Managing and Supporting Personal Computers in a Datacenter Environment

by Jeffrey J. Blau

In the last ten years, there has been tremendous growth in the data processing industry. With this growth, many technological advances have occurred. No area of data processing has shown faster technological advances, greater growth, or more future potential than in the area of personal computers. Bacause of such growth and technological advances, managing and supporting personal computers in large corporations has become extremely important. Du Pont, as the largest chemical company in the world, has put in place a strategy and organization to handle personal computers. This paper will describe what Du Pont is doing to manage and support personal computers.

DEFINING A PERSONAL COMPUTER

Personal computers go by many names; P.C.'s, micros, micro-computers, desktop computers, workstations to name the more popular. At Du Pont presently, personal computers must have a processing unit, display monitor, mass storage, printer access and telecommunications capability. In a more general sense, a personal computer fits on a desk or small table including most peripherals, has memory capacity of 64Kb to 1Mb+ and is priced under $10,000. The price must be low enough to justify use by an individual or for a single application. We call them personal computers because the 'personal' aspect is important. The emphasis is the one-to-one personal interaction between worker and computer to solve his/her particular problem.

THE DU PONT COMPANY - DIVERSITY AND AUTONOMY

The Du Pont Company, excluding Conoco (the ninth largest U.S. oil company), is the largest chemical company in the world. Du Pont makes a very wide range of products from chemicals to pharmaceuticals to fibers to laboratory equipment to electronic products. The company is organized into nine industrial and fourteen staff departments. The industrial departments are the revenue producers while the staff departments supply cost-effective support services to the others. Each industrial department is much like a semi-autonomous company of its own, running itself like an independent entity. Because of this autonomy, central support and management in certain areas can sometimes be difficult for the staff departments. Personal computer management and support represents such a situation, being a responsibility of the Information Systems Department, a staff department.

FORCES DRIVING PERSONAL COMPUTER USE AT DU PONT

Personal computer use is becoming important at Du Pont. Several forces are driving this use:
* People want control of their own work - People do not want to depend on others to get their work done. The primary dependence here is upon large mainframe computer systems. Users have little or no

control over resources available, end-user tools, turnaround time, or costs.

* Competition requires faster business decisions - Decision makers need to have the ability to get information quickly in a usable form.

* Production data processing vs. decision support systems - While the need for regularly scheduled work on large mainframes continues, the need for interactive decision support systems is growing quickly. Most mainframe systems cannot handle these interactive requests as well as mini's or personal computers.

* Application development backlog - Du Pont, like most companies, has more work requests than there are skilled personnel to handle them. In addition, with tighter budgets, cost justification for many useful projects becomes difficult.

* Availability of 'user-friendly' software packages - Most of the software now being produced is extremely easy to use. This allows the user to handle his/her own computer requests without the need or expense of using a skilled data processing professional.

* Hardware technology changing rapidly - Every time one picks up a computer industry publication, there is another announcement for a new or better personal computer. Most times there is more functionality and power for less money. It is hard to pass up the tremendous capabilities personal computers have for the prices asked.

* Purchase authorization authority moving to lower management levels - Because of the low price of personal computers, lower level management has the authority to purchase them. This has led to a demand by lower management to acquire their own computing capability.

PROBLEMS AND CONCERNS

Along with the forces driving personal computer use and the potential competitive advantages of personal computers versus larger multi-user computers, some problems and concerns arise. Listed below are some of them.

* Many vendors - There are so many different vendors offering personal computers. Each has its advantages and disadvantages. If each user goes out and buys whatever personal computer he/she thinks they need,

soon there will be a tremendous proliferation of incompatible computers.

* Rapid technology changes - Personal computer technology is advancing rapidly. This is making present personal computers obsolete very quickly. Users must justify their personal computer purchases with a maximum twelve month payback.

* Vendor promises - There is a bad track record by vendors, both large and small, in hardware and software, of not delivering the product as specified and/or not supplying the product within the time period promised. Both these problems have hurt projects and embarrassed more than one person who took the vendor's word.

