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Despite their public images and their social missions, educational institutions cannot function without their business side. And that business side has to be every bit as “businesslike” as any commercial enterprise because in the end, receivables must be collected, salaries and bills must be paid and “company” funds must be secure.

We depend on technology to help us with our back-room work. But there is a tendency among institutions to resist change and when we do so, we impose unnecessary hardships on ourselves.

This presentation will examine one university’s journey from the middle ages of disbursement technology into the bright light of the present: how we were focused to change by impact printing equipment failure and institutional economics; and how we searched for solutions that were affordable yet contemporary, and above all, secure.

What we found was MICR-enhanced laser printer hardware and software technology that enabled us to substantially:

- reduce printing costs;
- simplify, streamline and dramatically accelerate our check production process;
- to reduce personnel time spent issuing checks of all kinds; and
- assure management that we were utilizing the most current check fraud detection and intervention methodology available

--all in a single source solution that was virtually plug-and-play.
CHECK IT OUT!

HIGH IMPACT RESULTS FROM
A NO IMPACT SOLUTION

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INTRODUCTION

Major universities normally identify themselves with three primary missions: instruction, research and public service. These missions could not be fulfilled without an immense amount of behind the scenes activity. For the business side of an educational institution must be every bit as businesslike as any commercial enterprise. Receivables must be collected, salaries and bills must be paid and “company” funds must be kept secure.

It takes technology at every level.

In the university environment, technology is most often thought of in academic and research terms -- as the stuff of scientific breakthrough and intellectual discovery. And, of course, it is. But how about business technology -- the electronic equipment that fuels the engine of the institution and without which the primary mission cannot proceed -- something as simple, for example, as a system for getting tens of thousands of checks out expeditiously, economically, and with due regard for the security of the company treasury?

That is the task we are going to discuss today. We will discuss one university’s journey from the middle ages of disbursement technology into the bright light of the present.

Individuals and organizations of all types come to their technology solutions in different ways and for differing reasons, of course. In our case, we were forced into change by a combination of impact printing failure and institutional economics -- budget considerations, if you will. We searched for solutions that were affordable, yet contemporary, and equally important, secure, for today, check fraud is a major and growing problem.

We found a single-source solution from ACOM Computer, Inc. that satisfied all of our requirements and it is now up and running. We now produce our accounts payable checks in a single pass through a MICR-laser printer, and we intend in the near future to convert payroll to that process as well.

THE UNIVERSITY OF CALIFORNIA SYSTEM

With its nine campuses, 169,000 students and some 40,000 faculty and associated academic personnel, the University of California ranks as one of the largest educational institutions in the world. Chartered as a Land Grant institution in 1898, UC began its work in Oakland with 10 faculty members and 38 students.
UC’s size is matched by its record of excellence. Over the years, 30 of its faculty members have won Nobel Prizes and 17 of them currently are faculty members. The faculty also includes more than 260 members of the National Academy of Sciences, more than any other college or university in the United States.

Just a few more notable items:

- More UC academic programs are consistently rated among the top 10 nationally than those of any other public or private university;
- UC has one of the broadest ranges of study of colleges and universities in the nation and in the world, with academic study areas spanning more than 150 disciplines;
- UC receives approximately 10 per cent of all dollars awarded for research to colleges and universities nationwide;
- Ten percent of all Ph.Ds awarded in the United States come from UC.
- Five of the nine campuses offer complete medical schools, with two others offering portions of the medical school curriculum.

UC’s Office of the President is still located in Oakland, where it all began....

UNIVERSITY OF CALIFORNIA, SANTA BARBARA (UCSB)

Situated about 100 miles up the coast from Los Angeles, The University of California, Santa Barbara began as a small, independent teachers college and became a University of California campus in 1944.

A unique characteristic of the university is its exploration of less tradition-bound approaches to education. It stresses close collaboration not only between students and teachers, but also across academic lines. Chemists work alongside physicists; linguists collaborate with computer scientists. To foster such cooperative scholarship, the National Science Foundation has established nine interdisciplinary research centers at UCSB.

Students find themselves in the presence of world-renowned scholars as early as their freshman year. UCSB’s 900-member full time faculty includes many members of leading academic societies, including the National Academy of Arts and Sciences; the National Academy of Sciences, and the National Academy of Engineering; as well as fellows of the National Endowment for the Humanities and winners of the National Medal of Science.

