

Introducing The Efficient Pharmacy Institute

The Efficient Pharmacy Institute has been established in response to the needs of community pharmacists as they adjust to a changing pharmaceutical environment. The shift to patient-oriented pharmacy has necessitated improvements in pharmacy productivity from workflow to automation. The Institute is committed to helping North American pharmacists improve pharmacy efficiency by providing practical information in the form of newsletters, publications and continuing education activities and through research into productivity improvements.

The *Efficient Pharmacy* newsletter is one of the key services of the Institute, and over the past 18 months, *The Efficient Pharmacy* has published articles by experts in the field from both academia and industry. Topics have included enhancing work flow (job analysis, staffing, design, layout), adopting new technology (automated dispensing equipment, computer hardware and software, on-line services, communications equipment) and redesigning the dispensary layout and components. *The Efficient Pharmacy* seeks out outstanding examples of pharmacies that have re-engineered their dispensary and profiles them in each issue of the newsletter. And through their experiences, readers gain practical insights into the process, costs and results of dispensary renovations. A Web site for *The Efficient Pharmacy* is being planned which will make articles and resources easily accessible.

The Institute has developed an accredited seminar/workshop on "Efficiency through Automation and Design." This workshop has been presented to pharmacists across Canada in collaboration with the provincial pharmacy

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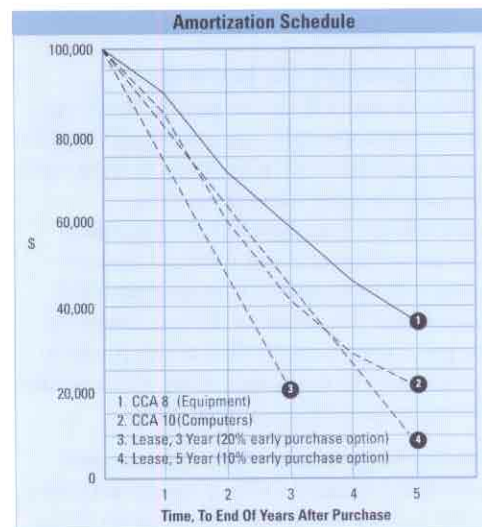
Putting your money to work for you

by Doug Mallett

In our present economy, we find ourselves seeking ways to improve efficiency through automation. This has the benefit of increasing employee productivity, thereby improving profitability or maintaining profitability but freeing up personal time. Almost every supplier of equipment will analyze time saved and potential profit, or time freed, with the use of their product.

The problem is that technology has a cost—initial purchase along with any maintenance or repairs and a limited life span—so the cost must be justified. With computer technology changing so rapidly, what was a state-of-the-art system three years ago might not be capable of running new-generation software today! After three to five years, a computer is generally considered to have no value at all. Computer-based capital items (e.g., pill counters) will likely fare better, with a longer average life span.

When the time comes to acquire equipment, you must also consider method of payment. Typically you have three choices: cash, bank loan, or lease. Each has its associated costs. Sometimes, too, your choice can be influenced by the reasons for purchase—e.g., to improve efficiency, productivity, or profitability. It's like hiring a new staff member, who would be expected to provide the same benefits to your business. If they requested an entire year's salary up-front, would you agree? Of course not! Each staff member is expected to earn their wage as they go. This is the *utility value* concept. In the same way, you require utilities to operate (lights, heating, electricity, rent), but they don't generate profit; revenue is provided by selling inventory. Thus we pay for these services as they are



used. Why should equipment be any different? In the case of offering extra products or services to clients, the equipment will pay for itself out of increased revenue or cost savings.

