Information Processing Standard Publication 201 (FIPS 201). It was created by the National Institute of Standards and Technology (NIST) with input from a host of those 'brightest minds.' FIPS 201 was no small undertaking. It would have been impossible to complete it in the prescribed time frame without the years of groundwork that had been laid by the prior government smart card groups and pioneering projects.

By October 27, 2005, agencies had to have procedures in place for issuance of FIPS 201 compliant credentials. These credentials were named Personal Identity Verification (PIV) cards and this first milestone became known as PIV-I. While PIV-I required procedures, it did not mandate that these procedures be up and running.

The requirement to put the procedures into operation was the second step, known as PIV-II, which required that by October 27, 2006, all agencies were to begin issuing the new IDs. That deadline passed with virtually universal success, though many agencies issued only a single card by the deadline.

What does FIPS 201 actually entail?

The process defines more than just a new ID card. It is a revolutionary change in the entire concept of what an employee credential is and does. It is here that the importance emerges for campus card systems, corporate ID offices, and other credentialing bodies.

Pre-issuance identity vetting

Before the first card was issued, FIPS 201 was making its presence felt. A credential can only be as strong as the pre-issuance process, the process of knowing the potential cardholder. As a part of FIPS 201, agencies must perform background checks on cardholders to make sure they are who they claim to be and to identify criminal activity or other history that might compromise security. Federal employees undergo background checks via the National Agency Check and Inquiries (NACI) program. Only after an acceptable NACI check will a permanent FIPS 201 credential be issued.

By the next key compliance date, October 27, 2007, agencies must have completed background investigations of all current employees and contractors.

Federation

More than 125 agencies will issue FIPS 201 credentials. A key to the HSPD-12 mandate is the need for cards issued by one agency or site to be accepted by others. In other words, a card issued by the Department of Agriculture should be accepted at the Department of Interior if an employee needs access to facilities for approved reasons such as a joint project. Moreover, it is not enough to visually recognize the card for acceptance. Rather it must be electronically authenticated to make sure the card is current and valid.

To accomplish this goal, the concept of federation or federated identity is essential. It centers on the reciprocal acceptance of credentials issued by participating entities. At the very core of federation is trust. Each entity must trust the credential and the procedural security employed by the issuer. This includes the pre-issuance identity vetting, the issuance integrity and security, the revocation, etc.

But how can 125-plus agencies possibly work with each and every one of the others to create this trust? The only way to do this, short of drafting more than 15, 625 individual agreements (125 to the power of two) is through adherence to an accepted standard. The bankcard industry provides an ideal example of federation. Imagine if each merchant had to enter into a contract with each and every bank that issued a debit or credit card. Each would specify payment terms, dispute resolution procedures, and a host of other elements that could vary from contract to contract. It would require literally hundreds of millions of documents.

Enter the card associations like Visa and MasterCard as the standard of trust for this federated system. A single set of rules is agreed upon by the merchant and by each card-issuing bank, thus eliminating the need for countless bilateral contracts … in favor of trust through standardization and federation.

Standardizing the card and technology

Defining the credential itself was another key element of FIPS 201. At the highest level, the card has both a contact (ISO 7816) and contactless (ISO 14443) interfaced integrated circuit chip. In the initial rollouts, two separate chips can be on a single card but in the future many expect two separate interfaces to a single chip to be the norm (commonly referred to as a dual interface card).

The card has two fingerprint biometrics stored on-card and a full set of fingerprints and facial image for registration and identification off-card. Multiple asymmetric key pairs are enabled for digital signature, key management, physical security, and card management functionality.

A tightly structured data model defines how the unique identification number and other elements are stored in the chip. Certain data elements to be printed on the front and back of the card are also specified. A magnetic stripe is optional.

Product certification

With tens of millions of users, hundreds of purchasing points, and likely billions of taxpayer dollars at stake, the need to certify products to work with FIPS 201 was paramount. NIST established test procedures and the Government Services Administration (GSA) established a lab to oversee product evaluation and approval. This Approved Product List (APL) has become the industry bible for product selection. To date, about 200 products have been certified for use in categories ranging from cards and card readers to biometric devices and cryptographic modules. Qualified system integrators must also be approved.

Shared service provision

The HSPD-12 mandate created a veritable frenzy in government circles. Literally days prior to the October 27, 2006 deadline, key product categories in the APL still remained empty, leaving agencies wondering how to meet the mandate. Large agencies and those with a history in advanced card issuance seemed confident of their ability to comply, while small and less card-experienced agencies expressed concern.

Two organizations, the GSA and the Department of Interior established outsourced services to handle HSPD-12 compliance for agencies. Because of the standardized processes, these shared service providers were able to handle vetting, issuance, and post-issuance services for client agencies. Reliance on the shared service providers was high. The GSA offering already serves 40 agencies with a user count of 420,000.

Reaching beyond the federal government

So, all federal agency personnel will soon have a FIPS 201 card. But who else will have the card?

- Military personnel
- Military academy students
- Government contractors including private security, IT, manufacturing and engineering firms (many of whom also contract with higher education institutions)
- First Responders including disaster relief, hazmat, infrastructure (e.g. telecom, utilities), emergency medical, and a host of other specialized personnel
- Transportation industry workers requiring access to ports and other facilities
- Other international government agencies considering adoption of the standard

Following this first wave of likely FIPS 201 groups, the list is expected to expand, not just for mandated reasons, but for voluntary efficiency and security as well.

Why? Because from the inception, the vendor community has lined up to create product for the program – partly for patriotic reasons perhaps – but mainly for economic gain. The pie is huge and the race to build product to get a piece of it is ongoing. Growing markets and increasing competition for compliant cards, readers, and applications is almost certain to continue reducing prices for approved products.

From the security and applicability perspective, never before has a solution with such widely tested and deployed security – both logical and physical – existed.

Who said this?

"Secure and reliable forms of identification … means identification that (a) is issued based on sound criteria for verifying an individual (student's) identity; (b) is strongly resistant to identity fraud, tampering, counterfeiting, and terrorist exploitation; (c) can be rapidly authenticated electronically; and (d) is issued only by (card offices) whose reliability has been established by an official accreditation process."

You might be surprised to find out that President Bush wrote this (or a staffer wrote it on his behalf) as a part of the directive that catalyzed the government-wide issuance of new, interoperable, secure ID cards.

Okay, we added the specific reference to student and card office. But it highlights the fact that solid, well-designed ID-issuing processes transcend boundaries. What the federal government has done is to create a blueprint that can be used by any organization wishing to improve its credential issuance and security.

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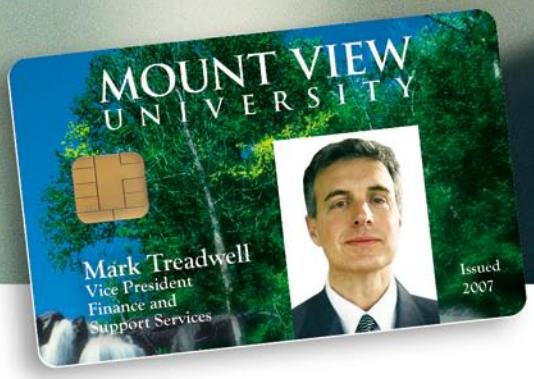

Mark, Campus Card Programs Director

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As evidenced by the movement in the ISO committee toward international standardization, the eventuality of FIPS 201 as either the real, or de facto, standard for secure identity credentials is more than simple speculation.

What does this mean on campus?

Campus cards have PINs … FIPS 201 has RSA 1024-bit and 2048-bit asymmetric cryptography as well as on-card biometrics. Campus cards have barcodes and mag stripes … FIPS 201 has dual interface contact and contactless integrated circuits. Campus cards have vendor-specific systems … FIPS 201 has an approved product list with hundreds of certified products based on defined standards.

But what the campus card world does well, the FIPS 201 world has yet to address. Campus cards handle money, track privileges, have web-enabled systems, and build applications to support the enterprise issuer and the cardholder.

The campus card community is, at the same time, both way behind and well in front of the federal government and the larger FIPS 201 world.

What can campus card programs learn from FIPS 201?

There are many lessons that card issuers – including campus card program administrators – can take from FIPS 201. Simply looking at the five characteristics touched on in this article can provide a wealth of insight.

Pre-issuance identity vetting – Individually, a campus can evaluate how it vets the identity of students and staff prior to issuing a new or replacement credential. Are multiple forms of ID required for identity verification? Is current status checked at issuance? Should there be security screening of any kind? From an industry perspective, a best-practices document could be developed to guide all institutions toward attaining at least a base level of procedural control.

Federation – Is there value in a federated credential among educational institutions? Perhaps not on a nationwide basis, but maybe it is necessary among satellite campuses or within a geographic or administrative region.

Standardization – Are there areas of the campus card industry that could benefit from a standards-based approach? Is it possible that one-day we may see a standard contact interface chip that handles logical security (e.g. digital signatures, network logon, file encryption) on campus IDs from any vendor? You could still buy your system of choice from your vendor of choice, but opt for the version with the FIPS 201 logical security capability. It would require a card with both a standard chip and the magnetic stripe for the campus-centric applications, but it needn't necessitate a radical shift in the current business model.

Product certification – Imagine if there was an approval process that vendor products could go through to be certified as "campus-capable." This could enable third-party offerings (e.g. peripheral applications, handheld readers, parking solutions) to be approved by an independent body making it easier for campuses to identify applications that will work with their program.

