

Making the Most of the Rensselaer Advantage Card: Plan for Finishing the Original RAC Project

Max Zujewski

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Introduction

Seven years ago, the faculty, staff, and students of Rensselaer Polytechnic Institute began a promising initiative, a student ID project known as The Rensselaer Advantage Card. Initially, it was a success for the college community, generating more profits for Rensselaer, making student dorms more accessible and safer, and propelling RPI to the forefront of student ID card technology.

Yet the Rensselaer Advantage Card project was not fully completed. Today, it is listed on only a single section of a Web site entitled "Details of Historical Projects." The site states that the Rensselaer Advantage Card's future uses will include banking applications, credit and debit functions, vending machines, and laundry services. Unfortunately, it has been seven years since the inception of the Rensselaer Advantage Card project, and none of these features are yet available on campus.

Other U.S. colleges and universities are substantially benefiting from self-supporting smart card systems, which not only create profit, but also increase student convenience in comparison to such magnetic stripe card systems as the one currently in use at RPI. The University of Arizona's CatCard incorporates chip technology that allows students to make small payments at the campus bookstore, parking garage, and unattended locations such as vending and laundry machine areas. The card's chip is also accepted by ten different on-campus vendors. Currently the CatCard system has processed over \$1 million in transactions. Another example is Texas A&M's smart card system: Students can use the Aggie Bucks on ID cards to buy items from "the bookstore, vending machines and snack bars on campus, as well as an ever-increasing number of off-campus retail locations" ("Case Study"). The school has reported annual sales of over \$12 million dollars.

The added conveniences, profit potentials, and technological innovations of the smart card have made Rensselaer's needlessly out-of-date ID card system impossible to ignore. This report will outline the project and recommend that the RPI Committee for Student Affairs support the implementation of the Diebold CS Gold smart card system over a period of two years. This is a feasible, cost-efficient upgrade solution that will benefit the college community both financially and in the everyday transactions of student life.

Background

Several years ago, the high costs of purchasing new ID card technologies forced RPI to place the Rensselaer Advantage Project on hold. Today, those same technologies are less expensive, more versatile, and more functional, and yet RPI remains behind other universities in ID card

technology. Students don't even have the convenience of using their ID cards at vending or copy machines—options that students at other schools have had for years.

The list of colleges and universities with new ID card services is growing rapidly. Moreover, campus polls show that these new services are indeed beneficial to the students. At Northeastern University in Boston, student ID cards can be programmed as debit cards that allow students to withdraw cash from bank accounts; the cards can also be used to obtain “discounts on rail tickets, shoes, sandwiches, and other goods and services” on and near the campus (Ackerman).

The Yale identification card, a smart card introduced in 1999, was recognized by the executive director of Yale's Student Financial and Administrative Systems as “one of the most technically sophisticated among universities and corporations” (Bialik). The DukeCard was implemented as early as 1985, and by 1988 the magnetic stripe card system could be used for vending and laundry services. Today, the DukeCard system has been updated to a smart card system, and, as student Emmanuel Chang notes in response to an on-campus poll, the card “ends up being your life” (Bialik). According to the poll:

Today, the DukeCard is used for nearly every on-campus transaction. . . .
[S]tudents can put as much money into their food accounts as they wish, and then spend that money on any food item, including candy bars from vending machines and pizzas delivered from the local Domino's. [For] copying, laundry, or buying computer supplies from the university store, the money is deducted from their non-food account. (Bialik)

When taking into account such factors as profitability, convenience, and the potential for the college to maintain a lead position in ID card technology, it's clear that the university must finish the Rensselaer Advantage Card initiative. With a few clear steps, the project can resume and RPI can return to the forefront of ID card technology.

Solutions

The solution to transform the Rensselaer Advantage Card system into an up-to-date, profitable, and more convenient ID card system lies in purchasing a new smart card system. The cost of new ID card technologies has been declining steadily for the past five years, and it is now an affordable solution that will lead to both real profits and added student conveniences.