Cash

If you elect to pay cash for an item, you lose the use of that money for other needs: marketing, inventory, wages, or even investment. This is commonly referred to as *opportunity cost*. You are also paying for the product with today's dollar, which has more buying power. The equipment value depreciates, but typically on a declining basis with the half-year rule applying. Class-8 assets will depreciate 10% the first year of ownership, 20% of the remaining 90% for the second year, 20% of the remaining 72% the third year, and so on. After five years, 63.4% of the value is written off. To depreciate all the way to no value requires approxi-

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The limits of automation

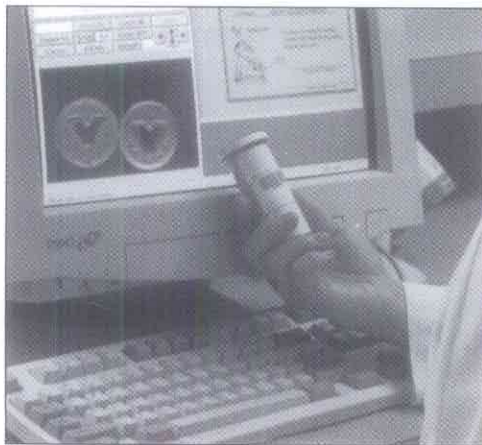
by Wayne Caverly

Automation is all around us. We use it every day in almost everything we do. This article is a review of a new class of dispensary automation, but it's also a commentary on the limits of automation. How far should we allow machines to take over? Which tasks are appropriate for machines, and which should always remain in human hands?

An (automated) day in the life

Consider a recent day in my life: When my alarm woke me early one morning, I could smell the fresh coffee brewing downstairs—brewing because I had preset the coffeemaker the night before. Because it was a cool autumn day, I started my car using a remote starter, warming both the engine and the inside of the car. Stopping for gas, I used a credit card at the pump to pre-pay and to continue on my way without having to go inside and wait in line.

Driving to the airport, I thought of some messages I needed to leave for my secretary. Speaking her name into my voice-activated cellular phone dialed the office, and, as it was still very early in the morning, I used voice-mail to communicate my messages. I arrived at the airport, and my credit card gave me access to the parking lot (it also, on my return, allowed me to exit). A bank machine gave me some cash; a similar machine gave me my airport improvement



fee ticket. Finally in the air, I was on a plane being flown across the country primarily by on-board computers.

All morning I had been using automation. I had engaged in numerous transactions and communications without actually seeing or speaking with anyone—and I was very comfortable with the way the morning had transpired. But now, 40,000 feet above the ground, I was glad to know that the pilot and co-pilot were in the cockpit. Some futurists joke that when airplanes can be flown completely by computer (and that time is drawing near) we will still want a human in the cockpit. Obviously we need someone to blame in case the computers fail and the plane goes down.

There are many things I feel comfortable having automation do for us, including most of the functions in today's dispensary. But can automation go too far? Anyone who remembers HAL in *2001: A Space Odyssey* will probably answer yes. (For younger readers: HAL was an advanced computer that decided its life was more important than those of the humans on its spacecraft, with disastrous results.)

The automated dispensary

There is a new breed of automation (the robotic filling system) pushing dispensing to the limits. Let's look at two examples and see how comfortable—or uncomfortable—they make us.

The first fully robotic counting system appeared in 1990 when AutoScript II was installed in the American Association of Retired Persons (AARP) mail-order pharmacy in Reno, Nevada. In the mid-1990s, faster systems followed (the BK2000 and BK6000) with the ability to process 6,000 prescriptions in an eight-hour shift.

The newest-generation robotic system was released in December 1997 at the American Society of Health Care Professionals convention in Atlanta. AutoScript III from

BakerAPS chooses a vial (one of three sizes), accurately counts the required product, labels the vial, places the counted product in the vial, and, finally, delivers the filled, labeled vial to the checking pharmacist. The three available models can fill from 100 to 240 prescriptions per hour in as little as 36 square feet of floor space.

When combined with checking software (such as Pharmacy 1000 or 2000), this



procedure allows the pharmacist to verify that the product in the vial matches a high-resolution color photograph on a computer screen. The checking screen also provides an image of the original doctor's prescription as another safety check.