Shared service provision – Could some campuses benefit by outsourcing some of their program's functionality to an outside entity? Certainly the answer is yes … as this is already happening via system sharing (e.g. the University of Vermont), outsourced card office management (e.g. CardSmith), and off campus merchant programs (e.g. BbOne). But these are merely the tip of the iceberg. The day may well come when a central issuing office, -- such as a new GSA-supported network, the Department of Motor Vehicles, or the US Postal Service, -- actually issues FIPS 201 cards for any government agency, corporation, or program. Could such a model work for campus cards, enabling instant issuance but from the campus card office? Or might our campus card offices one day become the issuing centers for government and corporate users of FIPS 201 technology? Card offices understand issuance and are staffed to handle ongoing requirements.

Only time will tell …

In the future, it may be that cost efficiencies and enormous volumes drive the price of a FIPS 201-approved card so low that money is not a deterrent to migration on campus. It may also be that the wealth of available applications and the mounting requirements for security make the cost irrelevant when compared to need.

But keep in mind that campuses don't have to deploy FIPS 201 cards to benefit from the process retooling for FIPS 201 details. There are lessons to be learned right now and progressive card program administrators can lead the way.

As FIPS 201 continues to revolutionize government identification and spread into corporate and other markets in the years to come, campus card issuers will have a decision to make … stand aside or get on board.

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The future of campus cards goes mobile

Handheld computers and PDAs extend on campus, off campus, and system administration functions

Andy Williams
Contributing Editor, AVISIAN Publications

As wireless connectivity becomes the norm rather than the exception, colleges are finding greater uses for handheld PDA-type devices that can simplify everything from taking food orders to checking students in during an event, such as a football game.

Meal vending, picnics, field trips, photo or event verification, even shuttle buses all lend themselves to handheld usage. One thing's for sure: colleges certainly have a variety of wireless devices from which to choose.

But for a handheld system to be effective, the campus must first have an ID system in place. "This system is the backbone and provides the means to make the magic happen on the handheld," explained Emil Bonaduce, CEO, Vision Database Systems (VDS). The company, which has been supplying ID card and tracking solutions for more than 15 years, uses several handheld devices from various manufacturers. "Our applications are written to be compatible with devices running on the Pocket PC Operating system," he added.

There are basically three levels of handheld suppliers for campus markets:

- companies that supply a full-blown campus card system (e.g. Blackboard, CBORD, General Meters, Nuvision) and also provide handhelds and software
- a middle tier of hardware device manufacturers (e.g. Symbol, Dell)
- a third group supplying software–and sometimes hardware–to run on handhelds (e.g. VDS, Sequoia, Tokenworks).

On campus use: authentication, dining, tracking, access ...

Bottom line purpose for any handheld used on campus is to pull up information stored in a database for the card just scanned by the device, said Mr. Bonaduce.

"Handhelds provide an excellent way of ensuring that students do not defraud a sporting event system, for example, by passing their student ID to others to gain free or discounted admittance," said Mr. Bonaduce. The company's PockeTracker Red/Green application "can allow one ID one entry (flashing a green symbol) and then deny entry to all subsequent presentations of the ID (via a red symbol)," he added.

Added General Meters' vice president, Jeff Zander: "They're used to verify someone who says they paid for an event. The card is swiped and a photo is displayed along with a pass/fail status. This keeps students from giving their card to a friend if they know a second level of verification will be a photo ID." General Meters produces the Pocket 1Card as an extension of the company's University One-Card System. Pocket 1 Card is a software package and a card reader designed to operate on a PDA using the Microsoft PocketPC operating system.

General Meters Pocket 1 Card

General Meters produces the Pocket 1Card as an extension of companies' University One-Card System. Pocket 1 Card is a software package and a card reader designed to operate on a PDA using the Microsoft PocketPC operating system.

Another possible use "is the tracking of attendance for a special or cultural event that is required for select students," said Mr. Bonaduce. "Perhaps a famous speaker will be presenting and all history majors need to attend the lecture, yet it is open to the entire campus. By placing a handheld per point of entry at the auditorium, quick and accurate attendance data can be gathered without disrupting traffic into or out of the auditorium. This data is then complied into reports that show at a glance who was in attendance so that proper credit can be given."

General Meters has a handheld that can be used as an access device, he said. A list of people who have access rights to a facility–be it a dormitory or a lab–is downloaded to the device. As the student enters, the card is swiped or an account number is manually entered, and a pass or fail light determines if the person can gain entrance.

General Meters' Pocket 1Card, like other applications, can accept meal plans. "No pre-wiring is needed and no setup is required. The appropriate data is downloaded to the Pocket 1Card which will then read a student's meal plan eligibility," said Mr. Zander.

Sequoia Retail Systems, a provider of point-of-sale, inventory control, e-commerce, and textbook management systems to colleges and universities, offers handhelds. "Customers use them for everything from athletic event entry, food delivery, board plan picnics on the quad, shuttle bus service, student group sales,

Sequoia Handheld Solution

"Customers use them for everything from athletic event entry, food delivery, board plan picnics on the quad, shuttle bus service, student group sales, attendance tracking, and even tracking iPod distribution."

attendance tracking, and even tracking iPod distribution," said John Diaz, Sequoia's vice president, Auxiliary Services Division. "In the campus retail store arena, they are also being used for inventory tracking, ordering and receiving, on-line order processing, and textbook buyback."

Campus card provider CBORD offers two varieties of handheld card readers "allowing users to process transactions at any location, regardless of power or network connectivity," said the company's president, Bruce Lane. "The readers are frequently used at athletic events, picnics, concession sales, conferences, and other on- and off-site events. In online mode, transactions are processed in real-time, using a wireless network. (Alternatively,) transactions are verified against an offline database downloaded to the device before the event. Transactions supported include sales, activities, and balance inquiries (when online only)." Reporting, he added, is available from either the handheld or the company's campus card system, Odyssey PCS/CS Gold.

"Blackboard's mobile devices are being used in a variety of ways by our customers," said Tom Bell, Blackboard's vice president, industry relations. One handheld offering is the Sequoia-Powered Wireless Campus Card Terminal which acts as an extension of the Blackboard Transaction System. It supports realtime transaction processing and eliminates the need for a separate server, he adds.

Blackboard also offers the Mobile Micros solution utilizing handhelds from Symbol and other manufacturers to offer full POS functionality in a mobile package, including credit card acceptance, signature capture, mag card acceptance and remote printing.

Off-campus use: Eligibility, loyalty, payment, age verification ...

Off-campus merchant options based on a college ID card system "are virtually limitless," said Mr. Bonaduce. "The ability to capture data from an ID card, assign vendor points, decrement those points and ensure loyalty are present once an ID system and handheld programs are introduced. Desktop or Point of Sale versions of the handheld software could produce a suite of applications that tie in seamlessly with one another and provide a boon for local businesses near a collegiate campus."

For example, PocketPoints, a decrement/increment application from VDS can be used "to track and distribute booster points," Mr. Bonaduce added. "The Booster Club assigns one point for each sporting event attended by a student that is stored in the handheld. At special booster meetings or events, the students can redeem those points for prizes and rewards. This same system can be used to track drink and food tickets accurately to determine exact quantities of items that were given away versus those that were purchased."

Sequoia has customers "who have used the devices for food delivery and even at locations such as off-campus coffee shops where student groups have held functions and needed to track attendance and charge admission to events," said Mr. Diaz.

The company also has customers "who use them on shuttle busses whereby students must swipe their card upon entering the vehicle where they are then validated as to whether they are entitled to ride the bus at no charge or if they must pay for the trip," said Mr. Diaz.

Some applications don't even need a database or access to one. For example, you can verify the data on a driver license, ensuring that the data encoded on the magnetic stripe or bar code matches the info on the license. Similar software can also determine if the person holding the license is of legal age to purchase alcohol, said Mr. Bonaduce.

In General Meters' case, a specially designed card reader attached to an HP iPaq enables card validation in a matter of seconds by a simple swipe of the magnetic stripe. "No external power is needed as the card reader is powered by the HP iPaq," said Mr. Zander. "It, too, can verify a person's age. Set Pocket 1Card to age verification mode, enter the age limit you want to verify and it will do the rest. The age is calculated based upon birth dates downloaded from the University One-Card System database."

CBORD Troubadour

"Our readers can withstand the demands of the higher education environment. Extra reliability is built into every aspect—from battery contacts to keypads to acoustics—to ensure they exceed the demands of daily, high-volume usage."

For administrators only:
System maintenance, remote access ...

Handhelds can also help college staff perform their jobs better, according to Mr. Lane. "Our CS Gold AdminPDA puts the power of CS Gold Administration GUIs at users' fingertips—anytime, anywhere."

This handheld device gives system administrators the ability to use a wireless online connection to view patron information and reader status, lock and unlock doors, and perform system administration functions. "The AdminPDA also has a patron lookup feature which allows users to see demographics and pictures of cardholders," he adds.

Bob Lemley, manger of CS Gold Development at CBORD, notes that "administrators can connect via Wi-Fi or cellular to monitor and control doors or view patron information. Plus, all of this is fully encrypted, using Advanced Encryption Standard (AES) on top of whatever network protection is in place."

How about durability and battery life?

You get what you pay for, suggests Mr. Bonaduce. "Some of the devices are fairly fragile while others can be dropped from ten feet onto pavement and not receive a scratch. There are also third party suppliers that produce aluminum or steel cases for common handheld devices for further armor. Basically, if one is willing to pay for durability, obtaining a robust handheld device is possible. If cost is a concern than handling the device with care becomes a priority," he adds.

"Our readers can withstand the demands of the higher education environment," said CBORD's Lane. "Extra reliability is built into every aspect–from battery contacts to keypads to acoustics–to ensure they exceed the demands of daily, high-volume usage."

