

Market Research Department

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A New Technology for Addressing the Shortcomings of Paper-Based Workflows

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CAP Ventures is a strategic consulting firm for providers and users of digital business communication technologies and services. We deliver the key research, analysis, forecasting, benchmarking, counsel, marketing education, and implementation to leverage industry opportunities and make a competitive difference in our clients' businesses.

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Introduction

Although too often overlooked, transaction documents (i.e. forms) are a key touch point with customers. The efficiency of the process from the vendor's viewpoint, and the effectiveness and "feel" of the process from the customer's viewpoint, are key elements in obtaining and especially retaining customers. For example, insurance salespeople are reluctant to bring laptops to customer sites (often a home). According to one salesperson, "To make the sale, I need to establish a relationship with the client. Pulling out a computer makes the process more impersonal and moves the atmosphere of the meeting in the wrong direction."

Costs and inefficiencies exist throughout the forms workflow process. This white paper examines workflow processes where paper-based forms are the most appropriate means of recording information to be used by an organization, and discusses technology solutions available to improve those processes.

The High Costs of Paper Forms

When businesses think about the cost of business forms and similar paper transaction documents, they tend to focus on the cost of the paper and the printing. This focus is understandable, as these costs are the ones most easily identified and measured, and can certainly be substantial. Nevertheless, the handling of these forms incurs even larger costs.

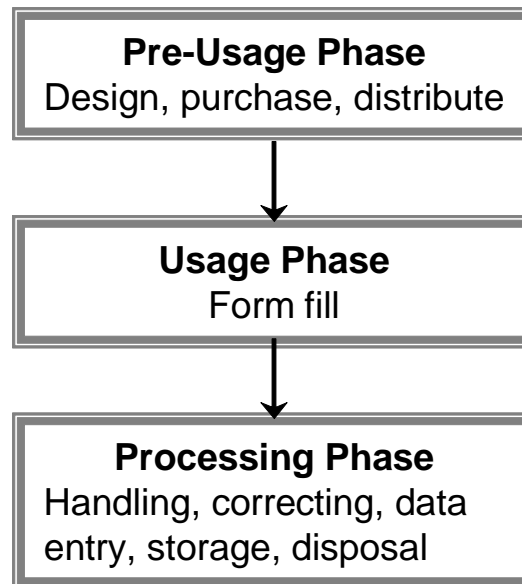
Cost estimates for the forms workflow range of total, fully burdened handling per A4 sheet (exclusive of cost of printing and distributing forms) is \$0.60 - \$1.50. The estimated median cost is \$1.23. Each stage of the form workflow has pain points, but some users tell us that the biggest pains are in the pre-usage phase and the processing phase. In the pre-usage phase, controlling and managing purchases of pre-printed forms and related supplies is difficult and tedious, to the point that even large, sophisticated organizations may choose not to do it effectively. Maintaining inventories and keeping the company's users supplied is cumbersome and costly.

Because of redundancy, processing is where the majority of the pain occurs. Users become particularly annoyed when they have to re-enter data that they have already captured on paper. Managers are frustrated by the costs and inefficiencies of processing, scanning, digitizing, and paper or electronic filing and retrieval. Customers are annoyed by errors that inevitably occur in data re-entry and the delays in responding to billing or service inquiries if the document cannot be easily, accurately, and quickly retrieved.

Companies accept these inefficiencies as a given when handling forms. They choose from several overall approaches to forms workflow, which include filling out the form and processing it at a central site, filling out the form and processing it at remote sites, transmitting in paper format, or transmitting in digital format. As past research has concentrated on mostly paper-based flows, this type of flow is summarized below (it is noteworthy that purely paper-based workflow has by now disappeared from the ranks of formal workflows, not to be confused with a very small company that may have no formal workflow at all). All data below is for A4 sheets only.