In the arts, sciences and engineering, many of its departments are considered among the best in the nation by such measures as output of significant scholarly papers and peer opinion. So too, is UCSB as a whole, ranked as a Category 1 research university by the Carnegie Commission. UCSB was recently elected to the 62-member Association of American Universities, joining such elite institutions as Harvard, Stanford, and UC Berkeley.

Currently, UCSB boasts a student population of about 18,500, 16,000 of them undergraduates and some 2,500, on-campus residents. The university is actually located in Goleta, nine miles north of Santa Barbara. The physical location is a former U.S. Marine Corps base and occupies just under 1,000 acres on a picturesque palm and eucalyptus-lined plateau overlooking the Pacific Ocean. Almost adjacent to the university is the Santa Barbara Municipal Airport, which offers flights to Los Angeles, San Francisco, Denver and other cities. California’s major coastal highway, Route 101, passes less than a mile from the university, making the physical property extremely accessible in every way.

Attractive as a place to live and study, UCSB is poised to make its singular mark on the geography of advanced education in the United States and in the world.

And as the students and academicians labor in the light, those of us engaged in the business aspects of the institution diligently strive to support their efforts by providing an educational ecosystem that fosters thought, learning and personal growth.
THE UCSB ACCOUNTING AND FINANCIAL SERVICES DEPARTMENT

Each campus within the University of California system operates with virtual autonomy, and so it probably follows that information systems and their associated functions will differ from campus-to-campus. I mention this so you understand that when I describe our operations, the description does not necessarily apply to other campuses within the system.

At UCSB, we have two major computing environments on campus, one of which is managed within academic affairs and the other serving Administrative and Student Affairs. Most of the core system data resides and is processed on an IBM 9672 running the MVS operating system and which operates as a giant server at the Computer Center. The Accounting and Financial Services Department’s legacy applications are part of the core system. On many of the UC campuses, the data processing function is centralized, but at UCSB, production is performed in a client-server model, with each department handling its own production control, one of the functions that I manage.

Software A.G.’s (SAG) ADABASE is the database for the core legacy activities, including the accounts payable application, with programming performed in SAG’s Natural programming language. IS management continues to support the legacy environment, but is moving toward a more modern architecture as applications are replaced. At least one alternative will be an AIX system using Sybase as the RDBMs, with web browser front ends at the desktop.

In my unit, the five-person Computing and Support Unit of the department, the basic responsibilities are accounting related production tasks: accounts payable; general ledger; payroll; and related activities. This latter category is somewhat amorphous, but much of the activity involves providing data from the core systems to our department and other campus administrative units for desktop analysis and reporting.

In addition to these functions, our unit also performs the data entry for all accounting documents and is responsible for maintenance of the networks and desktop computers in the department as well.

The computer population within the department currently is comprised primarily of Apple Macintosh machines, initially selected because they appeared to be the easiest way for the staff to become computer-effective. These machines act as 3270 emulation type terminals in relation to the IBM mainframe/server and meanwhile, provide full-scale desktop computing capability for other tasks, including communication with our Windows NT file server.

Until 1996, Accounts Payable check printing was performed on an industrial strength, 600 line-per-minute Printronix impact line printer. The Printronix was situated within the department in conformity with the decentralized computing environment, and the checks were produced remotely.

As the time arrived to produce checks each day, we would simply activate the check-writing program, load the appropriate pre-printed check/form stock complete with MICR identification and watch them roll out. Disbursement and payroll check print files were created on the Administrative Computer Center’s IBM MVS system, then sent to the printer over a dedicated line from the mainframe.

Once printed, the checks were passed through a second machine that separated the copy and carbon paper and then to a third machine that trimmed, burst and signed them in a single pass. It was a fast, effective process, if somewhat labor and paper intensive. But after literally millions of impressions and increasingly frequent maintenance requirements, our honest maintenance company advised us that the machine had simply outlived its usefulness and that we should find a different solution.

It was at that point that we began the quest that led to the ACOM MICR-laser check processing system that is now in place. We found an interim solution, and meanwhile, began developing the specifications and requirements that we felt would serve our needs for the present as well as carry us well into the future.

The interim solution was simply to take advantage of a high-speed impact printer situated at the Administrative Computer Center about one-quarter mile from our offices. It worked, but it was supremely inconvenient for several reasons.
One of these concerned security. Historically, our check/form stock has been printed annually, along with that of all of the other campuses, in a single order placed by the Office of the President, in Oakland. For security purposes, the inventory is controlled by employees in the Accounting and Financial Services office. When a check run was needed -- large or small -- it entailed one of our employees walking over to the computer center with the required number of checks and, if the run was a short one, waiting for it to be completed. If it was a long check run, the person would walk back, then return to pick up the checks from the computer center, bring them back to the department and run them through the trimmer/burster/signature cycle.