"GMC rates each hand held for three to five years of use under normal operating conditions," added Mr. Zander. "Most will last much longer."

And Mr. Diaz from Sequoia notes: "Our wireless card reader applications run on rugged devices manufactured by vendors such as Symbol Technologies. These devices are much more durable than a standard PDA device. Customers can also purchase an optional hardware service plan which covers just about anything that can happen to the unit."

Another thing colleges need to consider is battery life. "Most handheld devices can operate intermittently for up to ten hours without needing a re-charge," says Mr. Bonaduce. "Rarely is a handheld device in constant use for more than a few hours at a time."

Mr. Diaz agrees. "We support several different devices, but with our primary units, customers can expect run-times ranging from 10 to 14 hours of continuous use. This battery life can be greatly extended by doing things such as turning off the touch screen backlight after several minutes of inactivity and having the device automatically go to sleep when it is not in use." Using these power-saving tips means a handheld can "be used over several days without the need to be recharged," he said.

However, Mr. Bonaduce offers a word of warning. "Once a handheld runs out of power, nearly all of them revert back to factory settings when turned on again. This is due to the volatile nature of the memory inside the devices. Some manufacturers allow for a saved backup to be recalled upon start-up but any data obtained after the last backup is lost. Cradling (and thus recharging the batteries) is mandatory maintenance."

The future of handhelds on campus:
Bigger apps from smaller units

While handheld usage on college campuses has grown over the last couple of years, there is still much more to come. "Wireless, debit, access, financial and transit applications will continue to evolve with the size of the device continuing to decrease," said Mr. Zander.

Security concerns will drive the growth in handheld usage, says Mr. Bonaduce of VDS. "Campus security, dormitory administrators and even faculty can utilize handheld devices to check the authenticity of a student ID, capture that student's information digitally and record other crucial pieces of information with just the press of a button," he says.

"Once campuses understand the power that a handheld can bring to their security program, the presence of such devices in a collegiate environment will become as common place as radar speed detecting devices in highway patrol cars," concludes Mr. Bonaduce.

Sequoia "saw a doubling of our wireless customer base in 2006 and we expect this growth to continue in 2007," said Mr. Diaz. "We are also seeing many of the early adopters, who often started with just one or two units, placing follow-up orders for large quantities of devices as they've realized the benefits of using the handheld technology on their campuses."

Handhelds have obviously made their mark on college campuses. As a user of CBORD's handheld offering stated: "(It) is a great example of forward-thinking. It fills a niche that has been overlooked for a long time—a wireless, portable, small card reader …The uses are only limited by the imagination of the user."

Visionbase PocketTracker

"Campus security, dormitory administrators and even faculty can utilize handheld devices to check the authenticity of a student ID, capture that student's information digitally and record other crucial pieces of information with just the press of a button."

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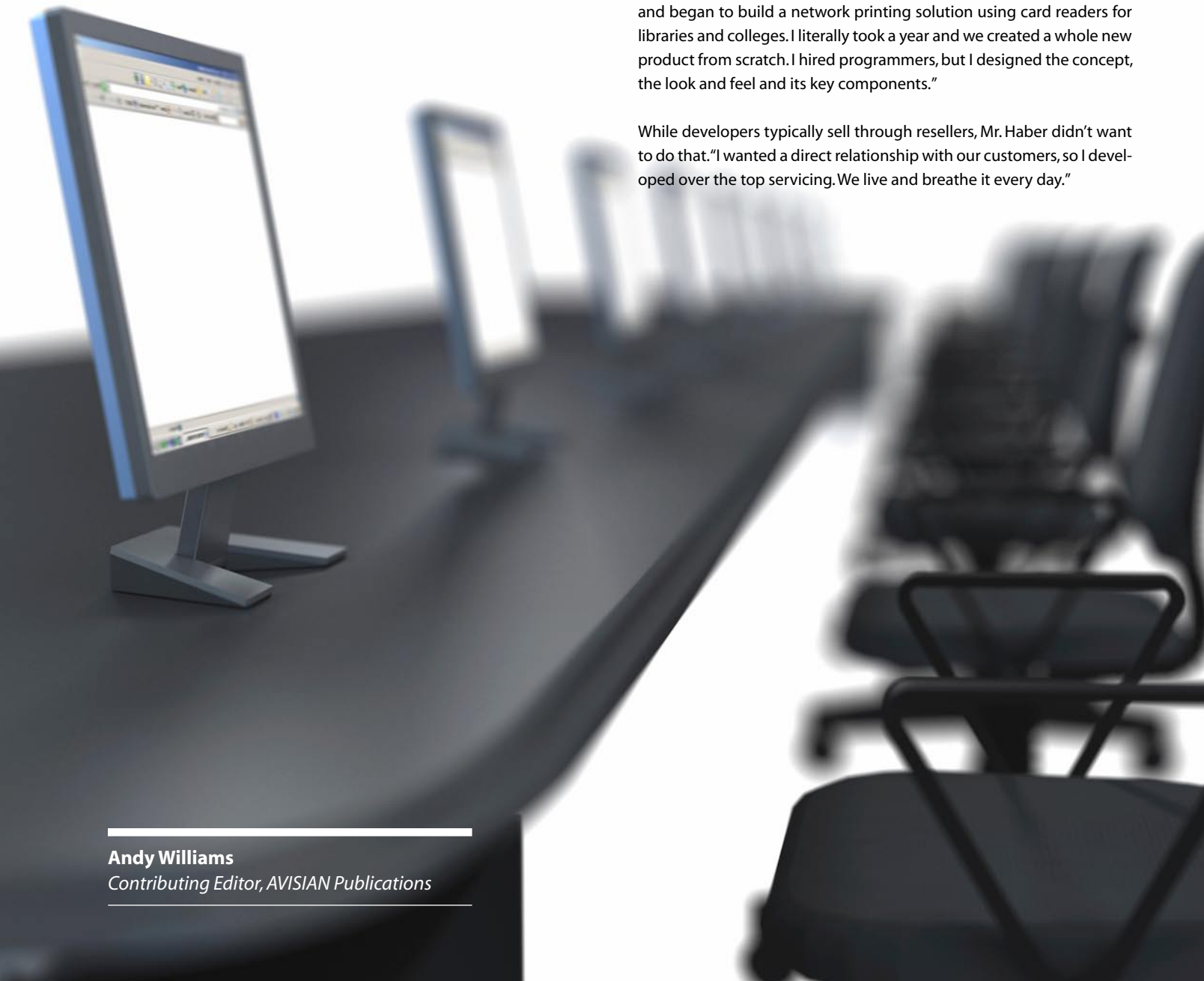


Andy Williams
Contributing Editor, AVISIAN Publications

Forty years ago, a new automobile cost about $3,500 and a printed page–at that time using a daisy wheel, dot matrix, or copying machine–cost about 10 to 15 cents. Today, the price of cars has more than quadrupled, but that same printed page of much higher quality–costs the same.

GoPrint Systems' Steve Haber's point–that he makes when visiting with college students–is simply that the pay for the print and copying process has evolved tremendously over those 40 years but the price has not. "When I was going to college, paying a dime or 15 cents for a printed page was the single biggest bargain you could ever come across," he said. "I ask students to tell me one thing they can still pay the same thing for 40 years later. And I have little trivia contests in our company to find something that costs the same."

Mr. Haber, GoPrint president, created his company 10 years ago. "I was hiring myself out as part-time COO and I ran across a company making print utility software. They were developers for Hewlett Packard. I came in as a CFO and within a couple of years I was president of the company. In 1997, I left to form GoPrint Systems (a print management company) and began to build a network printing solution using card readers for libraries and colleges. I literally took a year and we created a whole new product from scratch. I hired programmers, but I designed the concept, the look and feel and its key components."

While developers typically sell through resellers, Mr. Haber didn't want to do that. "I wanted a direct relationship with our customers, so I developed over the top servicing. We live and breathe it every day."

GoPrint can provide its customers the software, hardware, including computers, and touch screen monitors. "It's a full on-site turnkey service," he said. "If any component ever fails for any reason, we replace it overnight, freight-free with a plug and play device. They simply plug in power and they're up and running. It's all cost-free for the life of the service contract."

Middle Tennessee State University was GoPrint's first client. "It has had every upgrade since," said Mr. Haber. The school has the company's software running in libraries and computer labs. "They bought everything from us," he added, "including custom security kiosks."

The newest release fights "wasteful network printing"

Last year, the San Ramon, Calif.-based company introduced its new GS-4 product--an enhanced, automated and scalable pay-for-print management solution equipped with a host of customer-requested advancements and new features.

The GS-4 is designed to help campuses recover costs associated with what it calls "excessive and wasteful network printing," said Mr. Haber. The GoPrint solution is server based and supported on Windows, Linux, Macintosh X, Novell, Sun Solaris, and Thin-Client platforms with a web enabled control center. GoPrint offers both a release station and non-resident client workstation popup option for easy release and or payment of print jobs. He says that implementation of GoPrint products can result in customer print cost reductions of 30% to 50%.

All of the GoPrint software is written in Java. "That gives us the portability for Macs, Linux and Windows. We wanted to be multiple platform-driven."

The program is also certified to work with some of the major campus card systems– CBORD, Blackboard, NuVision, ITC and various payment systems, such as debit or stored value, cash acceptors, user quota accounts, online transactions and one-card systems. In addition, it supports PayPal and other credit card gateways for self-serve funding of user accounts with a credit card. Use of credit cards to add value to a user account is supported from any web accessible workstation.

GoPrint currently services more than 200 colleges across the country plus one university in Japan and two U.S. Air Force bases in Germany. "They (the Air Force bases) found us on the Internet. They loved our product and wanted it for their libraries because they needed a secure pay system for their printers," said Mr. Haber.