Forms Workflow for Remotely Filled-Out and Centrally-Processed Forms

Figure 1: Overview of the Workflow System



Pre-Usage and Acquisition Phase:

- Forms design/forms management costs
- Purchase process cost (vendor identification, vendor selection, purchase order preparation, and execution)
- Forms are pre-printed and centrally warehoused
- Distribution cost (deliver forms to the points of use)

Usage Phase:

- Employees at remote or satellite site pick up a stock of blank forms
- Form is filled out by hand at customer site

Processing Phase:

- Distributing form to appropriate department/individual/ organization/location
- Filled-out paper document is mailed or hand-delivered to central handling site
- Pre-processing (opening envelope, removing, unfolding, sorting)
- Checking form for errors, completeness, etc.
- Critical data entered from form into computer system (via keyboard and computer screen)
- Storage or disposal of paper form
- Scanning form for digital filing (optional)

There is also the potential for *post-processing* steps and costs for a paper-based system:

- Short-term storage costs (i.e. rental cost of space used, depreciation of filing system used)
- Long-term storage costs (i.e. document disposal cost or long-term storage cost)
- Document retrieval cost (locating mis-filed files)
- Document replacement costs (replacing lost or irretrievably mis-filed documents)

A clear message from this lifecycle description is that while the smallest and most easily measurable costs are tangible (i.e. the cost of pre-printed forms or the purchase process costs), the largest and more easily addressable costs are less tangible and harder to measure. One of the challenges to measuring these intangible costs is the degree to which they are spread across organizations and job functions. For example, most employees in large general hospitals devote a considerable portion of their time to the Usage and Post-Usage Phases of forms handling, but these activities are not their core job functions and are therefore not costed as such.

Table 1: Typical Processing Costs For Unit Sets and Flat Forms

Distribution	\$.05 - \$.15
Pre-processing	\$.08 - \$.25
Error correction	\$.20 - \$.50
Data entry	\$.15 - \$.30
Storage or scanning	\$.12 - \$.30
TOTAL	\$.60 - \$1.50

If any of the post-processing listed above is required, the cost per sheet rises dramatically. According to a study by Coopers & Lybrand (now PWC):

- The total fully burdened cost of filing a paper document is \$20
- The total fully burdened cost of finding a mis-filed document is \$120
- Reproducing a lost document costs \$220
- 3% of filed paper documents are filed incorrectly
- 7.5% of paper documents will be lost by the time they need to be retrieved
- People regularly working with paper documents spend 3 - 7 times (an average of 5 times) longer looking for and retrieving documents than they spend actually reading or working with them
- 90% of all the time spent dealing with paper documents involves merely handling or shuffling them as opposed to actually working with them

The Costs of Pre-Printed Forms

At the pre-usage end of the workflow, pre-printed forms can be costly, especially since the forms can become obsolescent before they are used. Larger companies and organizations are particularly vulnerable to this phenomenon; they tend to incur larger form obsolescence and other less tangible costs because they are more structured than smaller organizations. For example, many of the large organizations studied by CAP Ventures have formal, even cumbersome, processes for forms design and revision. The large healthcare system that CAP Ventures interviewed for this paper has committee structures for forms design, in which multiple individuals, often including at least one senior staff person, invest a substantial

number of hours in creating new forms or re-designing existing ones. As one respondent put it, "Mentioning a forms revision here can make hardened Senior Managers go pale." By comparison, this same activity can often be handled in only one hour by an office manager in a typical small or even medium-sized business (i.e. fewer than 100 employees).

Put in aggregate terms, CAP Ventures' research indicates that U.S. companies with over \$1 billion in annual revenues spend an average of over \$2.4 million each on pre-printed forms alone each year. Meanwhile, smaller enterprise-level companies (at least \$250 million in annual revenues) spend nearly a quarter of a million dollars on pre-printed forms each year.

Table 2: Annual Forms Expenditures by Company Size

Annual Revenues	Annual U.S. Forms Expenditures (\$Thousands)
\$50 million - \$249.9 million	\$51.7
\$250 million - \$999.9 million	\$241.5
\$1 billion plus	\$2,458.2

These costs do not include flat forms or forms that are printed digitally by the companies themselves. Even if one were to add those costs to the total, these costs are literally the tip of the proverbial iceberg, in the sense that 90% of an iceberg remains submerged. Documents such as pre-printed forms have an extensive lifecycle, and bleed costs at every point. Put another way, paper-based processes are notoriously redundant. They require extensive manual handling and rely on less efficient pre-defined routing methods such as postal mail and fax.

