1-07-30 Policies for Laptop Rollout and Use

John Loven

Payoff

Many companies find that outfitting their work force with laptop computers increases productivity considerably. The rollout process—from needs analysis to purchasing, delivery, and training—requires planning and control. This article gives planning tools and guidelines for a smooth and cost-effective laptop rollout, then discusses corporate policies for laptop use.

Introduction

The rollout of laptop computers costing several thousands of dollars each to a work force is a major undertaking and investment. Some degree of corporate discipline and policy must be established for laptop computing. From the start, the entire rollout process should be shaped by a clear, specific set of goals directed to a quantified return on investment (ROI). The amount of dollars that can be earned, the number of hours that can be saved, and projected competitive advantage must all be known before the actual purchases are made. Therefore, the rollout process actually starts with the original needs analysis: Why a laptop? Who gets one, and when?

The Importance of Staging

A major factor in a successful rollout is controlling the order of events, or staging. The outcome of the initial analysis (i.e., why, who, and when) does not include answering the question of which laptop to choose. This question is better left unanswered until the needs analysis has been completed, so the company can select the hardware best suited to its requirements.

Exhibit 1 is a chart that shows a blueprint for the rollout of about 1,000 laptops for an industrial sales force. It shows the steps that each operating department should take and the relative staging of each step. The hypothetical company is divided into typical operating departments:

- Strategic Management (the people who guide the direction of the company).
- Information Management (the individuals in charge of large-scale data analysis and information distribution).
- Marketing (the people who design and implement the profit-making policies).
- Operations Management (the people who directly manage the workers, in this case a sales force).
- Operations Training (the people who train the workers, in this case sales trainers).
- Systems and Programming (the individuals with direct responsibility for hardware and software procurement and support).
Typical Laptop Rollout for an Industrial Sales Force

The functions and staging shown in Exhibit 1 can be translated in a way that is useful to a company's unique situation.

**Stage 1: Needs Analysis**

Strategic managers must find out whether laptops are needed in their company and then project an ROI if the need is met within a certain budget and time frame. Those investigating the issue should talk to people on all levels of the corporate hierarchy as a reality check on both the need and the ROI. In most cases, the laptops will be expected to perform a single task or service that is the prime need and the prime source of return. In the case of the hypothetical sales force, that need might be Electronic Territory Management. Secondary needs might be sales training and use as a sales presentation tool.

One of the analysis factors is the useful life of the computers. A double limit exists on the life of a high-tech device because of the rapid pace of technological development. First, systems (not to mention manufacturing methods and materials) become obsolete in months. Systems purchased today may simply expire mechanically because service and parts are impossible to get in any cost-effective way after several years. Second, an older system may become useless compared with contemporary equipment, so that the users are essentially hampered. After thinking through the prime need, managers should look across the sample chart in Exhibit 1 and make sure they have considered all the collateral costs as well as secondary needs and sources of measurable return.

**Stage 2: Strategic Planning**

The emphasis here is on the word strategic. A wide buy-in for the needs analysis and projected ROI is needed to produce a chart like the one in Exhibit 1. IS managers should look at the tasks and decide how many can be done in-house and how many can be turned over to vendors. The hypothetical case discussed in this article assumes that hardware acquisition, integration, and distribution will be done by in-house systems and programming staff and that user training will be done in-house as well. Vendors will be used to create the electronic territory management (ETM) software and collateral software.

**Stage 3: Gathering Tactical Data**

The strategic plan addresses the questions of why, who, when, how much money, and who is doing the work. Some of these items may need revision after some hard data has been gathered. At this point, it is necessary to obtain bids from the hardware vendors. Software producers can be advised of the users' particular needs, and they may have some input as to the power of the computers. The trainers can look at the proposals for hardware and software and begin to calculate the costs of user training.

Some vendors may provide overly optimistic estimates of what they can provide. Where possible, contingency plans and agreements are needed to provide relief if the vendor turns out to be bluffing. For example, when producing laptop user training for a company in the midst of hardware acquisition, the company struck a deal with a major manufacturer for a brand-new model at an advantageous price. The computer was so new that it was just in a prototype stage. The first model came from a European factory. The
Disk Operating System and Windows software were in German, which made preliminary evaluation a little oblique. The screen kept coming loose, and the computer finally caught fire. On examination, it was found that the connectors for the serial port and for the external monitor were identical, and if a monitor was plugged into the serial port, a serious internal short circuit occurred. In the face of the obvious uncertainties, the hardware vendor agreed to pay to have the user training revised to reflect a competitor's machine if it could not deliver a satisfactory computer. That kind of protection should be obtained whenever possible.