Creating an intuitive, game-like user experience

He said when he initially designed the software, he wanted something that was student-friendly, "that they would love, like a vending machine or a game."

The result is "a simple three screen release station. "I'm a student at a workstation in a library. I hit print at my work station and the job is directed to the GoPrint server, where it's paused. The release station, which has a game-like user interface, is where (I) go to release that job. Typically that release station is located near a cluster of printers. It's like walking up to an ATM."

At the touchscreen (designed for rapid access and to support students with disabilities) the job is selected and priced according to the print rules built into the system. "The student clicks on the jobs they want to print and the third screen comes up and lists the amount … requests the student to insert their card or choose another payment method such as cash or account number."

But jobs can also be released directly from the workstation, he adds. "Hit print and up comes this Web interface dialog box which acts as the release station. The user selects the jobs he wants to print. In this case, he has to use a student account. Our system supports purses. I took this idea from chip cards where they were offering multiple purses. We have soft purses … so schools can give students individual quotas that can only be used for labs … or individual departments could give out individual quota accounts."

He further explained it this way: "If you're printing out your class notes, it prompts you for payment. Now you can choose how you're going to pay. You know the science lab gave you a student quota. You scroll through the purses until you come to science and charge it there."

Extreme customer focus facilitates quick response to user needs

Like the Avis car rental ads used to claim, he considers GoPrint as "one of the other guys. One of the benefits of not selling through a reseller is you can add specialized programming features."

This example of GoPrint being able to act, or react is one of the company's main advantages, said Mr. Haber. "I can set a print rule that you pay 10 cents a page or half dollar. I can set something that every third page in color is charged a 15% premium or every Thursday from midnight to 4 a.m. you can receive a 50% discount. These are just some examples of the power built into the algorithms."

Here's another little secret," he added. "When you send an email to support at GoPrint, I am copied on every single one."

"Our job is to build a great package of tools and then allow the customers to use those tools most efficiently as they grow; we're always looking five years out," said Mr. Haber.

By then, the average price of an automobile may be approaching $50,000 or more, but it's likely the cost of a printed page will still be hovering around the 10-cent mark.

Visa and MasterCard on your campus ID

Instant issuance solutions like CardWizard let campuses produce branded plastic

Chris Corum
Executive Editor, AVISIAN Publications

If you have a bank-issued debit card in your wallet, chances are that it has a MasterCard or Visa logo on it. But if you have a campus card with a bank account attached, odds are it does not. More likely you will see ATM network logos like Pulse, Cirrus, or Maestro. A major reason for this is that students need the ID card the day they get to campus but you can't just print a MasterCard or Visa card from your card office … or can you? A growing number of campuses are doing just that and it may well be the wave of the future.

One of the long-standing "truths" of the campus card market was that campus card programs require instant issuance but the card associations, specifically Visa and MasterCard, prevent instant issuance of their branded products in an effort to combat fraud. The association requirements dictated high security printing environments and strict blank plastic management processes that made it all but impossible to print cards on campus or even within a bank branch. Branded cards came from fortress-like printing facilities with clean rooms, man traps, and armed guards.

But something changed a few years back and that change is rippling through the campus card industry. The rules governing card issuance eased enabling branded cards to be produced under less stringent conditions.

Today, many bank branches are issuing debit cards to their new customers and replacing lost or stolen cards for existing cardholders on the spot …and some campus card programs with bank partnerships are along for the ride. Campuses in North Carolina, Wisconsin, Michigan and Colorado are paving the way, providing library and mealplan functions on the same piece of plastic as global branded debit card services.

A solution called CardWizard from Englewood, Colorado-based Digital Card Solutions has been a key player helping financial institutions and campuses make it happen. According to the company's Vice President of Sales, Ron Zanotti, it can be done with very little disruption to the current student badging processes.

How does instant issuance typically work on campus?

"Our implementations follow the same process flow through badging," he says. "The only difference is that when (the student) engages with the banking representative they get a different card selected in the system and it is routed to a different printer."

That different printer is stocked with blank plastic cards with the Visa or MasterCard logos and embedded security elements.

The card is printed with the elements sent from the normal campus card production system. This can include elements such as digital photo, cardholder name, ID number, library number, etc. The magnetic stripe is also encoded with the same data as the normal (non-branded) campus card.

At this point, the card is really just a campus card printed on branded card stock. But from here, the process changes for the branded version. The card is transferred from the standard card printer and fed into the embossing unit.

It reads the data encoded in the magnetic stripe and uses the ID number to call for information from the bank's card issuance system. From the bank system, the data elements required to make the card a compliant, readable branded debit card is obtained. The magnetic stripe is then rewritten with the new data – or a combination of the old and new data.

The cardholder name, account number, and expiration date are embossed on the card and it is ready to go.

The offset PIN, an encrypted version of the cardholder PIN, is written to the magnetic stripe during the final encoding process or in a subsequent process of customer self-selection.

Security remains a major focus

Mr. Zanotti stresses that the instant issuance rules still require extreme caution and strict control over blank card stock and system access. "Dual control procedure that are currently used for other cash like conditions" are required when dealing with card stock. Two people must count and sign for the stock when it is received and locked up, when it is moved from inventory to the printer, etc.

But this responsibility falls not with campus staff but with bank staff. "When we send it to the printer that has the Visa/MasterCard stock," says Mr. Zanotti, "(that printer) is located in the bank branch." Indeed all the processes associated with the branded card issuance and account setup are typically handled by bank personnel.

But while the personnel remain bank employees, the facility where production occurs may not always be the on-campus branch. U.S. Bank will begin issuing a Visa card at the University of Wisconsin Eau Claire campus this spring but the bank does not have an on-campus branch.

According to a U.S. Bank representative, with prior instant issuance campus programs, the student is instantly issued the card, but still has to go to the branch to have the card activated before being able to use it. "With the U.S. Bank program, the account and card are instantly issued and activated at the card office and in the U.S. Bank card system so the customer can walk out of the card office and go right to the ATM or a merchant and begin using it."

Campus cards using instant issuance: Range of institutions and banks

While only a handful of campuses have made the leap to instant issuance to date, Mr. Zanotti stresses that his company's solution is very well established. "We have just landed our 300th financial institution customer." Branch banks, it seems, are widely recognizing the consumer relationship benefits of instant issuance.

On campus, at least six campuses are on board with instant issuance and, to date, all campus projects are relying on the CardWizard solution from DSI.

- The first implementation of instant issuance on campus occurred in 2002 at the University of North Carolina Chapel Hill. Wachovia Bank is the financial partner for the UNC One Card Plus, combining campus card functions and Visa check card offering.
- In 2005, Wachovia made the same program available for the University of North Carolina Greensboro and Mercer University.
- Oakland University in Rochester, Michigan partnered with Credit Union One to issue the MasterCard-branded version of its campus ID card beginning in 2005. The 18,000-student campus selected Credit Union One
- In the Fall semester of 2006, Ent Federal Credit Union began issuing Visa branded cards for the University of Colorado at Colorado Springs' campus card program and the university's 7,800 students and 1,000 faculty and staff.
- This spring, U.S. Bank will launch its first instant issuance program offering Visa-branded cards at the University of Wisconsin Eau Claire.

The wave of the future?

CardWizard has already worked alongside many of the major campus card systems. "We have done the major ones out there," adds Mr. Zanotti, "CBORD, Blackboard, General Meters."

Costs for the solution, while not insignificant, seem reasonable when the total cost of a financial partnership is weighed. The additional hardware required consists of a separate photo ID printer, the embossing unit, and potentially some peripheral devices (e.g. PIN pad, stand-alone PIN encoder). Mr. Zanotti estimates the hardware investment at $15,000. Software fees are largely determined by the amount of customization required to integrate the instant issuance solution with the campus and bank issuance systems. For the CardWizard solution, he estimates $25,000 as the upper end of a typical installation.

The investment makes sense for the financial institution, suggests Mr. Zanotti, because "the money in ATM transactions is largely gone. Banks make money on signature-based Visa/MasterCard transactions."

"It's the only way to go," says Mr. Zanotti, commenting on the future of branded campus cards, "because it really adds more functionality to the card."

Can adding off campus payment to the ID card actually grow on campus spending?

Frequently, campus administrators struggle with the decision to add a banking partner or other off-campus functionality to their campus card. How will it affect spending on campus? Will it cost me more or will it generate revenue? What will happen to our card's stored value accounts?

According to several colleges that have chosen to add banking and other off-campus functionality to their campus ID cards, the advantages for off-campus card use far exceed the disadvantages. In the end, these colleges agree that students love the extra choices available to them and that pays off in the long run.

"One of the questions we get asked frequently is: 'Will adding a banking partnership reduce the dollars being spent in the campus stored value accounts?'" said Whitney Bright, vice president and general manager for Campus Banking with U.S. Bank. "Experience has shown that by adding a banking partner, students see their card as more of a financial tool. Most of our campuses haven't seen a decrease in on-campus spending. In fact, it can have an opposite effect, because students end up using the card more often for all kinds of functions."

"If they really analyze it, they'll find that a banking partnership is a greater value to students and a greater financial value to the campus. But they must have an effective communications plan so students understand the difference between their on-campus account and their bank account … and where they can use those different accounts," she said.

Sean Glass with Higher One agrees. His company, a provider of refund management and banking services for colleges and universities, has found that "with our ID card clients, the banking and refund management program helps to increase the amount of on-campus spending through our Campus Autoload feature."