Pain Points and ROI

There are various technology approaches that can improve the paper-based workflow described above. These improvements can usually reduce handling and processing costs, and more importantly improve the efficiency of the workflow. The paper-based workflow can be improved in the following ways:

- Reduced cycle times lead to better cash flow and higher customer satisfaction
- Eliminating workflow steps enables reduced head counts and/or more time spent on core activities instead of paperwork

Nevertheless, many companies and organizations are still using paper-based workflows and simply living with the costs and inefficiencies. One reason for this is that it often is not easy to determine the real-world ROI (return on investment) of technology improvements. Vendors will usually understate the costs and challenges of implementing new workflow solutions. Management personnel are often reluctant to accept values ascribed to seemingly intangible costs and savings. At the same time, however, the history of the past 25 or more years of investments in workflow technologies demonstrates that real savings can be and sometimes are achieved. This same history also tells us that determination and persistence can be at least as important as investing in resources.

CAP Ventures contacted a number of companies and conducted in-depth interviews to learn about their workflow pain points. The research performed for this White Paper concentrated on insurance, healthcare, manufacturing, and government. Some of the interview contacts were used to develop the case study presented below, but some key findings are summarized here.

Concentrate on Tangible Savings

Tangible savings include reduced forms acquisition and storage costs, reduced distribution costs, and most importantly reduced processing and handling costs.

One large casualty insurer has a full-time staff of 300 whose main activity is processing, scanning, and digitizing incoming claims documents at a central facility; technology that could eliminate the scanning process could save this company “millions of dollars a year.”

Nevertheless, many companies accept costs as a given where paper is a must for their operations.

One respondent explained, “... the intangible improvements such as faster turnaround, more efficient use of sales staff time, or improved customer service are the emotional side of the equation and may ultimately be the longer-lasting benefits, but tangible cost savings such as reduced processing costs are the best way to sell the solution internally.”

A therapist for a home healthcare provider commented, “If I didn’t have to pick up and deliver these forms [a documentation of visits and the care provided] every day, I could easily see an additional patient.”

Concentrate on the Potential for Reduced Cycle Times and Better Cash Flow from Faster Billings

Faster billings bring hidden savings or additional benefits of workflow improvements, improved staff efficiency, and improved customer retention through better customer service.

In terms of sales operations, studies reveal that most sales employees say they still spend too much time on paperwork, even though they admit that technology has improved the situation over the past decade.

Professional employees at a large home healthcare provider complained to us about the time spent simply picking up required forms from their field offices, and returning them to drop boxes at the end of the day: “After seeing six patients, often in homes with inadequate heating or cooling, I’m ready to go home, but instead I first need to find a drop box for depositing the day’s documentation.”

Field service reps for a manufacturer of printing equipment expressed similar opinions: “I spend at least two hours a day just re-entering the data from my notes and forms into my laptop.”

In terms of customer service, the old mantra that it is ten times cheaper to keep an existing customer than to obtain a new one still holds true.

One respondent summed up working with inefficient processes as follows: “Especially in today’s tough environment, few companies will make an investment in ‘cool.’”

A company must concentrate on the end value offered from a new solution. Harvard Business School estimates that most enterprise-level businesses could increase their profits by 25% if they could reduce “churn” or customer defections by 5% (a 5:1 ratio).

Hewlett-Packard has developed a new technology solution called the HP Forms Automation System, which can effectively address some of the pain points identified in the interviews conducted for this research.

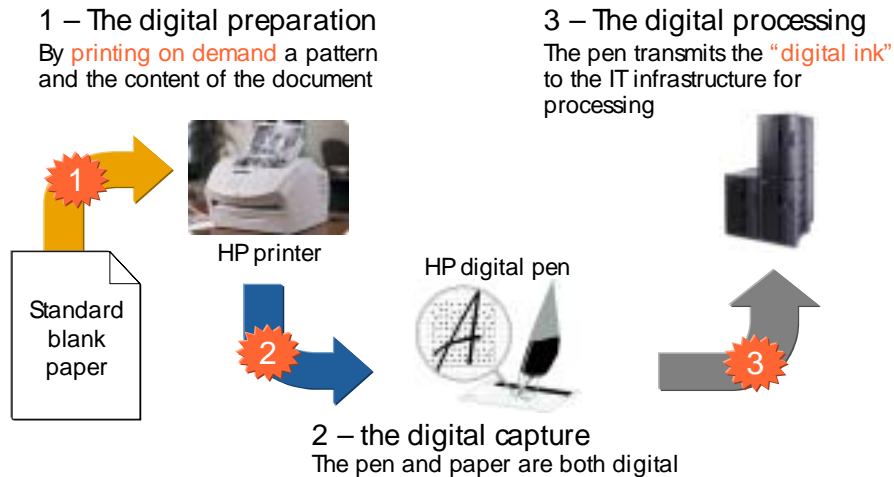
The HP Forms Automation System

The HP Forms Automation System serves as a link between paper forms and digital information. It does so in a manner that is almost invisible to the actual users (who are still using a pen to put ink on paper), and at a much lower total cost of ownership than alternative approaches such as laptop computers or even PDAs.