So far, so good.

What's next?

Another system on the market goes one step further. The Optifill system, primarily used in U.S. hospitals, also selects and labels containers, and it counts and fills them. However, with this system, the bottle is capped and sent on its way without being checked by a pharmacist. Before it's capped, a photograph is taken of the contents of the filled bottle. At the check station, the pharmacist is provided, on-screen, with that photograph and an image of the product requested. The pharmacist then verifies that the two photos match.

What, I wonder, is the next step? If the computer has two photos, apparently of the same drug, why don't we assume it filled them correctly and release the product to the patient? Or why not have the computer do a comparison of the two photos and decide whether or not they match?

There are a number of problems with

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Profile

Pharmacie Potvin & Garneau

Sherbrooke, Quebec

If at first you don't succeed... is the attitude that characterizes the efforts of Robert Potvin, pharmacist and co-owner of Pharmacie Potvin & Garneau. "Our first effort to improve the design of our dispensary was in 1988," says Potvin. "As our volume of prescriptions increased we needed to expand our dispensary to accommodate more staff and technology. We not only enlarged the dispensary area by about 100 square feet but also moved away from the traditional rectangular shape to a unique C shaped design." According to Potvin, this design made the pharmacy appear more customer-friendly and enabled the pharmacist to have better eye-contact with his or her staff.

"After a while, we discovered that both the pharmacist and the technicians spent a good deal of time walking from one end to the other. This was not only tiring but stressful and ultimately counter-productive to our goal of increasing our volume of prescriptions."

In 1993, Potvin set out to remodeled the dispensary once again; however, this time he replaced the 'C' shaped counter with a 40 foot long one. While this rectangular design seemed to cut down somewhat on the distance the staff had to travel and increased the dispensary by 75 square feet, a new problem was created. Customers were not circulating throughout the pharmacy. "Customers would come in for their prescriptions and then leave. We were seeing a decrease in our OTC and H&BA business."

"I think we've got the right design now. Our last renovation was completed in 1996 and we seemed to have achieved the right balance of increased work area, reduced walking time, and — most

important— better location of the pharmacist in the role of advisor and supervisor."

The dispensary was moved to the shorter wall and the resulting design created an almost square-shaped 600+ square foot dispensary. "From this new vantage point, the dispensary staff was able to have a clear view of the entrance and the front-end cash."

On the left side of the dispensary is the prescription drop-off area staffed with one or two technicians, depending on the number of customers. The technicians enter the script into the computer, which triggers one of three printers at the back of the dispensary. As the labels are being printed, technicians stationed at the rear pick up the labels and fill the prescriptions.

The technicians then leave the tray with filled prescriptions at the station to be checked by the pharmacist. The trays are vertically stacked and colour-coded: black signifies the customer is waiting, blue means

a pick, and white is for deliveries. This station is conveniently located in the middle of the dispensary right behind the open/semi-private counselling area.

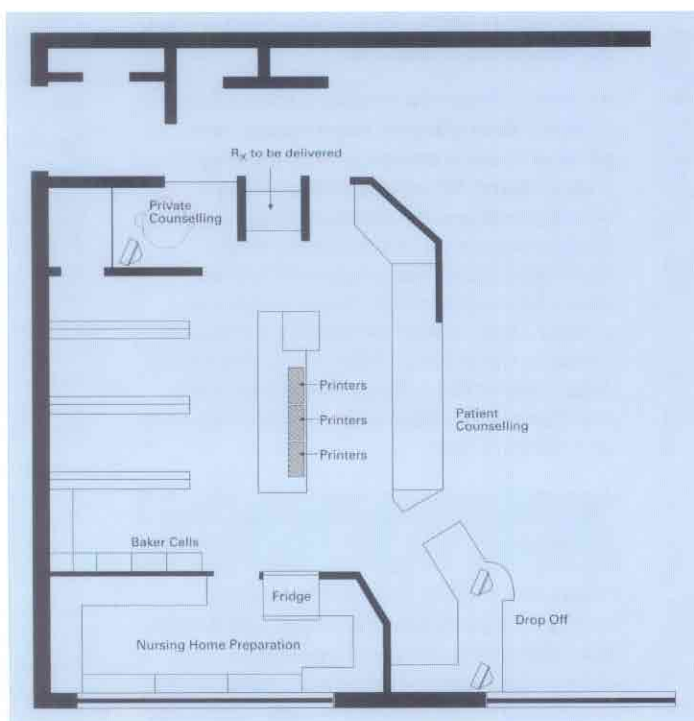
"The middle section of the dispensary is where the pharmacist works. From this vantage point, he or she has a view of not only the entire staff but the customers as well. The pharmacist from this position can easily identify problems and remedy them."

