

Photogrammetry in Focus Computer System Implementation

BY STEPHEN M. PERKINS, O.L.S.

Operating and maintaining a business requires thorough research, careful planning, and decisive implementation. The corollary to this statement is research, planning, and implementation are the foundation to good business, high productivity, and with luck, monetary payback. With this in mind, I would like to stray from a purely photogrammetric topic and discuss computer system implementation within the workplace.

Photogrammetrists have long since used computers to increase productivity within the workplace, as have many businesses within the geomatics industry. There are, however, companies that continue to work with conventional and traditional methods. In addition to these companies, there are others that have not realized major productivity gains from their current system or are dissatisfied by their quickly outdated technology.

In my mind, research, planning, and implementation are the three most important steps to creating a successful system. As a photogrammetrist and computer professional, with experience in computer system implementation and maintenance, I would like to share some of my views on this subject.

Any new idea that produces change requires sound reasoning. Woodrow Wilson once said, "If you want to make enemies, try to change something". Computers are a fundamental change, and as such, can cause grief and aggravation for whomever attempts to implement their use within the workplace.

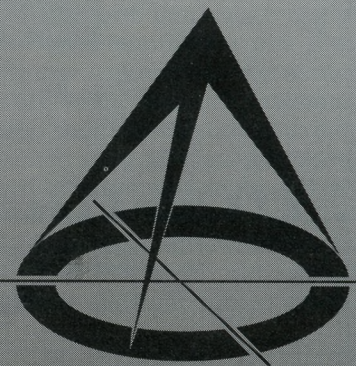
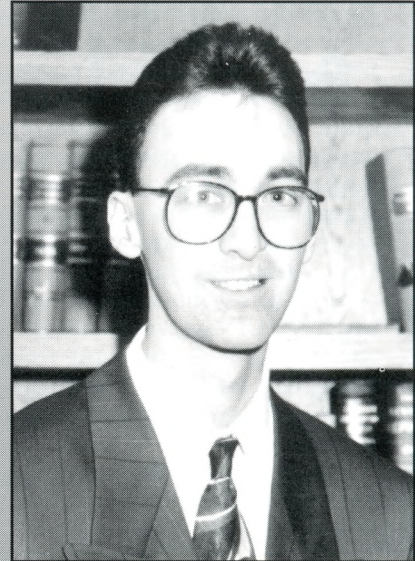
A computer should be seen as a tool for performing a specific task. For any task there is a beginning, middle and end. In cartography, a map is compiled, edited, and printed. It has been proven that a computer can optimize the task of map compilation and reproduction. However, the true benefit to production has been found to be in the middle stages of the task where additions, deletions and modifications are performed on the digital data. This holds

true for most computer applications. When an administrative assistant prepares a document in a word processing package, the benefits of computerization is not the input and output of the document (though there is a benefit here), but additions, deletions or modifications are made to the document.

What then are some tasks that a computer can perform to service the geomatics industry? Cartography, drafting, survey data collection, word processing, and database storage to name a few. Are these applications automatically enhanced or inherently more efficient with the use of computers? It depends on the implementation and whether or not the computer is being used to perform the task it was designed for. The computer should be used to add, modify and delete digital data.

As was stated earlier, research is an integral part of the management process. Research into computers should include learning and understanding what tasks a computer can accomplish and how these tasks can be used effectively in your work environment. Research into different computer systems should be conducted to find the most appropriate system for your task. The manager willing to change to a computer environment or re-engineer a current implementation should fully understand the new system and understand what benefits are to be derived from it.

In addition, the implementor should purchase and become proficient at using a crystal ball. The computer industry grows and transfigures at such an alarming rate, knowledge of present and future trends and technology can only be derived from educated guesses. Computer magazines are a continual source of gossip and conjecture and may be useful in helping you understand the industry. Be warned, however, that once you have decided on a plan, be prepared to disregard any other notions of change. Ongoing gossip



and conjecture can lead to self doubt and possible confusion.

Concerning one's self with the defacto standard in any one class of computer may be a way of hedging one's bet. However, please note that the general populous may not have your exact business scenario in mind during the selection process. Plan for yourself but remember the axiom of the economy of scale. The more popular the product you select, the more likely it is that some one else will have the same implementation problems as yourself.

Without becoming too technical, I would like to mention my predictions on the future of workplace computing. I currently administer three types of computer systems; DOS on an Intel platform, VMS on a VAX platform and CLIX UNIX on a RISC platform. All are quite capable at their tasks; drafting, database and mapping respectively. In addition, all interconnect via a transparent background network. Of these three systems, the UNIX platform excels in performance and is an administrative pleasure to run. Unfortunately, the system is costly to purchase and maintain and there is a dauntingly steep learning curve. While technically pure, this system is not easy to implement.