**Stage 4: Detailed Tactical Plans**

With all the variables weighed and balanced, specific plans can be made. Managers should now have specific names, prices, and time frames for each anticipated task and stage of the rollout.

**Stage 5: Hardware and Software Acquisition**

A handful of the specified computers and accompanying peripherals (e.g., printers, modems, and cables) should be stress tested through their entire range of anticipated experiences before delivery to the final users. At the same time, the prime software should be acquired or developed. As it is delivered or created, it should be tested on the actual laptop. Testing the software goes hand-in-hand with testing the computer.

**Stage 6: Alpha Training**

As the rollout is performed, certain people are needed to be boosters and leaders during the process. Typically, this means the line managers. Whoever they are, they should be the first people trained. This initial training may be a little confusing but can provide valuable feedback to the trainers, both about the training per se and about how the laptop fits into the actual work life of the users. This alpha training can also provide another level of stress testing for the hardware configuration. The result is that these first-trained people understand the process and support the rollout. This alpha testing is not only for the trainers; the hardware and software vendors should be represented to observe any shortcomings and to help the trainers and trainees understand them.

**Stages 7 and 8: Beta Training**

The software should be close to final form, and enough computers should be acquired to equip a small pilot group of users. This is a real experiment for the hardware rollout and user training plan. It can also get a small group of users online, which can, in turn, test the flow of information and level of manager participation. Applications like E-mail often contain surprises at the hardware or software level and in terms of corporate culture. The best thing is to discover these problem points when the number of users is small and time is still available to revise the large-scale plan before the big rollout effort.

**Stage 9: Final Revisions**

If the previous steps have been successful, the pilot testing (stages 7 and 8) should provide enough feedback to perform a final tune-up on the whole plan before the full-scale rollout. This is where the benefits of proper staging reward those who have kept the
process under control. Each operating department has listened to the needs and wants of
the others, and each has adjusted its process to maximize the return to everyone.

If control is lost, some areas of responsibility may be so far ahead or behind that the
revisions to the plan are not well informed. For example, if the E-mail distribution system
has not been tested under load yet, some procedures being taught may be wrong. Similarly,
if the training group has already printed the 1,000 user guides, last-minute ideas and
suggestions about terminology and procedure must be put aside despite their merits.

When everyone arrives at this stage with some experience and some flexibility, the
whole plan can be fine-tuned for success. Control of staging does not occur by chance—
someone in authority has to make it stick. If the rollout must go forward without
everybody being in synch, potential problems should be expected.

When the large-scale rollout is poised to begin, certain processes should be frozen until
the rollout is complete. The basic facts about using the laptop should remain constant for
everybody through the rollout and user training period. It is difficult enough without
deliberately introducing inconsistencies and confusion. These frozen processes include
software, hardware, and procedures.

**Software.**

Although the software developer may continue to develop the software—at this
point it is not unusual for the software developer to be adding some needed features that
were identified during the pilot test—new versions should be held until the entire rollout is
complete. All off-the-shelf add-ons should be frozen. Any off-the-shelf software not on the
system at this point should be held until everybody is online.

**Hardware.**

The configuration should be set and left alone until the rollout is complete. Any
doubts about which hardware is being used can cause a lot of difficulties during the training
phase. When the laptop is the user's first computer, calls to user support become
hopelessly convoluted unless everybody has the same configuration.

**Procedures.**

In the middle of the rollout, it may be discovered that some procedure is easier or
more effective than what is being trained. Once again, managers should try to hold off on
changing even procedures until the rollout is complete. Trainers and trainees can be
confused if the content of the sessions shifts around.

The only exceptions to the freeze are fixes or work-arounds for problems that seriously
impair the functional ability of the computer (e.g., software bugs, mechanical problems, or
inappropriate procedures). An effective way to handle these problems is to publish a log of
bugs and fixes. This log should be updated by user-support and training staff and
distributed at the start of each training session. One useful feature is a list of the problems
reflected in the 10 most common user-support calls. The implication here is that just after
rollout is complete, a wave of hardware, software, and procedural updates occurs. By
anticipating this, everyone involved can cooperate.
Stage 10: Rollout

This is the stage to actually deliver the hardware and train users in large numbers. This is also when maintenance, user support, and data handling come under full load. This is still a learning process. On the last day of the last training session, a few more things will undoubtedly be learned about how to integrate the laptop more effectively into the work flow.