* Duplication of work - Because of their low price and easy installation and use, many people have bought personal computers and software and then loaded up their application(s). What this has led to is that many people have individually evaluated hardware and software, done their own self-training, and solved their own problems. This is alright in an individual case, but with many people duplicating the work others have done, time, money and effort are wasted.

* Data integrity and security - There is a concern whether the data being used by any person on a personal computer is correct. How is the data obtained, is it being accurately inputted and is it up-to-date are serious data integrity questions. Regarding data security, how safe is confidential data on a personal computer? The only data security advice we can give our personal computer users is to put your confidential data on floppy disks and lock them up. If you have a hard disk system you can buy a locking computer cabinet. Other than that, data security for personal computers has not been seriously addressed yet.

MANAGEMENT AND SUPPORT

In light of what has been presented so far; that is, Du Pont diversity and autonomy, forces driving personal computer use, and problems and concerns with personal computers, it is easy to see why a program to manage and support personal computers is a must. In particular, we must manage

* network communications,

* standards of good practice,

* integration of packages,

* user education,

* data security, and

* vendor and corporate support.

In order to manage and support these areas, the Information Systems Our mission states that our group will "provide corporate leadership in personal computing/workstation technologies, monitor corporate Du Pont user requirements, promote compatibility among personal computers and with other distributed technologies, facilitate hardware and software selection and acquisition." To fulfill this mission there are three major areas in which we deal;

* guidelines,

* central user support, and

* maintain technical currency of staff.

GUIDELINES

The first major area to facilitate managing and supporting personal computers is the use of written guidelines. These guidelines help the prospective personal computer purchaser decide which machine and software he/she should buy. The benefits of selecting from the guidelines are that with reasonable assurances

* the system has already been evaluated,

* experienced help is more likely to be available,

* communications capability in the Du Pont environment has been evaluated, and

* adequacy of software libraries has been determined.

Below are some of the important aspects of the guidelines.

* Hardware – Personal computers may be acquired from any of Du Pont's primary hardware vendors – IBM, Hewlett-Packard (HP) , or Digital Equipment (DEC). These vendors are also the only ones guidelined for mini and mainframe computers. Within these vendors, ISD will support selected models that are believed to have broad business applicability and are consistent with future directions for that vendor and the industry in general. The models are selected after evaluation by the

Personal Computer Technology Group. Any location proposing to purchase personal computers manufactured by vendors outside the guidelines must submit a proposal for review to ISD's Planning Division stating why no guidelined vendor's products will meet their needs. Third party hardware such as printers, monitors, and circuit boards may be acquired when not available from the primary guidelined vendor.

* Software – The Personal Computer Technology Group has put together a matrix of software which the group will support. The matrix consists of the selected models of the guidelined vendors on one axis and categories of software on the other axis. These categories include

  - operating systems,

  - language(s),

  - spreadsheets,

  - data management,

  - word processing,

  - file editing,

  - communications,

  - graphics, and

  - integrated packages.

There may be one or more packages for a selected model for a particular category or there may be none. The user is not limited to these packages, but ISD support may not be available. Use of personal computer application packages is encouraged; thus the need to develop unique software packages is probably unnecessary.

Because personal computer technology is changing so rapidly, it is essential that proposals reflect a quick financial payback (one year or less is recommended). Expect to reevaluate personal computer needs for the next application. Equipment chosen today is likely to be obsolete in less than two years.

In order for these guidelines to work, they must be well managed. Guideline management has four aspects.

* Acceptance – The guidelines must be accepted by the departmental data processing managers. In addition, these guidelines must also be accepted by the users.

* Control – If someone wants to buy a personal computer from a non-guidelined vendor, they must submit for approval a

document called an Information Systems Proposal. A second control is done by Du Pont purchasing. Most personal computer purchases are done by a central purchasing group. This group will question any attempt to purchase non-guidelined equipment. The third control is the internal auditors.

* Deviations - Economics should not be the sole basis for choice of personal computers. Many of the proposals for non-guidelined personal computers are based on buying less expensive machines. Other factors are often overlooked which can outweigh the price difference. If viable guidelined alternatives are available, they should be chosen. If no guidelined alternative is available, conditional approval will be given for the one project only.