The program "lets students choose to have money automatically transferred from their OneAccount checking account whenever their on-campus flex account drops below a certain level," says Mr. Glass. "One of our earliest clients, University of Wisconsin-Stout, (found) that adding our service improved the economics of their previous flex account system."

Blackboard study quantifies this 'growth for all' phenomenon

What has been the impact on on-campus spending levels via the card following the launch of Blackboard's BbOne off-campus program at client institutions? CR80News posed this question to Pedro Marzo, Director, of BbOne.

"This is the number one question we get asked by prospect clients so two years ago we decided to conduct a study among our clients to find out conclusively. We found out that on-campus spending increased on average 25% over three years," said Mr. Marzo.

"For every dollar that is deposited into the flex account, about 2/3 gets spent on-campus, and only 1/3 goes to off-campus merchants," he continues. "In other words, the size of the pie gets bigger, and often on-campus locations keep the biggest slice."

The study showed that deposit levels increased as well ... "on average 85% over three years," according to Mr. Marzo. "The increase was significantly higher at institutions with brand new deployments and closer to 20% at schools with mature card programs."

Creighton University sees overall growth through the banking addition

Omaha, Neb.-based Creighton's banking relationship with U.S. Bank "is a win/win/win for all. We get help providing goods and services to our patrons without having to capitalize from a shrinking budget," said Brenda Hovden, Creighton's director of card services. "We're not any different from any private institution. We come back with all these ideas, but our budgets just don't have the ability to keep up. U.S. Bank gives us marketing opportunities and support. From our experience there are definitely benefits to having both a banking relationship and an off-campus program."

She added: "Our community members are in need of financial transaction services beyond our campus fringe and that's what the bank is looking to provide. The student or employee, the university, and the financial institution are looking for a long-term relationship that continues to be mutually beneficial. With U.S. Bank as our partner, Creighton University community members have access to personal financial coaches and local services."

Creighton's off-campus program "creates for merchants' opportunities to reach our campus population," she said. "One benefit is it offers our patrons the flexibility to choose from multiple payment methods. It's this same flexibility that boosts our participation levels in both the number and balances carried in our JayBuck$ (declining balance) program."

Does the banking functionality take away from the off campus merchant program? "Definitely not," said Ms. Hovden. "While they both offer a mechanism to make off-campus transactions and the ability to monitor and budget student spending they also have different features and functionalities that we feel complement one another. With U.S. Bank's Student or Workplace Banking our community members also have access to an array of services whose borders stretch beyond our campus fringe or functionality. We're simply extending to our community members an opportunity to access those services using our ID Card."

The 7,000 student-strong Creighton, with another 2,500 faculty and staff, uses BB One from Blackboard and currently has about six outside vendors, she said.

The student card can double as an ATM and PIN-based debit card. "It doesn't have a Visa logo and you cannot perform signature-based transactions, in other words, no credit capabilities. So if the card is lost, it becomes ineffective immediately unless that person has your PIN number," added Ms. Hovden.

Wisconsin campus finds similar growth with off-campus declining balance program

Having an off-campus program at the University of Wisconsin-Stevens Point has been a blessing since the school's student union is undergoing construction. "Students still have increased opportunities for their dining and other needs," said Jerome B. Lineberger, associate director University Centers. "Actually, they currently complement each other very effectively."

He added: "There are cost and service level benefits to each program. In the long term, as payment media technologies merge and become more transparent to the user, it may become less of an issue."

The university started its off campus program about five years ago, through Student Advantage. "When they were purchased by Blackboard, it was rolled into a Blackboard off-campus program," said Mr. Lineberger.

He said when the university first implemented its off-campus program, the concern was "that we might cannibalize our on-campus sales. The college uses what it calls "PointCash," a cash equivalency not tied to any meal plan. The college's foodservice operator was concerned that all this PointCash money would go to the off campus merchants. "But our deposits went up, not down," he said.

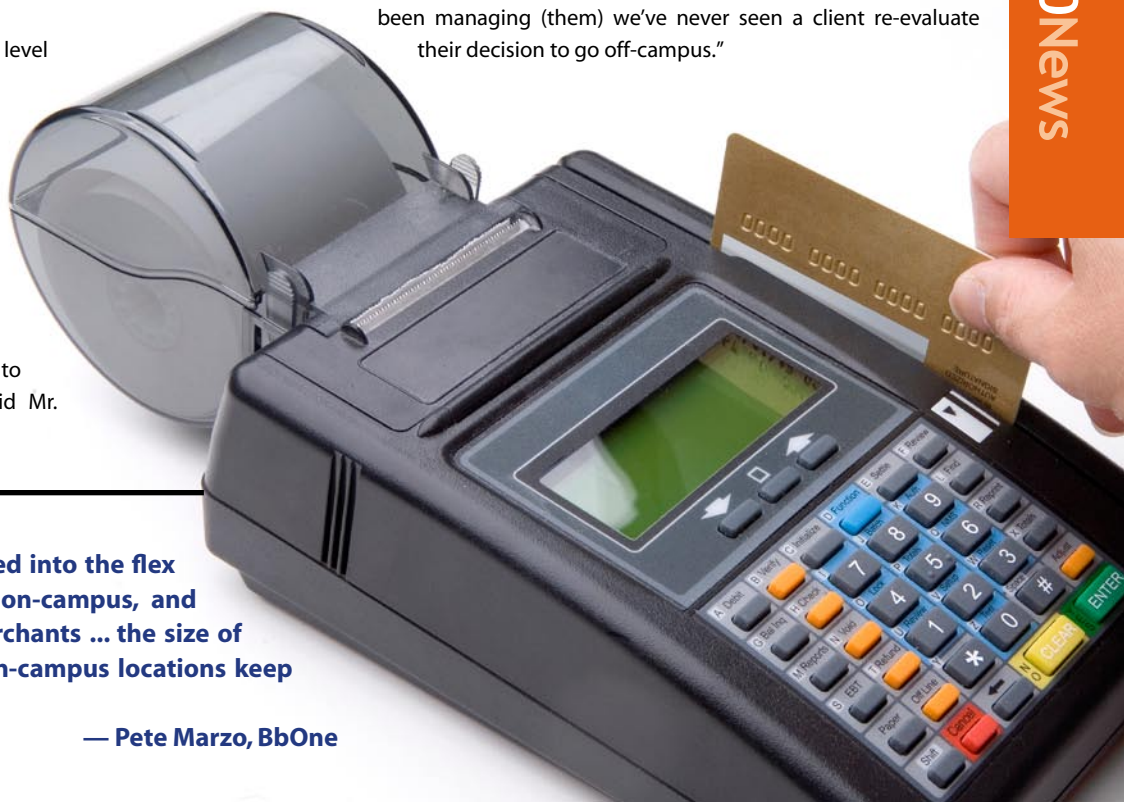
The university currently has about 15 off-campus merchants to service its 8,200 students. Merchants include food, laundry and dry cleaners.

Conclusion

The concerns are out there and campus card administrators will almost certainly face the questions when a new payment option is added to a card program. Will an off-campus program impact on-campus spending? Will a banking partnership impact on-campus and/or off-campus declining balance spending? Are we cannibalizing our revenues? The campuses and vendors interviewed for this article seem to agree that more options make for better usage, and better usage means more spending across locations and payment vehicles.

Perhaps Mr. Glass sums it up best when he stresses that you are not replacing the on-campus program when you add a banking partner. "When the school didn't have banking on the campus card, students still had bank accounts … so adding banking won't change how they access their money, it just makes it more convenient that they can do it all through one card."

Mr. Marzo sums it up from the BbOne perspective, "perhaps the best evidence in favor of off-campus programs is that in all the years we've been managing (them) we've never seen a client re-evaluate their decision to go off-campus."



"For every dollar that is deposited into the flex account, about 2/3 gets spent on-campus, and only 1/3 goes to off-campus merchants ... the size of the pie gets bigger, and often on-campus locations keep the biggest slice."

— Pete Marzo, BbOne

Biometrics gets its 'fingers' into school foodservice and other campus environments

Ryan Kline
Contributing Editor, AVISIAN Publications

The use of biometrics for identification and authentication is taking hold throughout the country and in our schools.

Way back in 1972, far before many people were even thinking of using biometrics in conjunction with daily authentication, the University of Georgia began using biometrics in their dining halls. The campus had decided to simplify their mealplan offerings—from a ticket-based program to an enrollment program—and they needed a way to accurately identify paid customers The same goal of simplification remains a core motivator when colleges, universities, and K-12 schools decide to use biometrics in their facilities.

Biometric identification is not a new concept. "The ancient Egyptians used bodily characteristics to identify workers to make sure they didn't claim more provisions than they were entitled—just like governments today are looking at biometrics to lessen benefit fraud," says Jay Fry, CEO of biometric developer, identiMetrics. And just like the University of Georgia has been doing for years.

Lower costs and increased accuracy has many school administrators looking to biometric as means of authenticating students. According to Mr. Fry, "price is no longer an obstacle…. Today, biometrics can actually be priced competitively with barcode readers, swipecard (magnetic stripe) readers and PIN pads."

Though the number of schools utilizing biometrics is not known, Mitch Johns, CEO/President, Food Service Solutions, reports that his company has 65 school districts using their solution.

Bud Yanak, VP Marketing, BIO-key International, stresses that the advantages of biometrics far exceed those of other authentication techniques.

CR80News spoke with the three men in an effort to determine the state of biometrics in college and university as well as K-12 settings. Both are convinced that biometrics hold the key to solving the challenges of authentication in campus environments.

An interview with Charles Yanak, VP Marketing, BIO-key

What advantages do you think there are with a biometric system?