Stage 11: Maintenance, Developing Secondary Software, and Future Planning

Now is the time to go to work on those secondary needs—for example, skills training for the users and presentation tools—that can help get more return out of the laptop. Why wait to develop these needs? First, until the rollout training is done, nobody really knows just what the system configuration is or how the user will actually integrate the computer into daily work life. It is not uncommon for companies to defer secondary software activity for a while because the whole company is overloaded on computers after the rollout.

After rollout, communication lines to the users must be kept open. Faults in user support may not be visible at the home office but may be creating problems in the field. If users are unhappy waiting for problems to be remedied, productivity can suffer. IS should spot-check some users who call for support or maintenance and verify that they were handled well.

Training must shift over from the total saturation laptop training to turnover training. As with many turnover tasks, the sooner users are trained, the sooner they are productive. At the same time, training is more cost-effective if a group has accrued. These considerations must be balanced, based on the company's economics.

Turnover also brings in the issue of physically retrieving laptops from departing employees and recycling them. The data present on the laptop must also be retrieved and either archived or recycled. In the case of the hypothetical sales force, the data represents the customer base and sales history of a specific territory. The new representative to that territory must not only be trained in using the laptop but familiarized with the data from the departing representative. IS may need to set up a procedure to audit or sanitize the data before passing it along to the new person. This would include checking it for completeness, accuracy, and removing extremely personal or idiosyncratic data that would have no meaning or use for the newcomer.

It is also time for strategic management to start measuring the ROI. It will take a year or more to get a real picture of the effect on a company, but it is useful to start gathering data right from the beginning. A profile of the time and cost effect of the laptop rollout (for better or for worse) can serve as a model for evaluating other new technologies, including cellular modems, pen computers, notebooks, and interactive broadcast television, that corporations may be adopting.

Special Policy Challenges of Mobile Computing

Although laptop use and desktop use are similar in many ways, the world of laptops has special challenges that entail corporate policy decisions.

Laptop computers give employees office-level productivity at home and in the field. Why should anything be particularly troublesome? The answer, in short, is that laptops are small, expensive, portable, fun, and crucial to productivity—and dangerous to security. The software runs roughly the same, but the laptop becomes a personal possession: part of the
workers' 24-hour-a-day life and not just their nine-to-five office life. The computer will be subjected to the world of cars, planes, trains, families, neighbors, and pets; and unfortunately, thieves, vandals, and snoops. As such, the promulgation of laptops embroils IS in situations uncommon for a data processing professional. Setting user policy must achieve a critical balance among corporate security, efficient end-user support, and freedom of use.

In a broader sense, implementation of laptops is the tip of the iceberg in terms of computerized business; ubiquitous networking, widespread telecommuting, and the virtual workplace are on the horizon. The attitudes and expectations arising from laptop use can color many decisions to come about designing systems that are as functional in the field as in the office.

**Goals of Laptop Policy**

The interests of the company generally lie in increased productivity, effective security, and efficient support. Therefore, the goals of laptop policy can generally be summarized as follows:

- To protect the monetary investment in equipment, software, and training.
- To protect proprietary software and data resident on the computer.
- To ensure the expected return on investment in productivity and competitive advantage.
- To minimize time and money spent on user support.
- To reinforce the notion that the use of the laptop is a company activity as surely as is a meeting at headquarters, and that the corporate culture is expected to be upheld.

The goal is not to make people toe the line. When rules are perceived as burdensome, dictatorial, or arcane, it has as much to do with the promulgation of the policy as its content. IS management must have a clear and complete policy package before the laptops are rolled out, and it must train users immediately regarding proper procedures in a supportive, enthusiastic way. The message is how to get the most out of a helpful machine rather than a list of what not to do.

**What Kind of Policies Are Needed?**

An outline for the kinds of policies laptop users will need is presented in Exhibit 2. Every situation is different, but perusing this list should get IS managers thinking about which issues are important in their operation.

**Typical Laptop User Policies**
A. Rules for computer use within the boundaries of company work software.
   1. How and when the computer will be used.
      a. Users will have the computer with them in the following business
         situations......
      b. Users will use software x in situation y.
      c. Users will connect to E-mail at least every xx hours.
      d. Users will be reimbursed for...(e.g., printer ribbons).
      e. Users will not be reimbursed for...(e.g., an extra long extension
cord to reach the pool).
      f. Users will contact end-user support in the following way...