Figure 2: Overview of the HP Forms Automation System

What is it about ?

The link between paper and the digital world



The HP Digital Pen

HP's Digital Pen can be used like any standard pen, but it is somewhat thicker. It writes in indelible ink, but it also incorporates a tiny digital camera, as well as pressure and vector sensors. Overall, the features are:

- The digital camera interfaces with the digital paper (see below) to precisely place each pen stroke on an x-y coordinate grid.
- The battery is sufficient for 40 full pages of handwriting or ten hours of continuous use. It is automatically recharged while the pen is placed in its cradle or attached to a USB port.
- A USB version with a cradle is available for communicating directly into a corporate intranet, or via the Web.
- Each pen has a unique identifier, thus if desired the user is automatically identified and impressive security features are "built-in."
- Time/date stamps are standard.

Printing the Digital Paper – Getting "Forms on Demand"

HP has licensed use of the digital pen and paper technology from the Swedish technology provider Anoto. The paper includes a special pattern that is invisible to the naked eye, printed as the background onto ordinary A4 paper. A number of standard HP laser printers (monochrome and color) can be used to print this pattern at the same time that any text or graphics are printed; Indigo digital presses can also be used.

Since the software will “know” each page, variable data (i.e. customer, address, policy number, reason for visit) can be pre-printed when the original form is printed, and the data manually entered onto the page will be automatically connected with that customer or event when it is digitally read back into the system.

Because each sheet has a unique pattern, there are many possibilities:

- Assigning each sheet to any set of standard forms.
- Assigning sheets to any set of users, sites, etc.
- Doing both of the above at the same time! The enabling software can recognize, for example, that the sheet being processed was printed by a specific user for a specific customer, as well as time and date.

The software can be used with all standard formats, including PDF (Portable Digital Format), to work effectively with nearly all existing forms design tools.

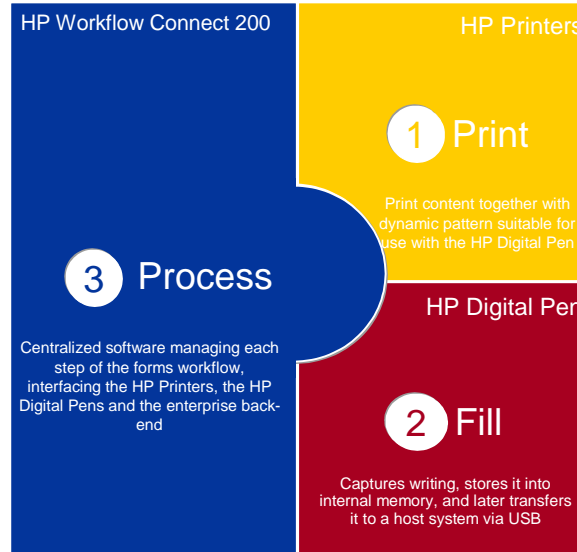
Centralized Software: the HP Workflow Connect

The final element in the solution is enabling software. The software has five main elements:

- The **Digital Layout Designer** is a software tool for transforming existing paper forms into digital automated forms.
- The **Digital Paper Printer Driver** enables the printing of the form content with its unique digital pattern.
- The **Digital Pen Download Software** transfers the information captured by the pen to the appropriate back-end systems.
- The **Service Controller** configures and manages the communication between the printers, the pens, and the back-end software and systems.
- The **Digital Paper SDK** is a set of software tools for developing new or additional forms applications.

Figure 3: How a New Forms Workflow Process Will Work

Forms Automation System



Purpose and Advantages of the HP Forms Automation System

The HP Forms Automation System is not about eliminating paper, but about making it smarter. In fact, one of the strengths of the solution is that among line employees, there is little or no apparent change in the work processes with which they have become familiar, and no training is required. Line employees love the concept of the HP System: It is simple to use, and intrigues them with its automatic digital capture. It is about using plain pen and paper to initiate a digital workflow. In addition, it achieves this goal at a dramatically lower total cost of ownership (TCO) compared to more elaborate alternatives.