* Evaluate promising candidates outside guidelines - Our technology group continues to evaluate other equipment. The guidelines must not become static or they will soon be obsolete. Serious consideration will be given any equipment which has a significant advantage in terms of functionality. Portables and transportables are items under consideration now.

CENTRAL USER SUPPORT

Central user support is one of the primary responsibilities of the Personal Computer Technology Group. Activities included in this area are

* personal computer training,

* 'hands-on' demonstrations,

* consulting,

* Personal Computer Newsletter,

* personal computer bulletin board, and

* organizing and chairing the Departmental Personal Computer

  Coordinators Committee.

More detail will be given later about training and the Coordinators Committee.

* 'Hands-on' demonstrations - The technology group has at least one of every guidelined personal computer. We often give 'hands-on' demonstrations of these computers to any Du Ponter who needs to know more about a certain computer

before making a purchase decision. We also give introductroy demos to people who have never used a personal computer. We are also organizing a special demonstration room where Du Ponters can sign up to use or test on a guidelined personal computer.

* Consulting - Consulting consists mostly of answering routine questions over the telephone and showing prospective computer users how personal computers might be one alternative solution to their particular need.

* Personal Computer Newsletter - The newsletter was published quarterly in 1983, but we hope to publish it every 4 to 6 weeks in 1984. In the newsletter, with a circulation over 1,000, are short articles about new hardware or software and examples of how some people are using personal computers.

* Bulletin board - The bulletin board is presently being implemented. We plan to put on it any late breaking personal computer news such as product announcements or professional seminars along with answers to individuals' questions which are pertinent to all users.

Training

With any relatively new technology, training is extremely important. People in the corporation, from senior management on down must understand the technology to decide whether to acquire it and then how to effectively utilize it. This is very true for personal computers. There is so much in the press these days about personal computers (Time's 1982 "Man of the Year"), yet most people know very little about them. At Du Pont we have a four level approach to training.

* Senior management - For senior management a computer management program has been developed. The goals of this program are 1) to help them become more comfortable with computer technology and applications, 2) to help them to make more effective use of computers in business, and 3) to prepare management to deal with the future of computers in business. This program takes 4 to 5 days. The core topics are

  - computer concepts,

  - stategic issues,

  - planning,

- managing applications,

- impact on people, and

- data management.

Around these core topics the following are discussed:

- business data processing,

- office automation,

- end-user computing,

- technical and scientific computing,

- networking and telecommunications, and

- process automation and control.

For personal computers, there is a 'hands-on' session. During the session personal computers are introduced, a public data bank is accessed, spreadsheets are introduced, information is organized and analyzed, and 'what-if' analysis is done using the public data bank information. The personal computers are also available during any of the free periods. The primary goal is to have the personal computer be viewed as an analog of computer technology.

* Middle management - For middle management a seminar is given to those who will have some direct involvement with data processing. The seminar is an overview of Du Pont's data processing activities. These activities include

- planning,

- data center operation,

- distributed processing,

- security,

- database,

- project management,

- software engineering,

- support,

- personal computers,

- end-user software, and

- office automation.

The purpose is to familiarize middle management with computer concepts and give them a working understanding of specific ISD activities. Personal computer topics include

- terminology and characteristics,

- business concerns,

- applications,

- personal computer concerns,

- guidelines,

- ISD strategy and planning,

- ISD support,

- future, and

- warnings.

* Personal computer coordinators - For the personal computer cooordinators, the training is more technical and more specific to the machines themselves. Training sessions show the coordinators how to replace accessory boards and reconfigure systems to add peripherals, how to hook up various peripherals to the computers, how to run various communcation and application packages, and give them information to help their respective departments make good computer system choices.

* Professionals - For the professional level, several courses are offered on operating personal computers and effectively using various application packages. Members of the technology group will give training classes on request. ISD has a Training Institute which coordinates course scheduling. It has contracted with an outside firm which offers many personal computer courses. There the professionals get classroom training and 'hands-on' experience. The technology group has also written some 'how-to' manuals which are distributed on request. The final area of training for the professionals is the personal computer tutorials. The technology group evaluates tutorials and will tell people which are the best. Du Pont's central Technical Library, on the technical group's recommendation, purchased several copies of a particular tutorial which any Du Ponter can sign out.