First, convenience … With biometrics, there is no need to remember a password or carry an ID card. You simply place your finger on a biometric reader that takes a picture of your finger, digitizes it and then compares it against a database of templates. For students, this is a major plus, since it eliminates the need to constantly be replacing lost or stolen IDs and it eliminates the possibility of sharing ID cards.

"Biometrics ... can improve your privacy since it can virtually eliminate or substantially reduce unlawful/unwanted access to your private information."
— Charles Yanak, VP Marketing, BIO-key

"Price is no longer an obstacle…. Today, biometrics can actually be priced competitively with barcode readers, swipecard (magnetic stripe) readers and PIN pads."
— Jay Fry, CEO, identiMetrics

"More and more schools are considering doing away with ID cards and using biometrics in the lunch process."
— Mitch Johns, CFO, Food Service Solutions

Second, security … Biometrics are far superior to current passwords/PINs and ID cards identification techniques for establishing identity. It's very easy to "share" a password or PIN with someone and worse yet, they are easily forgotten or unknowingly obtained by someone looking to access your personal records or assume your identity. In the campus environment, biometrics can help eliminate:

- "Buddy punching",
- students logging into systems using a teacher or administrator username and password to access protected information, and
- identity theft.

Is this a cost effective strategy to implement in schools?

Definitely … The cost to deploy biometrics has gone down significantly over the past 2 years. Three years ago, the average cost of a fingerprint reader was over $100. Now, they are included in most new laptop computers. External USB readers cost less than $40 today, one-third the price they were two years ago.

The cost to deploy a fingerprint biometric system is far lower than the costs to issue and manage ID cards and passwords. And they provide far better security since you can't "borrow" or loose a finger like you can an ID card or password/PIN.

Why do you think so many people are afraid of using such secure technology?

Great question. There is still a lot of misinformation about biometrics and "Big Brother" concerns. The reality is we all use biometrics every day. Biometrics are defined as the ability to recognize someone by their physical attributes. You intuitively use biometrics when you pick up the phone and recognize the voice at the other end, or when you meet a friend on the street and recognize their face. However, people are concerned about how biometrics can be misused with "Big Brother" being able to track your every move. Banks, retailers and other institutions store and track a lot of information about us every day. Biometrics can protect access to this information! With biometrics deployed to access this information, our lives would be safer, since they would reduce or eliminate unlawful acts such as identify theft. Biometrics provide better security and confirm who has access to critical information and can improve your privacy since it can virtually eliminate or substantially reduce unlawful/unwanted access to your private information.

What sort of stereotypes can biometrics eliminate in the lunchroom?

Another great question. When two students are traveling down the lunch line side-by-side, they look identical to the system. When they get to the cashier, they both place their fingers on the reader to establish their identity and the system electronically debits their account. One of these students may in fact be buying his lunch with government aid. (With biometrics, there is no) negative stigma among peers. Another example … very young students often forget or lose their ID. With biometrics, the lunch line flows faster and eliminates the embarrassment when the student discovers he has forgotten or lost his ID or password.

An interview with Mitch Johns, CEO, Food Service Solutions

Have parents expressed apprehension to using biometrics with children?

The association with fingerprint-based biometrics is generally associated with law enforcement. AFIS systems store actual fingerprints while commercial applications only store a numerical template of the enrollment scan. Post 9-11 events including the Patriot Act and war on terrorism have elevated concerns over the Americans the loss of privacy. Using Opt In or Opt Out at time of implementation gives parents a choice.

What should a school think about when choosing the right biometric solution?

Jay Fry, CEO, identiMetrics, provided this checklist for institutions evaluating biometrics for use in their foodservice or other campus applications.

- Choose a biometric identification platform that can eventually be used throughout your entire school. This means that students should be enrolled only once to be identified in a variety of areas in the school – the cafeteria, the front door or classroom for attendance, the nurse's office, the library and the office for absence information entry. It's just impractical to expect a Principal to disrupt the entire school to enroll the entire student body for each application that requires student identification.
- Make sure that it can scale if needed. Some biometric technologies work great with ten students or less in a standalone environment, but fail miserably as the number of students increase in a networked environment. A more robust biometric technology might cost a bit more, but will be worth it in the long run.
- Make sure that it can integrate with your software applications that you already have in place, if you don't want to replace them.
- Ask about performance accuracy. There are basically four metrics: false acceptance, false rejection, failure to enroll and failure to acquire rates. False acceptance rates are what you should be most concerned about. That means I place my finger on the scanner and your name comes up.
- Compare, but not just on price. Check up on customer support and rollout experience. Once again, make sure the technology works in a practical school setting and not just in a vendor lab.
- Communication, communication and communication! Make sure everyone – parents, teachers, students, administrators, the school board and the media have up to date and accurate information about biometrics. identiMetrics has a "Guide to Implementing Biometrics" that includes, for instance, sample letters to parents, biometric FAQs, best practices and other important information to make the whole process run smoothly and easily.

What do you think the future holds for identification at schools around the nation?

More and more schools are considering doing away with ID cards and using biometrics in the lunch process. Schools are currently testing/using biometrics and GPS for tracking bus attendance. As security becomes an even bigger issue for schools biometrics will be used for door entry and attendance.

An interview with Jay Fry, CEO, identiMetrics

What about privacy issues?

Biometric technologies don't conjure up the Orwellian fears they used to. Of course, some people still grumble at the mention of systems that scan fingerprints because of misunderstood privacy fears, but overall the acceptance of biometrics has risen substantially over the past few years. In fact, people are now realizing that biometrics actually protect their privacy and that in many biometric applications, including the one identiMetrics employs, their fingerprints are not stored anywhere and their fingerprints can never be recreated from the digital template. Minutiae based systems, like ours, use flat images to create templates. Flat images reveal the center of the finger and require only a minimum of unique identifying points in order to make a match. The purpose is to identify a person already enrolled in the software. Fingerprints can never be recreated.

Why would a school use biometrics?

Quite simply, to save time and money, and improve the accuracy of reporting. Biometric technology can provide benefits in terms of convenience, safety and security. There are two areas of identification that schools have to manage: students and employees. Biometrics are beginning to be used in both of these areas.

In some schools, teachers, staff and employees (use biometrics) for time & attendance, making record keeping very accurate. It can be used to identify people that come into the school on a regular basis, like substitute teachers, contractors, parents, so you know who is in your school and when they left.

Biometrics can be used to identify students as well. The cafeteria is usually the first area in the school to embrace biometrics. With up to 80% of students forgetting or losing their cards on a daily basis or forgetting or sharing their PINs, lines are slowed and mistakes are made. Biometrics will be used:

- in vending machines to ensure positive identification of children eating free or reduced lunch
- for attendance to eliminate "buddy punching" and provide irrefutable proof of attendance and help cut down on "class cutting" when attendance is taken on a period-by-period basis
- in the library to checkout books
- in the nurse's office to make sure that the students are receiving the correct medication.

How do you begin to implement biometrics on campus?

Start by making small improvements. You want to improve productivity, record keeping and of, course, safety. Take baby steps! Identify and assess your "pain." Where in your school could the use of finger scanning instead of cards and PINs save you time and money? We have found that in most schools it's in the cafeteria.

Why the cafeteria?

About 65% of purchasing that is not facilities-related in schools is done by food service departments. Food service is a business and it needs to run efficiently.

There's a growing interest in the use of biometrics for student ID in school cafeterias nationwide. By just about every measure, finger scanning biometrics outpace other options for efficiency and ease. When a child presses a finger into a scanner, there's no doubt about his or her identity. There's no risk of lost ID cards or forgotten PIN numbers. There's no chance of fraudulent use of the child's meal account by someone else. Biometric ID also provides anonymity and eliminates any stigma for the children who receive free or reduced-price lunches, (therefore increasing) participation in the National School Lunch Program. And increased participation ---can translate into more funding for districts.

Another key area of focus is healthier vending. Instead of going to the cafeteria, a student can purchase a prepaid, reimbursable meal from a vending machine. The machines being tested are tied into a point-of-sale system, and they can track the purchases to prevent a student from buying two lunches on the same day. And biometric finger scanning will ensure accurate record keeping – a must for federal and state reimbursement.

Any concluding thoughts for institutions considering biometrics?

Cost-effective biometric technology is here today with practical uses for schools. It's a perfect solution for schools who are dissatisfied with the current student identification systems in place such as PINs and swipe-cards. Biometrics, and in particular finger scanning systems, provide irrefutable proof of identification. Unlike the complicated and expensive government systems in the past, biometric finger scanning systems can be simple, cost-effective and technology friendly. If children can do it, you can, too. It's just smart business!

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CR80News

Philadelphia's sixty high schools issue contactless campus ID cards

Access, attendance tracking, lunch programs drive the implementation provided by Scholarchip

Andy Williams
Contributing Editor, AVISIAN Publications

Colleges have been using campus card ID systems for years. But with increasing security concerns, similar products are moving into public schools. One example: Philadelphia, Penn.'s school system where high school students at 60 schools have been provided a contactless ID card needed to gain admission to school property, track attendance, and, in some cases, buy lunch in the cafeteria.

"We have 56,000 high school students and we wanted a better handle on (them)," said Patricia DiLella, senior project manager for Philadelphia School District's Office of Information Technology. "Before, everyone was assumed present until marked absent. We needed something to track students. With this new system, everyone is assumed absent until they tap (their card) and have physically been seen by school personnel."

Via a request for proposal process, the district selected ScholarChip Card LLC, a seven-year-old organization whose origins date to higher education and has since incorporated K-12 schools in its lineup. While ScholarChip had been conducting a pilot program in two of Philadelphia's middle schools, it landed the five-year contract because it had "better technology, ease of implementation and cost," said Ms. DiLella. "It was state of the art and they had experience with smart cards in universities."