B. Use outside the boundaries of company functions.
   1. Additional software or procedures that may or may not be used:
      a. menuing, disk optimization, and macro key utilities.
      b. Other business applications (e.g., spreadsheet, word processing,
or graphics.)
   2. Additional uses:
      a. Recreational (e.g., games).
      b. Educational (e.g., learn-language learning programs).
      c. Communications uses (e.g., CompuServe or Prodigy).
   3. Additional users:
      a. Coworkers
      b. Family
      c. others
   4. Connectivity
      a. Using networks
      c. Printers, modems, and plotters.

C. Physical security
   1. Protection against damage, loss, and theft:
      a. Handling (e.g., use of a padded case, use of a surge protector).
      b. Travel:
         i Airlines (e.g., always store a laptop under airline seat rather
            than overhead).
         ii Care (e.g., Always lock the laptop in the trunk when parked).
         iii Environmental threats (e.g., heat, cold, or X rays).
      c. Personal versus corporate liability in cases of damage, loss,
or theft.
      d. Reporting a problem.
      e. Procedures, time frames, and costs for replacement or repair.
   2. Everyday maintenance
      a. Cleaning screen and keyboard.
      b. Battery charging or discharging.
      c. Users will run the disk optimization-diagnostics program every
         xx days....
      d. Surge protection.

D. Data security
   1. Backing up the work.
   2. Passwords and codes, security devices, locks, and smartcards.
   3. Personal versus corporate liability for data loss or theft.

E. Legal and copyright regulation.
   1. Documenting ownership of all software.
   2. Responsibility for personal software in maintenance situations.

F. Software stabilization
   1. Who can mandate upgrades of official software?
   2. Who arbitrates computer resource allocation arguments?
   3. How will information about upgrades or additions be communicated?
   4. How will upgrades or additions be implemented?

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Previous screen
Rules for Use

The specificity and rigidity of policy in this arena depends entirely on the situation. In some lines of work (e.g., scientific research), the users are often encouraged to shop around for software of their own choice to use in their work. Great leeway is given to encourage innovation, support individual preferences, and generate entrepreneurship. In other lines of work (e.g., medical records), it is a legal and ethical necessity to strictly standardize software and procedures across a workforce.

Variety in software can lead to variety in data formats. Having three kinds of word-processor files pouring into the home office for desktop publishing can cause considerable confusion. The character, tenure, and technical skills of the user are important considerations. For example, a major pharmaceutical company that provided laptops to its sales force developed a reasonably strict policy about use. Policy enforcement, however, was placed in the hands of regional managers. In the regular field force, comprising mostly new employees, the rules were observed rather fiercely. For the hospital sales force that included tenured, more broadly trained, and generally more elite troops, the managers lightened up a bit. Some managers even handed out game programs. This was definitely bending the rules, but it raised enthusiasm and worked successfully.

Physical Security

Companies naturally need to prevent unnecessary costs through loss or damage. At the same time, the modern laptop is a pretty durable item. Users will expect a quick course on care of the computer but should not become preoccupied with safety to the point that they are afraid to get full use of the laptop.

Slice-of-life comparisons are helpful in communicating standards. Most laptops like the same environment a person does: if the laptop is hotter or colder that the user could stand to be, it should be allowed to normalize before being turned on. It is at least as valuable as the user's wallet or purse, and equally tempting to thieves. Anywhere users could leave their wallets unattended, they can leave the computer. To the degree that they would conceal or lock away their own cash and credit cards, they should do so with the computer.

Perhaps the most important policy, in terms of getting full productivity, is a clear and prompt process for replacement or service. If the laptop is really key to users' productivity, a sense of being lost in a bureaucratic maze when a problem arises can discourage full use. Management may have to quietly investigate some cases where it suspects abuse, but the most important task is to quickly get each user back in business.

Data Security

It is a clear proposition that secure data is hard to access. A company's policy should realistically reflect how valuable or valueless its data and software might be in the wrong hands. The more levels of passwords and encryptions that are involved, the more likely the user is to avoid using the computer, arrange some other way of handling data, or both.

For example, a sales company chose to have password access to the laptop software and smartcard access to E-mail after password entry. The smartcard has a window showing an apparently random number that changes every 20 seconds. The user must enter the card's ID number and the number in the window to gain entrance to E-mail. The minicomputer running the E-mail system, in turn, has the algorithm that produces the window numbers. Once a card is accessed, the minicomputer knows what number should
be in the window of any card at dial-in. It is secure as long as nobody steals both the computer and the card. The user, however, does have certain burdens, including:

- Storing the card and computer separately but always having both at E-mail time.
- The somewhat nerve-racking process of entering two sets of numbers before the window number changes.
- The possibility of the minicomputer glitching.