Hardly the best use of either time or resources. We knew that there had to be a better way, and had become aware that one of our sister campuses, the University of California at Davis, had begun using a laser process.

Davis had purchased a turnkey system from Standard Register. We also looked at a turnkey solution from Moore Office Systems. Both of these systems were perfectly acceptable in most respects: the companies are mature and highly reputable, and their equipment has a record of dependability and reliability. Both, however, were proprietary systems, which meant that you were locked into the chosen solution in every respect for the duration. In the event of downtime, you were out of business until the respective service resource arrived on the scene.

I have a powerful personal preference for open, or nonproprietary systems. I prefer standards-based hardware and software so that if one component stops running, you can swap items and keep on running.

Our initial intention was to find a solution that we could use with Hewlett-Packard printers that we had in the department, running preprinted MICR stock. Our service vendor quickly disabused us of this idea, noting that with some 1,000,000 impressions logged, one of our printers was ready for retirement. That fact in mind, we decided that the printer(s) purchased should be able to perform MICR printing as well as conventional printing.

Meanwhile, our search for a check printing system had turned up two vendors which we felt could satisfy our requirements: ACOM Computer, Inc.; and Bottomline, Inc. Both offered an impressive selection of MICR check disbursement solutions, but ACOM offered the additional advantages of proximity (Long Beach) and single-source capabilities.

The Accounts Payable volumes specified were 150-600 for the average daily range of check runs, with large quarterly payment runs for student financial aid averaging 4,000 checks. Disbursements cover the gamut of expenses, ranging from invoices for supplies, to utilities, to student loans, to large-scale purchases of laboratory equipment. Payroll checks are another story, since payroll files are kept on the computer at the Office of the President. These were stated as 500 at the minimum and 4,500 at the maximum, in three check writes per month. We have not yet converted payroll to the ACOM MICR-laser check processing system, but we plan to do so.

Considering the wide range of activity our ideal MICR-laser check processing system would perform, we developed the following list of specifications:
- a security amount font for amount line protection
- separate administrator and operator functions
- a password for each operator
- a removable and lockable signature device
- overflow/bin selection for overflow disbursement remittance advice
- ability to print postal bar code information from Zip code data in the mailing address
- printing with MICR toner and font on blank stock as well as with regular toner on prenumbered stock
- the ability to suppress signature for manual signing of checks over prescribed dollar amount
- user defined reports as well as system provided logs
- the flexibility to allow user to make future changes to the configuration at no additional cost, e.g. bank information, check layout, additional bank accounts
- issuance of checks from multiple bank accounts and within banks
- the ability to generate duplicate copies of checks
- capability for manual check writes
- enhancement of bank reconciliation by matching check print data with data from the user’s bank (Positive Pay).
THE DISBURSEMENT PROCESS

Accounts Payable is part of the accounting function, so every invoice must have an order number. Some types of purchases require purchase order numbers, but others, which are made under low value purchase authorizations, can be identified with a number that does not necessarily come from the purchasing department. But all must be identifiable, since the order number specifies the ledger account to be charged.

When a bill comes to the accounting office, an accounts payable specialist matches it with the purchase order on file and enters the information into the database, currently using a Macintosh as a 3270 emulation type terminal. The system is organized so that bills and the purchase orders must match before the payment information entry will be accepted by the database to be certain that there is no unverified data put into the system. If there are questions, the specialist communicates with the department, resolves whatever issue exists, updates the form appropriately and sends the payment information on to the database.

The invoice copy is sent to the department as a notification that it is being scheduled for payment. If the amount is less than $2,500 and is not an equipment purchase, we pay the bill after 10 days unless instructed otherwise. On amounts of more than $2,500, or for equipment purchases, we require that the department sign off on the payment.

Many of our disbursements are for student aid. The financial aid office makes the awards and credits the student’s account in the Cashier’s office. Students are permitted to charge these accounts for various purposes, such as laboratory fees, library fines, housing and residential costs, telephone bills and so on, in addition to fees and tuition. The balance of the award is sent from the Cashier’s system to Accounts Payable after applying payment to items that can be paid with the student’s aid.