"We spent a year and half doing evaluations in the pilot program (with the middle schools)," said Dr. Maged Atiya, ScholarChip's founder and chief technology officer. "We've provided a contactless card (using NXP's MiFARE technology) to every high school student in the district."

Ms. DiLella added that the district, Pennsylvania's largest, was "in the process of implementing the system in three large middle schools. We concentrated on high schools first because they needed it."

Students are encouraged to wear the lanyard-attached badge around their necks, however, many are still simply carrying them on their persons, said Ms. DiLella. "We want them to get used to wearing the cards because they're going to be used (eventually) for classroom attendance."

The smart ID badge is tapped when a student enters school grounds. Attendance is taken in a classroom in the normal fashion and the results are compared with the records generated when the students first enter the school. In addition, the badges can be read by portable, PDA-style readers. So, if a student is in the hallway, the badge can be read by an administrator to determine where the student should be.

To accomplish this, the card contains the student's picture and also his class schedule. Other information can be added, such as any special health needs and whether he's on free or reduced lunch, which can be read by a POS device in the cafeteria.

The next step is implementing electronic attendance at the classroom level. She said some schools would like to put readers in classrooms so students can walk by, thus registering their physical attendance in the class. But that's not something the district is looking at as a whole because it's expensive and would require readers in each classroom.

"The (first) challenge is making sure teachers have computers," she said. "If a child is marked as tapping in (when he first enters the school) when the teacher gets to her class for the day, it shows he's present." She then manually identifies that the student is in the classroom. If he's not, a notation is made on the computer.

"We opted right now not to have devices hanging on the door," she said. Inevitably, they would be subject to vandalism. "So the teacher will be doing it. This system does help tremendously in finding kids and keeping track of them."

Eventually, the POS system in the cafeteria will be able to have the food service portion on the card and ultimately an e-purse. But right now it just notifies cafeteria personnel that the child is eligible for free and reduced lunch, said Ms. DiLella.

In, the technology-savvy Microsoft School of the Future in Philadelphia, the cards are also used to open lockers. "I don't think it will be implemented at our other schools anytime soon," she said. It would require either upgrading the lockers or, more likely, installing new ones, which is an expense the district isn't willing to undertake at this point.

Each school issues its own cards. "The school can queue a card and print it or we can print it at our data center," says Dr. Atiya. "It's all up to what the school wants to do. (It is a major) implementation of distributed smart card issuance and printing. We have almost 70 printers in the field."

The printers from Evolis are customized to encode the contactless chip during the print cycle. According to Dr. Atiya, as the blank card is physically printed, a unique digital ID is added to the card that contains the student's schedule data, emergency information, cafeteria e-purse, etc.

"Our approach is ideal … for large urban school districts," adds Dr. Atiya. "We installed 300 devices in Philadelphia inside of five weeks. That's because of the architecture of our system. Everything is self-configurable."

It seems that the Philadelphia experience supports his claim. "The technology is unbelievable," Ms. DiLella said in rating the overall system. "We implemented in 59 schools in six weeks. That's unprecedented. ScholarChip was out here helping them with training and helping us get more accurate data. Now we're able to assist schools manage and keep accurate attendance records."

The printers from Evolis are customized to encode the contactless chip during the print cycle.

Video surveillance and campus cards:

A total security solution

Read Winkelman,
The CBORD Group, Inc.

Video cameras are becoming increasingly common on college campuses. It is now estimated that more than half of junior high and high school students attend a school with one or more security cameras. We are becoming accustomed to being monitored.

As the role of campus card systems changes and grows in light of new technological innovations, access control and video surveillance will become increasingly ingrained in purchase decisions. Already, we have seen headlines about criminal cases solved on college campuses with the help of card system software linking cardholders to specific locations at specific times. Campuses are now starting to use the software to back this up with video footage of card usage, and tracking of security events that send alerts to the system, both of which allow security officers to follow cardholders' activities from one location to another.

When CCTV (closed-circuit television) and DVR (digital video recording) equipment is integrated with a campus card access system, the result is a powerful, flexible security solution. The systems work together to provide video capture of events detected by security features in the card system, as well as playback and monitoring of video records of those events. This software integration goes beyond simply monitoring activity. It allows campus administrators to react quickly to events as they occur, as well as track the events that precede and follow them.

For example, at North Carolina A&T State University, the school's campus card system is tied to a centralized monitoring station with eight DVRs networked to almost 150 cameras located throughout the campus. When an event is triggered in the campus card system within view of one of these cameras, live video can be pulled up on the screen. This enhanced security system provides students, guests, and staff a sense of comfort and strengthens police operations.

As security becomes increasingly important for administrators, students, and parents, any auxiliary system on-campus that can be used to improve safety will be called upon to do so. What this holds for the future of campus card technology is new and better integrations between campus card systems and surveillance technology, as well as more alarm and security management features within the software itself. (And a better night's sleep for campus security officers.)

A brief history of the campus card industry

Robert Huber,
Robert Huber Associates

The history of the campus card program has been diligently chronicled by one of its long time leaders, Robert Huber, of Huber Associates. CR80News thanks Mr. Huber for helping us to bring this abridged version to our readers.

1968

R.D. Products develops and installs the first electronic card access system for a college or university at the Rochester Institute Of Technology. The "VALI-DINE" System mechanically punched holes in the card as it was read to signify access to the dining hall.

1972

Amsec, founded by Gary Lorenz and John Darjany, develops and installs their first card access system at California State Polytechnic University. It was the first known card-based system for colleges and universities, utilizing magnetic stripe technology.

1974

R.D. Products purchases Amsec.

1975

The CBORD Group, Inc. founded by John Alexander to develop and market food service management systems for the college and university market.

1978

IDenticard Systems Inc., founded in 1970, installs its first campus A.M.E.C.S. access control system at West Chester State Teachers College.

1979

General Meters Corporation founded by attorney Leon Gottlieb to provide off-line vending control systems for copier machines.

CBORD develops and installs their first online electronic card access system at Cornell University.

1981

General Meters develops and installs their first standalone electronic card access system at California State University.

1982

Harco Industries Inc., founded by Harvey Bryans in 1949 as a manufacturer of identification cards and on-line electronic security systems, and Concept Systems Inc. develop and install their first on-line "Entrec" campus card access system at the University of Wisconsin – Stout.

1983

General Meters introduces the "Door Accountant" application at Brigham Young University Law School to provide electronic door access with the same campus card used to make copies.

1984

CBORD develops and installs their first Personal Computer based electronic card access system called "PC ACCESS."

1985

R.D. Products changes name to Griffin Technology Inc.

Harco installs their new multi-application Campus-Wide System at Duke University for the new "DukeCard" program under the leadership of Joe Pietrantoni.

CCV Systems, a provider of transaction control systems for closed environments, installs the first Canadian school card system at the University Of Calgary.

1986

Debitek Inc. is founded to provide cashless payment systems.

Special Teams Inc., founded by Don Endres in 1985, develops and installs their first electronic access system at Augustana College and South Dakota State University.

Roth Systems Inc., founded by Robert Roth, introduces its first A.M.E.C.S. access control system to the higher education market, utilizing magnetic stripe technology.

DANYL Corporation, founded in 1972 by Pete Truscello, installs their first standalone electronic card access system to manage copy machine copies at John's Hopkins University.

1987

ARA Services Inc., a campus service management contractor, develops and installs its first in-house card access control system ("ScanPlus") at Utica College.

NPD Systems Inc., founded by Niles Dally, introduces its first standalone debit card system to the higher education market.

1988

Marriott Corporation, a management service contractor, develops and installs the first smart card-based access systems on a college campus at Trinity College and Queens College.

1989

CCV Systems becomes ITC Systems, founded by Campbell Richardson, to provide transaction control systems.

1990

Florida State University becomes the first public university to link their campus card with a bank.

National CacheCard Company founded to develop card-based higher education systems utilizing smart card technology.

DataCard Corporation introduces its first black and white digital imaging card production system.

Advanced Network Technologies develops and installs its first on-line Integrated Campus Management System (ICAM) at Baylor University.

1992

Diebold Inc., a provider of electronic security systems since the 1940's, secures exclusive marketing rights for the ICAM products from Advanced Network Technologies.

1993

National Association Of Campus Card Users (NACCU) formed to provide an educational forum and resource for campus card users. Founders included Tom Bell (SUNY Geneseo), Mel Blackburn (Loyola College in Maryland), Paul Melanson (Loyola College in Maryland), Bill Norwood (Florida State University), and Joe Pietrantoni (Duke University).

DataCard introduces its first color digital imaging card production system.

NPD & Associates and Roth Systems Inc. enter into a strategic alliance to jointly develop and market card based systems.

1994

AT&T Inc. purchases Harco Industries Inc. creating AT&T CampusWide Access Solutions.

NACCU holds its first conference in La Jolla, CA on February 13-15 with representatives from nearly 50 colleges and universities.

Florida State University forms the Card Application Technology Center, an independent business enterprise operation, to manage the new "FSUCard" under the leadership of Bill Norwood.

1995

American Express Travel Related Services purchases Special Teams Inc. and its card access systems.

Schlumberger purchases DANYL Corporation to form Schlumberger DANYL Inc.

Advanced Network Technologies is purchased by Diebold Inc.

National CacheCard Company develops and installs their first smart card system at Washington University in St. Louis.

The University of Michigan and Western Michigan University contract with First of America Bank and Schlumberger DANYL to provide campus smart card system.

SmartCity, a vendor consortium to provide smart card technology systems to campus environments, is founded by Florida State University's CATC, Debitek, Gemplus, and Product Technologies Inc.