The pharmacist, using his or her own computer, checks the filled prescriptions and, depending on the situation, can either provide semi-private consultation over the counter, accompany the customer to the fully private consultation room, or place the prescription beside the cash at the right side of the dispensary. The latter is usually the case for refills. The pharmacist's computer allows him or her to modify the script, print new labels and print patient information handouts.

"We have increased our work area and cut down the traveling significantly. Each staff member now only walks about the maximum of half the dispensary, about 12 feet, to fulfill any task. And the pharmacist is 10 feet away from any dispensary activity." This is quite a savings (A recent study reported in the *Efficient Pharmacy* Vol. 1 No 3, noted that a pharmacist or technician can walk about 1.6 km to fill 150 prescriptions in one day).

"Even our bay shelving was positioned to minimize traveling time. We placed our 47 Baker Cell automated tablet/capsule counters and our non-countable products (inhalers, birth control pills, etc.) nearest to our drop-off area. This is the area the technician needs to go to only once to either pick up the product or to have it automatically counted. Prescriptions/products that need manual counting are placed closer to the technician's filling station. These prescriptions require two trips to the bays — one to pick up the product and one to return the stock bottle."

"We can now handle with calm and professionalism up to 600 scripts per day with four technicians, two pharmacists, and one cashier. Each staff member works effectively within their designated area and the pharmacists are now in much better position to supervise, advise, and respond."



The cost of profit: Continued from page 1

mately 19 years, far longer than the anticipated life span of most equipment. Computer (PC) hardware is slightly different (CCA class 10), with total depreciation of roughly 70.85% after five years. Software requires two years (CCA class 12). Also, value is depreciating in tomorrow's dollars, even though they are less valuable.

Loan

Using a loan is largely the same as paying cash, with the addition that interest paid on the loan is also deductible. Most loans from a bank are quoted on a floating rate, and payments can be subject to market fluctuations. A bank almost always requires a down payment on the equipment being purchased (usually 20% or higher for computers or software). A bank loan will also affect your available credit for other expenses such as marketing, inventory, and personal items.

Lease

The leasing option has many potential benefits. A *true operating lease* can be used as an operating expense and is therefore 100%-deductible (similar to rent or wages). The contract should be at least three years and have a purchase option at the end representing fair market value. Terms of

three years to 20%, four years to 15%, and five years to 10% are common for capital equipment; for computers, three years to 10% is also generally accepted. This means that the equipment is paid for with tomorrow's less valuable dollars—a hedge against inflation. It also has the advantage of increasing the effective depreciation of the product, matching it more to expected life span (see amortization graph). Our business, Newcourt Financial Healthcare Unit, would normally quote a fixed rate including insurance (life, disability, and multi-peril). At the end of term, equipment can be purchased, upgraded, or returned.

A lease typically provides more flexibility with payment structure. Initial payments can be delayed by a few months, enabling your business to ease into the cash flow. Terms can be from two to ten years; however, three- and five-year leases are the most popular, depending on individual cash-flow situations. A lease is also easier to budget, because your costs are fixed for the remainder of the term and are easily allocated to different divisions or cost centers. Bookkeeping is easier with no depreciation schedules or CCA (capital cost allowance) tables.