In considering the HP Forms Automation System, what are the key potential sources of savings to look for? We have identified eight key potential advantages to expect from the HP Forms Automation System implementation, and present them in rank order below:

- 1.) Time-and-motion: eliminate or reduce physical steps or motions. After filling out the form at the point of use, there is no need to make any additional motions, and no steps to the mail drop or the fax machine, for data entry or processing. After reviewing the capabilities of the HP Forms Automation System, an IT Director commented, "I'm tasked with improving efficiencies in our workflow every year. I've found that the best way to achieve this goal is to actually eliminate a step. The HP Forms Automation System creates opportunities in several of our paper-based process to eliminate steps that are currently required to transfer the paper data into our computer systems."
- 2.) Reduced internal distribution costs: eliminate the need to physically transfer forms. Stop faxing, scanning, mailing, or shipping and replace all of these channels with a single electronic delivery system.
- 3.) Data entry: reduce or even eliminate keyboard data entry of handwritten information. The HP Forms Automation System includes intelligent character recognition (ICR). Simple forms re-design can also reduce or eliminate the need for data entry: many forms of entry (i.e. check the box, circle the word or letter) can be intelligently recognized even without ICR intervention. Mobile workers from multiple fields complain about the time spent on non-core administrative duties, with re-entering data from forms or notes at the top of the list.

- 4.) Eliminate parts from a multi-part form: Since the data is being captured digitally, and the form can be transmitted electronically, the need for additional parts can usually be obviated.
- 5.) Disaster recovery: A highly accurate digital image of each form is automatically created. Because of the efficient use of electronic memory, these digital images can be economically stored on back-up drives, even at separate sites. If desired or compulsory, the paper form itself can be retained as the ultimate back-up method.
- 6.) Document management: With the inherent ability to code every form by multiple variables (i.e. whose pen was used, date and time, form type), storage, archiving, and retrieval of documents is easy and effective.
- 7.) Security: With the virtually built-in ability to securely assign pens to individuals, system security is enhanced without adding features that are cumbersome to the actual users. An IT Manager from a large mid-Atlantic general hospital stated, "This technology [the HP Forms Automation System] could help us respond to new requirements for secure handling of patients' information and shifting to computerized prescriptions."
- 8.) Improved customer service: Customers can use a "pen" to fill out a form without being bothered by the fact that they are performing data entry. Customer service representatives can bring up a digital image of a handwritten form that required only a fraction of the electronic memory required for scans or PDFs. A Director of IT within a large county government stated, "Your system [the HP Forms Automation System] can allow us to interface with our citizens in a way that is more efficient for us, but seamless to them [by enabling them to continue to use traditional, universal pen-and-paper]."

An additional potential advantage is reduced capital investment for mobile employees. This advantage is discussed in more detail in the next section.

Benefits of Shifting from Centrally Produced to Distributed Forms Printing

The HP Forms Automation System does not require users to engage in distributed printing. If they prefer, they can continue to print their forms centrally. Nevertheless, users who choose to shift to distributed printing of their forms will receive the well-established benefits of the print-on-demand model:

- **Reduced document obsolescence costs:** Reduce or eliminate the discarding of obsolete forms, and use of forms versions that are no longer current as a cost-saving measure. (CAP Ventures research estimates that, on average, 20% of all pre-printed forms are either discarded due to obsolescence, or are obsolescent and impact the efficiency of workflows at the time they are used.)
- **Reduced external distribution costs:** Reduce or eliminate the costs and headaches associated with distributing centrally printed and warehoused forms to the actual user locations.
- **Reduced contracted services:** Reduce or eliminate reliance on costly pre-printed forms from outside print for pay providers.

Why Not Entirely Paperless?

In terms of efficiency, purely electronic, or paperless, solutions may be more straightforward than the HP Forms Automation System. In terms of total cost of ownership and return on investment, however, the HP Forms Automation System offers several advantages:

- The solution is easy to use and requires no training on the part of the user.
- Users will find the solution to be highly portable, small, lightweight, and robust.