1996

Diebold purchases Griffin Technology Inc.

The Card Application Technology Center upgrades the FSUCard to include both magnetic stripe and smart card technologies.

Cybermark LLC, a provider of smart card systems for colleges and corporate campuses, installs their first system at Old Dominican College. Investors include Sallie Mae, Battelle Institute, and Huntington Bancshares.

1997

College Enterprises, Inc., founded in 1993 as a provider of copy and reprographic needs for colleges and universities, purchases American Express Special Teams Inc..

CyberMark agrees to market the SmartCity smart card system, in addition to acquisition of responsibilities of the former FSU Card Application Technology Center. The Center's director, Bill Norwood, joins CyberMark.

1998

The Pennsylvania State University System becomes the first university to link their campus card with a consortium of multiple financial institutions.

Northeastern University becomes the first to offer a campus card with MasterCard logo issued "onsite" by the university.

Debitek is purchased by IVI/Checkmate, a supplier of point-of-sale (POS) terminals.

The University of Missouri Columbia becomes the first college or university to "share" its host campus card access system with another school, Stephens College.

2000

National CacheCard Company abandons higher education market.

Student Advantage, Inc. founded in 1992 as a national student membership and retail discount network, introduces "SA Cash" to provide schools with a new option to expand the scope of their on-campus debit card program to include selected off-campus local merchants via an outsourced marketing service.

iCollege Inc. (formerly CEI Special Teams), announces its intention to acquire AT&T CampusWide Access Solutions.

2001

Blackboard Inc. acquires iCollege/AT&T CampusWide Access Solutions (originally Special Teams and Harco).

NPD Associates / Roth Systems Inc. change name to Nuvision Networks.

IVI/Checkmate, parent of Debitek, purchased by Ingenico, a leading provider of point of sale systems.

CyberMark becomes responsible for marketing, selling and supporting all Schlumberger DANYL smart card-based products for the campus market as Schlumberger DANYL withdraws from the education market.

CBORD introduces the first IP addressable card reader for campus card access systems.

2002

CyberMark ceases operations and transfers all marketing and support responsibilities to ITC Systems.

Higher One, Inc. founded in 1999 as an on-line financial services company for Higher Education, launches its first program at the University of Houston.

2003

SmartCentric founded by Kieran Timmins to advance the SmartCity smart card solution.

2004

The University of Vermont becomes the first college or university to "share" its host campus card access system with two other non-related schools, Saint Michael's College and Champlain College.

2005

CBORD acquires Student Advantage.

CBORD, on its 30th corporate anniversary, acquires Diebold's Campus Card Systems Division.

Tracking misprints and bad cards can be as important as tracking good ones

Keeping track of the bad cards–those that were printed but never issued–is just as important as tracking the good cards when managing your ID card system.

For John Ekers, Fargo Electronics' director of product marketing for software and services, it has become something of an evangelization issue.

"One of the things we've been trying to promote, which comes from working with security bureaus, is that it's not just about your cards, but about your duplicates as well, your bad cards and how you are managing those," said Mr. Ekers.

"…particularly in the ID market with desktop printers, you see a huge gap. No one is managing the bad cards, the ones that had to be remade," he stresses. "Not many have software in place to tell you we made four copies of Jane's ID badge and the fifth is what we sent out."

What's needed is something that will help organizations to do a reconciliation to match bad cards against the inventory and produce an audit trail. "The bad cards don't necessarily have to be kept on file, but a supervisor needs to look at them, check them off (that they actually reviewed them) and then the cards can be destroyed," said Mr. Ekers.

It's all about hardening your security. The card may not have been encoded yet, but the picture is still there, the name is on the card and it could still be used fraudulently.

Fargo and others have tools that can secure the issuance process. "We're trying to manage the issuance of both good cards and bad cards," explained Mr. Ekers.

A presentation at a National Association of Campus Card Users (NACCU) conference on the issuance process ended, "with most of (the 40 college attendees) wanting to get back to their offices as soon as possible," said Mr. Ekers. "These were people who initially felt their offices were pretty secure," he said. "You need to know who has access to your card issuance system. Can someone come in over the weekend and produce fraudulent cards? And what is your liability if that happens? Fear drives a lot of this."

If you're providing a system to manage access, but you're not managing the security of the issuance process, you could still be liable for any breakdown that occurs, he said. For example, someone could print out a fraudulent card that allows him to gain access to a secure building.

One preventative measure organizations can take is to utilize a tool that can lock down their printers. "If you have an application running on your PC, the only way the printer will work is if you present the printer password. That's more widely accepted in the education market. In a lot of cases," said Mr. Ekers, "you have students doing the badging process. At least over the weekend no one can come in and access the printer."

Complementing that system, he added, would be a notification application. "An individual who comes in over the weekend who wanted to print badges and if the printer wasn't locked up, the printer would send out a message over the network or cell phone and let the manager know that someone is trying to print something," said Mr. Ekers.

Another possible security gap is the data itself that's used to print the badges. "We recommend that you don't maintain that data any longer than you need it. If you look at Visa or MasterCard, they're not allowed to maintain account information for more than seven days. You don't have to maintain a local database," said Mr. Ekers.

Computer advancements have also led to more security holes. The simple USB port provides quick access to data on the computer. "A lot of corporations are not buying computers with USB ports," he said.

Even if you don't have the means to implement a sophisticated issuance security and card inventory system, "you can at least have an Excel spreadsheet where you log in the number of cards, cards you've printed, and so forth," said Mr. Ekers. "You really need to manage that inventory." Or, you could go low-tech with a simple pencil and paper method, he added.

"So many colleges today seem to be overwhelmed with operational requirements. Historically, they've let a lot of these things go just to get the cards out the door. But I think they're starting to understand that there's a lot more at stake," said Mr. Ekers.

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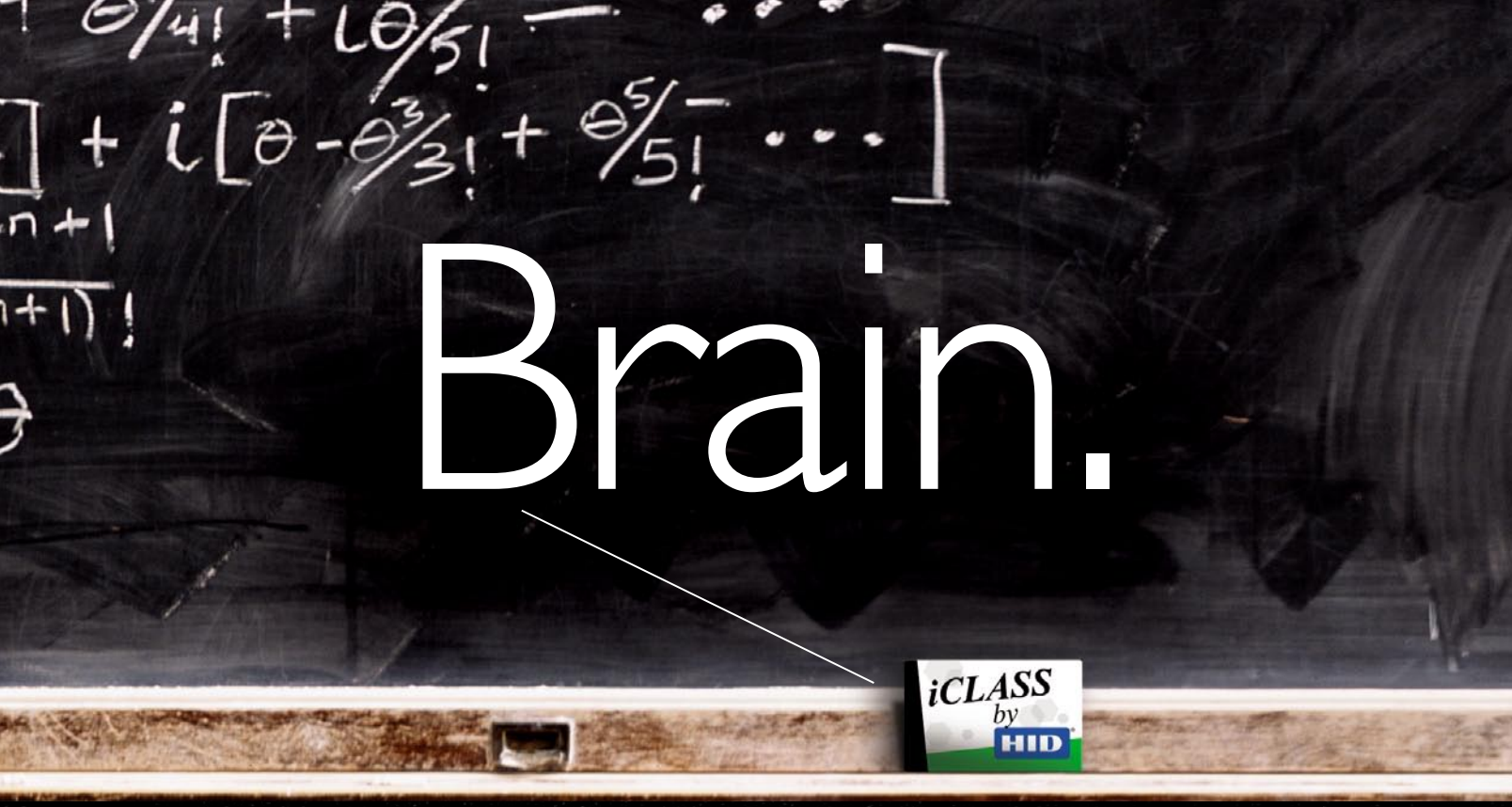

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