This last eventuality actually happened during one training period when 100 trainees were going online to synchronize their cards. Someone at the home office tweaked the internal clock on the minicomputer in midprocess, invalidating hundreds of cards around the country—including most of the trainees. This left the trainees pessimistic about the whole scheme. The bottom line seems to be to do no more in the way of security than genuinely necessary.

Many companies concerned about security provide data backup through E-mail or network. This ensures that disks of data are not floating around, and that if a hard drive crashes, the company can provide one with the user's data reinstalled (as of the last backup). It is generally true that only company data is backed up. If the user has personal software on the laptop, those programs and data will be lost if the computer is damaged. This message should be reinforced many times.

**Legal and Copyright Issues**

In this situation, very strict considerations are the rule. The field of liability for copyright infringement is a legal gray area. No one really knows how far a suit could spread or what kind of damages could be rewarded. The problem is that if an employee gets a pirated computer game and puts it in the company laptop, the company may be liable.

If users are allowed to mount their own software, IS must insist that they have documented ownership and be prepared to provide it on request. IS should also make clear that the company has no liability for personal software or data. Computers going in for service may have the hard drives wiped clean. Although it is naturally the company's obligation to return the company software and data intact, personal software and data may be gone.

**Software Stability**

Maintaining a stable software environment is always a consideration, but perhaps needs a special emphasis in the laptop arena. Desktop users are usually within speaking distance of similar users. They can compare notes, teach each other, and be addressed as a group. On the other hand, the laptop user is more likely a lone ranger, working individually in the field and lacking across-the-desk support. Such users will therefore do better in a stable environment.

Software add-ons can seldom be iterations of the in-house desktop programs. Very often, the in-house desktops are on a network or use massive multifeatured software. The laptops are standalone, and the laptop corollary of Parkinson's law comes into play: The desired applications will expand to slightly exceed whatever size hard drive the user has. So shopping for simple, compact programs that are new to the company often becomes the
order of the day. This process must be managed for efficiency, and the realities of the situation must be communicated to the user base.

The demands on the laptop and its support system can grow with surprising quickness, and someone or some agency should be set up as the arbiter of disputes right from the outset. Typically, the investment in laptops is justified by specific needs in one department (e.g., sales management, engineering, or management information services). Other departments will soon follow, and things can get over-burdened. The company wants to get maximum use from the computer, but should not let it become an item of contention. For example, a series of sales training programs was produced for a sales organization. Disks were to be mailed to the laptop users. The programs produced a certificate of completion for the user, which the sales training department decided would be E-mailed back to the department of records. At the eleventh hour, just as the disks were to be duplicated, the systems and programming people announced that the E-mail system was over-loaded and breaking down. The extra volume could paralyze it. Pandemonium ensued. Had there been a recognizable authority to whom the idea was submitted early, this problem might have been avoided.

**Conclusion**

Policy thinking should be done as early in the implementation or rollout as possible, and not issue by issue. Several of the problems cited in this article are clearly related to timing. Laptop users establish strong habits of use quickly. Trying to introduce uniform ways of doing things after people have had time to develop idiosyncratic approaches always meets with added resistance.

Suggestions for policies should be generated at a grass-roots level. It is not unusual for high-level departments to go for strict and detailed policy; managers close to the user, however, know that the ROI hinges equally on motivation. If rigidity and inconvenience are demotivating to use of the computer, one of the prime objectives is hampered. Line managers may also be wary of physical hazards to the laptop peculiar to the work environment.

When the Internal Revenue Service rolled out 18,000 portables to its revenue agents in 1987, it provided a work center software package comprising 18 diskettes. By 1991, under pressure from the field, the IRS had reduced that to 7 diskettes.\(^{28}\) A better sense of the realities of field work before rollout would probably have avoided the frustration caused by having to swap 18 diskettes to get a job done.

Centralized authority seems a little incompatible with the laptops themselves that serve to decentralize information processing and dissemination. Yet controlling user-support costs ultimately hinges on a firm set of user policies, and the presence of high authority may be necessary.

The policies on the use of laptop computers should be communicated in clear, concise user terminology. Stating that data security should be a first priority when using Alternating Current power under conditions of meteorological instability is not very helpful. Instead, policy should direct users to never plug the computer into a wall during a thunderstorm. If the policy cannot be put into simple, understandable, declarative sentences, management should rethink the policy.

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Author Biographies

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