In the past, ID card technologies were not cost-effective, as can be seen by looking at the cost of a single card reader unit and the cost of an individual plastic smart card. In 1998, a single smart card reader cost between \$1,000 and \$4,000 (Christie). As Manager of Harvard's Identification and Data Services Dave Wamback explained in 1998, “an ID card with an embedded computer chip would cost approximately \$15, and right now, that's not cost-effective.” Still, at the time, Wamback also recognized the potential of the smart cards, adding: “When banking goes to smart cards, and costs go down, I can see a lot of people going to smart cards” (qtd. in Bialik).

In contrast, today that same smart card has dropped in price dramatically. A recent article in the online business magazine *Enterprise Kentucky* states, “At one time, a smart card cost ten dollars [or more] to produce. The per-unit cost is now approaching \$3.50 or less” (“Magnetic Stripe Card”). Administrators at the University of Colorado at Boulder also acknowledge the cost-effectiveness of today's ID technologies. As the housing ID card manager noted, a new

card system is “a daunting expense, so it will have to come in phases.” Nevertheless, Susan Dorsey of the ID Projects Team stated that “in the long run, this card is going to generate revenue through long-distance calling and increased use in the vending machines” (qtd. in Christie).

With that said, it is proposed that Rensselaer purchase the Diebold CS Gold smart card system for its campus. The Diebold card system is a two-part system. The first part is the hardware portion, which provides plastic smart cards and card readers for various applications across campus. The second part is the software portion, which provides a central database and software for specific-use card readers. According to the Diebold Web site, the Diebold CS Gold system provides the following advantages:

- Access control
- Alarm monitoring
- Copy machine charges
- Credit/debit functions
- Guest meals and shopping
- Laundry services
- Library checkout
- Off-campus merchant access
- Vending

Along with the hardware and software, Diebold offers an annual support contract with help available twenty-four hours a day (*Diebold*). Under this support contract, Diebold will provide all service and installation and a full warranty on all Diebold products for the life of the contract. In addition, the manufacturer will replace broken and malfunctioning parts of the CS Gold system within twenty-four hours of receiving a service request. It is clear that Diebold’s system covers what Rensselaer needs to update its system and to keep it up-to-date in the future.

While there are a few less expensive alternatives for creating profit and adding student convenience to on-campus facilities, none would create as much profit or convenience as Diebold’s system. Still, it is worth examining some of those alternatives to ensure that an informed, responsible decision is made in regards to Rensselaer’s ID card technology.

The first alternative would be to add more change machines on campus. Change machines would allow students to get quarters for laundry and vending services quickly and would be available twenty-four hours a day. The first shortcoming with this solution is that change machines must be restocked often, which undermines their cost effectiveness because someone must be employed and paid to do the restocking. The second shortcoming with this solution is that most on-campus students don’t carry money with them, and if they do, would prefer not to carry around change. As an obvious example, it would be much more convenient to carry around a card with \$22.58 on it than to carry around “a ten-dollar bill, two five-dollar bills, two one-dollar bills, a quarter, two dimes, two nickels, and three pennies” (“Magnetic”). Finally, and perhaps most importantly, increasing change machines doesn’t address the issue of technology: No technological advancements would be gained.

A second alternative solution would be to maintain the current magnetic stripe card system at RPI and simply upgrade the cards to handle the new types of transactions occurring on campus. To do this, a new system would have to be implemented. One of these systems is the AT&T Optim9000 magnetic stripe system, but it offers significantly fewer advantages than the Diebold CS Gold system (see fig. 1).