- The hardware investment is modest. The average total cost per active digital pen is approximately \$300, compared to well over \$1,000 for a business-class laptop or about \$500 for an effective PDA.
- Investments in software and systems integration are also less complex and therefore less costly than moving from a paper-based to an entirely electronic workflow.
- Cost of support at the user level is virtually nil. Compare this with annual support costs per seat for PCs or PDAs, which are generally estimated to run thousands of dollars by IT consultancies such as The Gartner Group.
- The solution requires minimal changes in workflow. In many instances, the changes will be hardly noticeable to the employees. Most changes will consist of no longer doing something (such as taking the form to a workstation, or performing data entry), rather than doing something differently. Training employees to use the new technology is straightforward and simple because the solution is intuitive.

A Case Study

CAP Ventures contacted a number of companies to assess their level of interest in the HP Forms Automation System technology. At a high level, approximately half of the companies that we contacted expressed considerable interest in the HP Forms Automation System. Given the relatively low cost of implementation, even relatively small companies and companies with only modest volumes of manually filled-out paper forms, could identify advantages. At the same time, however, the greatest cost savings are achieved by companies with a fairly high volume of existing paper-based workflow. Companies that rely on mobile employees, such as salespeople or field staff, are also likely to realize greater tangible and intangible benefits than companies whose workforces are based mostly in company offices.

The Company

The company that this case study considers is a very large U.S.-based insurance organization. Headquartered in New York, this company sells a full range of insurance products, including life, disability, casualty (home and automobile), and long-term care to millions of American households. The insurance products are sold via over 10,000 agents. Approximately half of these agents work exclusively for the company out of established sales offices, while the other half are independent brokers who may represent other insurance companies as well. The completed applications alone account for approximately 11 million forms pages annually. Based on our analysis, the company and its agencies could realize savings of over \$5 million annually through an implementation of the HP Forms Automation System using 10,000 pens.

At A Glance
1 million applications
11 million pages
Implementation cost: \$3,345,000
Annual recurring costs: \$4,796,750
Gross tangible savings: \$10,000,000 / year
Net tangible savings: \$5,203,250
Time required for pay-back: Less than a year

The Workflow Problem

Like most U.S. insurers, this company is currently highly paper-based for its life insurance sales process.

A respondent from another insurance company commented, "Nearly 90% of U.S. [life] insurance companies are still heavily paper-based for their application forms. For these companies, the HP Forms Automation System is a powerful opportunity to reduce handling costs and speed up the process."

In fact, the company is highly paper-based for most of its insurance products, but the data gathered for this analysis centers on its life insurance product. A lengthy application form (four duplexed A4 sheets, or a total of 8 pages) is filled out by the agent at the prospective customer's home or place of business. A single-sheet duplexed disclosure statement and a single-sheet one-page, or simplex, agent report are also filled out. Thus for each completed application, 6 sheets of A4 paper with 11 pages must be filled out and presented to the insurance company. This form must be physically returned to one of the insurance company's general agencies (as its administrative sales offices are called). The data is then entered via keyboard into the company's computer systems by support staff. After that point, the paper form is for back-up and archival purposes only. With the average agent signing up approximately 100 new clients annually, most agents generate about 1,100 forms pages per year.

It is noteworthy that agents do not want to bring computers to the point of sale, which is usually the prospect's home; the belief is widespread that the use of such technology sets the wrong tone and interferes with the sales process.

One agent told us, "I'd love to capture all the information electronically, but most of my prospects would be intimidated by my coming in with a laptop."

The Pain Points

Speed is of the essence. The application is not considered to have been made until it is in the hands of the insurance company. The sooner the application is formally entered, the less time the applicant has for potentially reconsidering their decision and the sooner the sales agent will obtain their commission on the sale. In the current system, however, the agent must drive to one of the company's general agencies (the usual procedure), or arrange for delivery of the paperwork by mail or express delivery.

The three different paper forms, totaling 6 sheets and 11 pages, that make up a complete application must be delivered to the sales agents. At any given time, the inventory of these forms exceeds 1 million copies if one includes the centrally managed inventory and the number of blank forms in the hands of the agent force.

The filled-out applications are currently stored in hard copy form. Although there is rarely any need to retrieve one of these forms, doing so is tedious and costly, and there is a moderate warehousing expense.

The HP Forms Automation System

The recommended solution provides net savings in excess of \$5 million annually.

A description of the solution follows:

- Require each agent to purchase the HP Digital Pen from the company.
- Each general agency is likely to already have a suitable HP laser printer, but if not, they must purchase one.
- Offer each agent the option of leasing a suitable HP laser printer model from the company (note that the company already requires agents to lease approved computers loaded with proprietary software for communicating with the company, for generating data such as projections of net policy values, and for creating sales collateral) if they do not already have one.
- Install the HP Workflow Connect.
- Modify the software used for application data entry so that it recognizes checked boxes or ICR words which form the bulk of the entries on the application, and so the image of the submitted application appears on a split screen next to the data entry screen.