Security is a priority. As we enter each invoice, it is given an accounts payable reference number which is a unique information key: time and date of entry; entry clerk; sequence number. The following morning, each entry is audited by someone other than the person who performed the entry. The audit is a comparison of key information from the entered transaction printed on a label to the data on the source document. If approved, the label is affixed to the document as certification that the invoice is approved for payment. Payment is then authorized and scheduled, based on the invoice date and vendor terms.

All documents are now filed by their accounts payable reference number, which, while not eliminating all of the paper shuffling, at least puts it on an organized, easier-to-handle basis.

THE ACOM SOLUTION

As a company, ACOM Computer, Inc. is unusual, if not unique, in that it is a single source provider of MICR-laser check processing systems -- MICR-enhanced hardware, software both for secure check disbursement and for forms design, MICR fonts, supplies and secure blank check stock. ACOM software solutions integrate seamlessly with all accounting and business management software systems.

In our case, the ACOM solution consisted of QuickCheck™, the company’s flagship software system, its companion forms design software application, QuickForm™, and two Xerox 4215 MICR-enhanced laser printers.

QuickCheck runs in the IBM AS/400 and the Microsoft Windows® environments and helps to prevent check fraud while substantially reducing check disbursement costs. Significant economies are achieved by eliminating inventory of preprinted check and/or form stock; use of less expensive safety paper; eliminating the need for bursters, decollators and signature machines; reducing personnel time for check production, correcting duplicates and locating missing check numbers; eliminating the need to align and test checks prior to each run; eliminating the need to void check numbers in case of printer malfunction; and the ability to set up new bank accounts and to print checks in minutes. The software allows activation of add-on features in seconds and works with all current financial packages.

QuickCheck also offers several advanced security features, including the Positive Pay check verification module; a Reverse Image Font, the ability to specify dollar limits for printing one, two, or no signatures through Signature

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Control; Front Panel Override, which forces the printer to print only a single page even when configured for more; and Security Reporting, which allows the designated security officer to print ad hoc, comprehensively detailed audit reports.

QuickForm, the powerful, versatile, easy-to-use forms creation software application, functions as a MICR-enabled front-end design tool, providing WYSIWYG forms design; autoconversion of scanned forms; advanced design features; optimized print speeds; forms storage; and graphics import/merge.

As mentioned earlier, Accounting and Financial Services has been primarily a Macintosh shop, so to run ACOM’s QuickCheck software, it was necessary to utilize a PC. At the time each desktop in the office received a Mac, the department had six of the Intel-based desktop computers. One of these, an 80386-based machine with eight megabytes of RAM and a 250-megabyte hard disk, was assigned to the ACOM MICR-laser check printing process.

We quickly discovered that the 386 lacked the power needed to do the job. We obtained an 80486/66 machine with Windows 95, 16 megabytes of RAM and a 500-megabyte hard disk and that is where QuickCheck now resides. Granted, given Moore’s Law and Power PCs and Merced processors, an 80486 is not exactly a hot rod, but interestingly, it is more than adequate for the assignment. Through the 486 PC, the ACOM software can feed the Windows 95 print manager faster than the print manager can feed the printers.

Procedurally, when we are ready for our daily check run, we use the File Transfer Protocol (FTP) to retrieve the data from the administrative mainframe/server and download it to the PC, where QuickCheck drives the two Xerox MICR-enhanced laser printers. When we move payroll onto the system, the file transfer will be the same, the only difference being the length of the wire to the server: payroll records reside at the Office of the President, in Oakland, not on campus.

IMPLEMENTATION DISCOVERIES

As is often the case when adopting new technological approaches, we found that in some cases our specifications called for items we didn’t need and/or that ACOM’s solution was fully adequate or superior.

For example, ACOM provides downloadable security amount fonts, as well as downloadable signatures rather than the removable signature device. We download these items each time we start up the application. We found that we did not need the overflow bin and when we learned that we would need to format our addresses differently in order to generate the full 12-character postal bar code, we decided to not implement that feature.

Initially, we had planned to print MICR lines on numbered stock, keeping the stock control number and check number synchronized, but in the ACOM solution we found that the software would print the numbers on blank stock as the checks ran, thus saving us the need to match the two numbers. We still have to account for spoiled stock but we avoid all of the complexity of matching the numbers and updating any reprints back into the Accounts Payable system.

Another early rediscovery was the fact that not all printers feed paper the same way. We had ordered stock in anticipation of using Hewlett-Packard printers, which feed paper face-up. The Xerox printers feed face down. With a little experimentation we worked through the stock control problem and other similarly minor ones.