The effect of financing your equipment purchase through a lease contract is that the equipment pays for itself through increased profitability while taking advantage of favorable tax treatment from Revenue Canada. Financing a purchase can also mean acquiring the equipment sooner than otherwise possible, so you also begin seeing the benefits immediately.

Newcourt Financial Healthcare Unit focuses only on the healthcare marketplace. This gives us a much greater understanding of your industry. We recognize that no two clients' needs are the same, and we're willing to discuss your unique situation while presenting an unbiased opinion of your financial requirements. Please feel free to contact Doug Mallett or Stephen Karlowsky (western Canada) at 1-800-561-2556, David Lind (central Canada) at 1-800-661-9009, and Christopher Plummer (eastern Canada) at 1-800-663-3000.

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taking automation this far. For one, the quality of a photographic image taken on an assembly line is not good enough to distinguish between tablets of similar colors (especially white tablets). But the second is much more important: The computer doesn't care if you die!

History will show that automation is an excellent tool to make dispensaries more productive. By making the staff more productive, they allow for more patient-pharmacist contact and they definitely reduce the possibility of dispensing errors. However, if an error is made, whether by human or robot, we need a real, live, caring person to ensure that the mistakes are caught before somebody gets hurt.

So a message to all the companies developing automated systems for pharmacy: Continue to develop your systems and robots to do the routine tasks required in a dispensary. But leave checking and counselling to the pharmacist, the professional—and the one who cares if we live or we die.

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associations. Response to these seminars has been extremely positive and several more are currently being planned. Building on the success of these workshops, two more accredited seminars are being developed: Efficiency through Esthetics, and Reducing Dispensing Errors. A home study version of these live programs is also being considered.

In addition to the accredited workshops, The Institute is creating a lecture series that will be available to groups and associations. The lecture series will include Automation Update, Productivity by Design, and Mapping for Efficiency. Presented in the lecture series will be leading industry experts.

2nd edition of Pharmacy Management In Canada now available

The Institute would like to make available to all pharmacists the second edition of Pharmacy Management in Canada (John A. Bachyhsy, Harold J. Segal, editors). This comprehensive textbook covers the broad range of timely issues including, management and the process of change, forms of business enterprise, the business plan, financial assessment, human resource management, marketing and merchandising, fixture design and layout, innovation and technology in practice, and several more topical subjects.

Pharmacists can purchase this textbook for \$69.95 plus \$4.95 shipping and handling from the Institute by contacting our Canadian office at 1450 Hymus Blvd., #2, Montreal, Quebec, H9P 1J6, (514) 685-3842.

The Efficient Pharmacy Institute is funded through an education and research grant from BakerAPS. For more information on the Institute's services contact (in Canada) Wayne Caverly, Executive Director or (in the US) Sharon Shapiro, CE and Public Affairs Coordinator at (802) 655-3105.

The Efficient Pharmacy

THE EFFICIENT PHARMACY INSTITUTE

The Efficient Pharmacy is a quarterly newsletter that addresses the informational needs of community pharmacists as they adjust to a changing pharmaceutical environment. The publication will provide pharmacists with timely practical information on how to reprofessionalize their pharmacy by improving work flow, adopting new technology and developing the ergonomic design of the dispensary and its components. The Efficient Pharmacy is distributed free of charge to pharmacists and is funded by an educational grant from AutoPharm.

The opinions expressed in The Efficient Pharmacy are those of the contributors and do not necessarily reflect the views of AutoPharm.

The editorial staff and AutoPharm welcome opinions as well as subscription requests from our readers. Please direct your correspondence to:

Saxe Communications
(802) 655-3105 Tel.
(802) 655-3127 Fax
Internet: dsaxe@together.net

Editorial Board

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