The workflow improvements created include:

- Agents can now upload the completed application electronically instead of spending time (two hours on average) delivering the paper form personally or by fax, and supervising its data entry. The agent also retains a digital and a hard copy of the application without any need to copy or scan.
- The application process from the viewpoint of the underwriting department begins in a minimum of an hour, but can potentially be 24, 36, or even 48 hours (for independent brokers who are at a distance from a general agency and must mail or express the paperwork to the company), faster.
- Accuracy is increased via the digital translation of checked boxes, etc. and the intelligent character recognition.
- The company moves from a pre-printed form to a form printed locally, eliminating the need to maintain an inventory of pre-printed application forms.
- The need to file, store, and retrieve paper forms for archival purposes can be eliminated; this process now relies on the digital image created by the submission of the form.

- As a side benefit, each application submitted is tagged, via the individual HP Digital Pen, as belonging to a particular agent, along with the date and time.

The estimates below assume, based on the interview, that each agent submits 100 11-page applications annually.

One-time costs to the company:

Enabling software platform:	\$45,000
Software modification:	\$300,000
Acquisition of 10,000 HP Digital Pens	\$3,000,000
Total one-time costs to the company:	\$3,345,000

Recurring costs to the company:

Internal software maintenance:	\$40,000
External maintenance & support fee	\$6,750
Transaction fees:	\$2,750,000
Lease or amortization of printers	\$2,000,000
Total annual recurring costs:	\$4,796,750

The external maintenance and support fee is an annual charge from HP (first year is free) based on 15% of the cost of the enabling software platform. The transaction fee is 20 cents per page actually submitted; the total annual cost presented here assumes 100 submitted applications per agent per year, 11 pages (including duplexing) per application, and an additional 25 applications partially filled out but not completed for a total of 13,750,000 pages per year. The lease or amortization cost is for a sufficient number of HP laser printers that are capable of printing the automated forms. This estimate assumes a three-year life and an annual lease or amortization cost of \$200 per printer.

Note that "internal software maintenance" refers to the costs (estimated by the respondent) of maintaining and updating the applications that receive data from the digital pen enabling software.

The cost of acquiring the pens and printers will actually be borne by the agents themselves, so the ROI calculation is being very conservative by including these as costs to the company.

Tangible Savings to the Company

The company estimates that its current total cost for processing an application is \$75 per application, or approximately \$75 million annually. It estimates that about two-thirds of this cost is incurred at the underwriting end of the business and would not be materially affected by the HP Forms Automation System. The estimated current cost to the company for the administrative processes of data entry, review, and correction is about one-third, or \$25 per application, or approximately \$25 million annually. The company estimates that this processing cost could be reduced by 40% to \$15 per application through use of the HP Forms Automation System with its digital forms fill and data transfer.

Savings on data entry / application processing is estimated at \$10,000,000 (\$10 per application, with 1 million applications processed annually). There may also be savings from elimination of pre-printed forms and their associated storage and distribution costs, but we have not included these savings in this analysis.

Summary

Based on tangible costs alone:

One-time set-up costs:	\$3,345,000
Recurring annual costs:	\$4,796,750
<i>Total first-year costs:</i>	\$8,141,750
Annual data entry / processing savings:	\$10,000,000

The net annual savings are calculated by subtracting the annual recurring costs from the annual savings on processing.

Net annual savings: \$5,203,250 (\$433,604 per month)

Time to pay-off: The calculated time to pay off the investment is eight months. (Initial investment, or one-time set-up cost, of \$3,345,000, divided by monthly savings of \$433,604). Even allowing for some of the friction that often accompanies deployment of new workflow technology, the investment will be giving a net return to the company within the first year. The company will realize tangible savings within the first year of \$1,858,250 (calculated by subtracting total first-year costs from the gross annual savings).