The Positive Pay feature is present in the ACOM solution but we have not implemented it, since our accounts payable software system has the feature and we use it to advantage. With each check run, we produce a file of the checks in the run and send it to the bank to use in validating the items presented for payment/clearing.
TESTING

Before we were given the green light for full production using the ACOM MICR-laser check processing solution, the University Treasurer’s office and our banks -- Wells Fargo, our primary bank, and PNC Bank, our clearing bank -- asked us to run some test documents for them.

We prepared a set of test checks and sent them to the banks. The first batch was rejected: one bank didn’t like the way we spelled its name: Pittsburgh National Bank, rather than the new self-designation, PNC Bank. They also wanted two leading zeros in front of the eight-digit account number to use the full 10 positions for this field. We made both changes using QuickForm. They also objected to the placement of the convenience amount -- that is, the numeric dollar amount -- on the left, rather than the right side of the check. ACOM originally had anchored this amount on the left in order to accommodate larger amounts of money. ACOM made the change in the software and sent us a revised version.

Interestingly, not one of the banks’ tests or auxiliary requests had anything at all to do with the quality of the MICR line or the performance of the ACOM solution. If anything, they underscored the performance and flexibility of the system and reconfirmed our judgment in selecting the solution.

GOING LIVE

No matter how well you prepare, you cannot expect that everyone involved is ready for the changes you make and this was no less true when we did our first production run.

We received a number of calls from local bank branches informing us that they were getting checks on our account that (1) didn’t look like our checks, (2) were laser printed and that (3) they might be forgeries. We assured all callers that they were legitimate checks and, although we had explained it all before, we explained it all again.

On one occasion, a student deposit was judged a forgery by a bank employee somewhere in the system because the check form he/she was used to seeing was different. Our check was returned and the student was justifiably furious when his own checks began to bounce.

RESULTS

The ACOM MICR-laser check processing solution has been in use at the University of California, Santa Barbara since September 1997, and it is working well. It has enabled us to perform the accounts payable function more efficiently. It has provided us with greater control by having the entire disbursement process performed right in the department. It has allowed us to make better use of our personnel by eliminating the post production trimming, bursting and signing process. By mid-1998, with payroll also on the MICR-laser processing system, the trimming, bursting and signing equipment can be removed entirely, and that will save the department and the university more than $2,000 per year in equipment maintenance.

Communication, it must be emphasized, is of the essence in these types of technological and procedural changes. While we communicated our intent to change procedures before the fact, QuickCheck and QuickForm allowed us a vehicle with which to continue communicating, using the check stub itself. We include two telephone numbers check recipients can call if they have questions or problems: one each for vendors and for students. We were able to do this because the system allows us to modify forms as it is needed.

One other major administrative issue is that of security. The existence and advance of desktop computer graphics and printer technology has made check forgery of conventionally issued checks a fairly simple process. We know of one instance at a sister institution where a student sold his check to counterfeiters who proceeded to copy it and pass checks for a sizable amount of money. The bank insisted that the campus’ account be closed for protection against
further loss, and the payroll department had to review all of their transactions and assure the bank of their validity. The department had to establish a new account and get a new order of stock.

Using QuickCheck with blank stock, all that would be necessary is to go into the software, make the account number changes and start over. Meanwhile, Positive Pay provides an almost immediate means of validating each check as it comes in.

While ACOM and other vendors do not claim the ability to eliminate check fraud entirely, they legitimately claim that the security features inherent in MICR-laser check processing technology make it extremely difficult and keep all but the most creative and committed counterfeiters out of the picture.

CONCLUSION

While initially we explored MICR-laser check disbursement technology because our equipment was worn out and because funding for new equipment is difficult in today’s education environment, it has become apparent to us at UCSB and to our counterparts at other UC campuses that it is a technology whose time has arrived. Other campuses are examining the technology and we are certain that some or all will go forward with it. Some perhaps will go with partial solutions, such as using MICR-coded stock and laying on the other variable data. Others may opt for the full MICR solution such as the one we obtained from ACOM Computer, Inc.

From the cost-per-check analysis that we performed prior to committing ourselves to the purchase as well as from our experience since cutting over to full production using the system, I am convinced that from the joint perspectives of effectiveness and economy, UCSB’s ACOM MICR-laser check processing solution was the right decision when we made it, and that the openness and flexibility of the system will keep it current for years to come.