• Diebold CS Gold	• AT&T Optim9000
<ul style="list-style-type: none"> • Multiple card types supported • Smart cards • Magnetic stripe cards • Barcode cards 	<ul style="list-style-type: none"> • Only one card type supported • Magnetic stripe cards
<ul style="list-style-type: none"> • Ability to integrate with multiple software packages • Oracle • Windows NT • Crystal Reports 	<ul style="list-style-type: none"> • Ability to integrate with only one software package • Oracle

Figure 1. Comparison of Diebold CS Gold system and AT&T Optim9000 system

As the above figure emphasizes, the AT&T system doesn't have the capability of upgrading to smart cards in the future, and it doesn't easily integrate with multiple technology platforms (AT&T). This presents long-term complications because smart cards are preferable to magnetic stripe cards. Smart cards hold more information on the card itself: a typical magnetic stripe card can hold only about 1KB of information, but a smart card can hold megabytes of information. They're more reliable: even if the central database goes down, transactions can still occur and be updated later to the central database. Smart cards are also faster than magnetic stripe cards, since each card reader and each card itself contains a microprocessor, which lowers transaction completion times.

Perhaps the greatest advantage of smart cards is their ability to secure data, making them better able to minimize the risk of loss or theft. Smart card systems use a central computer system for total redundancy and reliability. Once a smart card is swiped, the amount is deducted from the student's account information, which is stored locally on the card and on a remote computer. Therefore, if a card is reported lost or stolen, it can be immediately deactivated and a new card can easily be issued. The contents of the card are placed on a new card from the old card's redundant information on the central computer system. The latest technologies also include the option for having a PIN (personal identification number) associated with each smart card. Just as with a debit or ATM card, the person who owns the card must enter his or her PIN number before any transaction can take place ("Magnetic"). This gives an added level of security for the user.

Implementation

The implementation of this proposed solution is straightforward. The ID card services director at Rensselaer will fill out a Request for Proposal (RFP) for a Diebold CS Gold smart card system and send it to Diebold in the spring. Diebold will examine the RFP and send back an actual proposal to implement a new smart card system, along with pertinent pricing information. If the proposal from Diebold is accepted by RPI, then implementation will begin in the summer. This summer implementation will limit inconvenience to students.

This implementation will be efficient and have minimal cost. Diebold will fill out the RFP before RPI's work begins, meaning that we will be well prepared and positioned to undertake the

transition. The ID card services director will have a clearly-defined role in contributing to the proposal: review the RFP, add or subtract items from the proposal to suit Rensselaer's needs, and attach pertinent information about the current ID and meal plan structure at RPI. Once the RFP is completed and Diebold's proposal is accepted, Diebold will lead the implementation. Diebold will install the system and set up training sessions to train on-campus employees to run, manage, and troubleshoot the system.

Each smart card will cost no more than \$3.50, which can be attached to a student's activity fee at the beginning of his or her freshman year. As the directors of ID card services are aware, the initial expense for RPI will be significant, however, it is a manageable undertaking that has been met with success at many large universities. Numerous schools across the nation—including Yale, Harvard, Duke, Penn State, and the University of Colorado—have overcome this obstacle by phasing in the project over a couple of years. Should RPI follow this example, over one summer, the central database could be put in place and dorm access readers changed. Then, during the school year, card readers could be placed on vending machines and laundry machines (these would not need to be replaced, since card readers can be simply attached to the current machines).

It will be quite feasible to fully implement a smart card system as outlined here over a period of two years. This gradual implementation of the new smart card system will ensure that Rensselaer can budget money effectively and minimize inconvenience while the new system is installed.

Conclusions and Recommendations

There are resounding benefits to upgrading to the Diebold CS Gold smart card system. Selecting this smart card system establishes a single point of contact with an ID card system vendor, making installation, equipment sales, and repairs easier to facilitate. In addition, new ID card system services can be phased in and the extra profits created by the increased system usage will offset the initial cost of implementing these new ID card services. The increased system usage will not only boost profits for Rensselaer, but will boost profits for all vendors on campus. In addition to increased sales, students will be able to use their ID cards to buy food, make copies, do their laundry, and check out books—all without having to carry change or multiple forms of credit.

The goal of the Rensselaer Advantage Card project was, and still is, to create a source of revenue for Rensselaer, make campus facilities more convenient for students, and ensure that campus life is technologically current ("Details"). With today's cost-efficient technologies, it is time to finish the project, achieve those goals, and restore the RPI campus to the forefront of ID card technology.

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