To summarize the training effort, there is a certain goal for each level. For senior and middle management, the goal is literacy and acceptance. For the personal computer coordinator, the goal is expertise. For the professional, the goal is productivity.

Departmental Personal Computer Coordinators Committee

Because of the diversity and autonomy of the departments in Du Pont and because of the difficulty of one small group trying to support the entire company, the Personal Computer Technology Group has organized and now chairs a committee called the Departmental Personal Computer Coordinators Committee. The committee is composed of a representative or representatives of each department, assigned by the department's data processing manager. The functions of the coordinators are

*   to be the central reference point for their respective departments,

*   to handle first-level problem determination,

*   to be the departmental personal computer expert, and

*   to help formulate and carry out the strategic personal computer direction for their department.

Several activities are scheduled to help the coordinators do these functions. First there are monthly meetings. At these meetings, presentations are made about applications people are doing, issues that are important to personal computers and/or Du Pont policy, guidelined vendor hardware, and new software packages. At this meeting and at a special session between meetings, question and answer periods are held. Anyone can ask or answer a question concerning personal computers. Another coordinator help is the bulletin board, which will contain any important items for the coordinators. Vendor sessions are also scheduled to discuss new product announcements and vendor personal computer direction. Finally, the technology group does consultations with individual coordinators to help them with specific items.

This committee is an excellent tool to help manage and support the personal computer effort. One of its most important advantages is communications. Every department has at least one representative so all the departments should know what is going on with personal computers. With the meetings, presentations, and question and answer sessions, lots of information is exchanged. This information includes company guidelines, hardware and software evaluation and corporate strategy and direction. This exchange is also beneficial to the technical group. The coordinators are both enthusiastic and cooperative, creating a positive and productive organization. In terms of support, the coordinators are able to handle quickly many of the routine questions which departmental users have. Finally, by being able to talk to such a representative group, the

departments will all know the overall corporate direction for personal computers.

MAINTAIN TECHNICAL CURRENCY OF STAFF

The last area which the Personal Computer Technology Group deals with in managing and supporting personal computers is maintaining technical currency. What this means is keeping up with all the industry advances. Activities to accomplish this include

*   reading and reviewing the current literature,

*   evaluating new hardware and software,

*   attending seminars and conferences, and

*   having strategic direction sessions with our guidelined vendors.

No one can effectively manage and support a particular technology for a company unless they are constantly aware of what is happening, what is available, how it works, and where the technology is headed.

One particular activity in this area is a workstation prototype project. The technology group is building prototype workstations from our three guidleined hardware vendors. The goal is to take a guidelined personal computer, integrate as many functions as possible, and then let people evaluate it. Integration can be one package that can do spreadsheets, graphics, database, etc. or a set of packages that can use each others files easily. Integration also includes integrating with an office automation system on a mini or mainframe with a minimum electronic mail connection. This project has taught us a lot about package integration, electronic mail, personal computer to host communication and user requirements for a workstation.

CONCLUSION

This paper has described personal computer management and support at Du Pont. The first part explained the importance of managing and supporting personal computers to the company. The three major areas of management and support; guidelines, central user support, and maintaining technical currency of staff were

explained and activities relating to each area were described. While it cannot be denied that many individuals within the company would have found productive uses for personal computers without all that has been described, these activities have brought personal computers into the company in a more orderly manner, made many more users productive quickly, and set a fairly stable course in a rather turbulent technology.

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Jeff Blau has been in data processing for about 12 years, the last 11 with the Du Pont Company. He has a B.S. and M.B.A. from the University of Delaware. His first 5 years were spent doing programming/analysis work on large IBM main-frames using DOS, 370 OS, and MVS. He did system programming/operating system support in MVS/JES3 for the next 2 years. This was followed with a 2 year assignment as a computer operations supervisor in Du Pont's central computer center. After this, he was a systems manager and systems analyst on a HP 3000. This included being in charge of getting data communications operating among the International Department's world-wide HP 3000 sites. The last year was divided between working on a DEC VAX project and his present assignment with the Personal Computer Technology Group.