Additional benefits include:

- **Time savings for agents:** Sales agents no longer need to physically deliver their applications to a general agency or the parent company. Time savings will run from a minimum of 20 minutes per application to well over an hour, or an average of at least 50 hours per year per agent – this represents more than a week that can instead be spent on selling administrative functions.
- **Faster turnaround:** By automating the application process, the initial bill can be generated faster and agents will be credited with commissions more quickly.
- **Reduced errors in data entry:** some of the data (i.e. boxes checked) will be entered automatically as a result of the forms fill. Other data entry will be enhanced by the ability to place a digital image of the application on a split screen with the data-entry fields.
- **Digital storage of completed applications:** Currently, the general agents are responsible for retaining the original hard copies of the applications. Respondents tell us that it is “very rare” or even “almost unheard of” to need to refer to these documents, but nonetheless, the HP Forms Automation System would allow the agencies to store and retrieve these documents digitally.

Other Key Potential Applications

Other potential applications for HP's Forms Automation System include:

- **Healthcare:** Hospitals, outpatient facilities, and providers of home health services all have potentially compelling uses for the HP Forms Automation System. Some large hospital systems are currently maintaining expensive central scanning operations for records retention and retrieval; many of these records can be automatically digitized if filled out using an HP Forms Automation System, thus eliminating the additional step of scanning. Large home health providers have extensive mobile work forces composed of RNs (Registered or licensed Nurses), a variety of therapists, and aides. Using the HP Forms Automation System would eliminate the physical distribution of the paper forms, which is the current workflow norm, thus speeding the billing and reducing time spent by field staff on administrative duties as well as reducing keyboard data entry and improving records storage and retrieval.

- **Liability Insurance:** Providers of commercial and residential casualty insurance policies (mostly automobile and home or office) have large field staffs responsible for claims service. Many also have large centralized document-handling facilities for scanning and digitizing incoming paperwork. Using the HP Forms Automation System can improve the efficiency of the field staff, speed up the claims processing (and thus improve customer satisfaction), reduce costs by eliminating steps in the original workflow, and improve the efficiency of document retention and retrieval.
- **Police Departments:** The various U.S. police forces write millions of traffic citations and other misdemeanor (minor offense) citations every year. Although the U.S. court system has embraced electronic technologies for document filings, court schedules, and the like, these citations still require an original signature from the officer and the offender, and thus a hard copy document (usually a multi-part carbonless form). The data from these forms must then be manually entered via keyboard into the court's computer systems. The HP Forms Automation System has broad potential for improving document management and reducing document handling while still leaving the motorist or offender with a paper original.

Conclusion: Applying the Case Studies and the Research Results to Your Organization

Many types and sizes of companies can potentially benefit from the HP Forms Automation System. The low total cost of ownership (TCO) and the simplicity of the system at the user level are especially attractive features. Some applications are horizontal (i.e. apply to most companies regardless of segment), such as time cards and related payroll or human resources (HR) issues. Others are vertical in specific industry segments, such as application forms in the financial services industry.

Although companies with large paper-forms volumes are likely to see the fastest payback, they will also incur greater initial costs. Workflows with moderate volumes and a smaller number of users are also amenable to the HP Forms Automation System with payback occurring in less than two years and commensurately moderate set-up costs.

The path for analyzing your own company's potential use of this new technology is to:

- Identify your own pain points in your workflow.
- Estimate the costs of deploying a HP Forms Automation System.
- Estimate the tangible savings from the deployment.
- Identify the hidden benefits, and assign estimated cost savings to them.

You will also need to answer a number of more specific questions:

- What paper forms do you use? In what volumes do you use them? Where are they filled out? Who fills them out? How many people are involved?
- How is the data on these forms communicated to your organization? What are the potential cost savings of communicating this data digitally instead of manually? What are the potential implications on sales, customer service, and customer retention of communicating the data faster and/or more accurately?
- What are your costs of transmitting the paper-based forms to your data center? What are your costs of actually inputting the data, error-checking, etc.?
- What are your other technology choices? Their tangible implementation costs? Their costs in terms of employee training?

While purely electronic paths arguably remain the “holy grail” for workflow solutions, the HP Forms Automation System will often be easier and less costly to implement, and is especially appropriate for the many workflows in which paper continues to have a legitimate role.

About Hewlett-Packard

Hewlett-Packard is a well-known provider of technology solutions. Headquartered in Palo Alto, California, the company posted 2002 annual revenues of over \$56 billion following its acquisition of computer company Compaq. Although best known in recent years for its success in personal and workgroup laser and inkjet printers, the company has focused on computers since at least the mid-Seventies, with a specific focus on broader technology solutions for businesses.

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