As for the general computing public, the price/performance equation will be solved in the near future by the Microsoft Windows NT (New Technology) product. Although Windows NT is available now for Intel computers, it will take a few years for hardware to catch up to the software product. Windows NT requires massive amounts of hardware resources and current platforms cannot fully support the operating system. However, in combination with the next wave of computers, (DEC Alpha, Intel Pentium, and RISC), the benefits to Windows NT will become clear. First, window style applications are becoming the defacto standard for office computer products. This includes word processing, database and spreadsheet applications as well as project specific applications such as computer aided design and drafting. Second, NT will run on different hardware platforms and perform in a visually similar manner. This will allow managers to purchase machines tailor designed for each task and with price in mind. Finally, the major advantage of this system will be its resources for interconnectivity (networking) and multi-threaded processing. This will allow multiple users to run multiple tasks on their

systems and allow a free flow of data between computers with the organization.

Whatever your choice in future computing systems, remember to purchase your system from a reputable manufacturer/dealer. Your computer system is a business choice and any business choice should be made with business in mind. Money is not to waste, but to spend wisely. Your system should be an investment and the company that you would like to deal with should be stable and strong enough to grow with you.

Another major part of your research should be directed towards determining how your current work flow will be affected by your new computer system. It is at the research and planning stages that you have the opportunity to redesign and retool your current production cycle. Changing your work flow during the planning stages is much less expensive than changing after the implementation.

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One such example of re-engineering comes from a major automobile manufacturer and its computerization of its parts receiving department. Originally, if a part or product was delivered to the loading dock without an accompanying invoice number, the part was received and a six stage procedure was initiated that eventually assigned an invoice number or returned the part. When the new computer invoice scheme was implemented, the designers of the system changed the procedure dealing with parts without an invoice number by simply not receiving the part. This type of simple and effective redesign should be strived for in any new implementation. Do not perform your work conventionally in a computer environment, re-design your process to take advantage of the benefits of computing.

Once the choice of a system has been made, all research will be complete and only planning and system implementation will remain. The majority of planning will be staff training. This includes training for the new system

and training for the new work flow. One person, however, that should not receive system training is the system administrator. This individual should be ready to use the system, fresh out of the box, and competent. Whether the successful candidate is a newly hired staff member, consultant in a temporary position or long time employee, the administrator should require training only in the newly designed work flow.

As for staff that do require training, plan on over-training rather than cutting corners in order to save money. As the saying suggests, a good defence is a good offence. Your workers will need to use the system as efficiently as possible in order for you to realize productivity gains instead of losses.

In addition to training your staff, train yourself. As manager, you should be proficient with your system and fully able to discuss its workings, especially with your staff. Your confidence will definitely make an implementation work smoothly. By proficient, I mean that the manager should be able to navigate the different processes and applications. By no means do I mean that the manager should be ready to perform production tasks.

Here is where I feel that the multi-user, multi-tasking computers for the masses will regenerate the current computer industry. These types of systems will allow managers to once again monitor the performance of their workforce on a daily basis instead of at the end of a task. The computer operator should not have the opportunity to point a finger at a slow or inefficient system, this should be the job of the manager.

The last item during the planning stage is the customization of your system. Customize to optimize. How well your system reacts to future change and development should be of concern when you initially select a system. Be warned, however, that customization should not be heavily considered in your plan in order to create an efficient system. Your system should start efficiently and only require 'fine tuning'.

The final stage of system implementation is the actual change over from the old system to the new. The implementation will depend on two important items. The first is money. How much money you have relative to how much you need will affect your implementation methodology. If financing can be arranged for the entire system at once, the implementation can

proceed unencumbered. However, more than likely, the implementation will be divided into parts. How you divide the implementation, will be a function of your business and how you do work.

For example, if your office is arranged so that each person produces a single product, such as a survey plan, then, one by one, each person can be supplied with a computer. However, if your work is more assembly line oriented, such as in a mapping business, groups of people will have to be outfitted with the new equipment at the same time.

The second item to affect implementation is the diversity of work within your office and the availability of resources to handle the change. For example, if your business is diverse, and you produce different products such as with an engineering company, there will be different computer applications and different groups of people using them. Implementation here will have to be divided into the separate work groups to ensure each implementation is successful and will eventually interconnect with the other work groups.

However when the implementation is performed, the change should be swift and complete. The new and the

old technologies should not be allowed to coexist. This will cause confusion for both the staff and the implementor. The results of careful research and planning will be most apparent during this stage.

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Stated simply, all successful computer implementations should have the following attributes;

- a reason and a plan
- the implementor should understand the technology to be acquired
- system choice should be 25% defacto standard, 50% educated guess and 25% crystal ball
- redesign of procedures to reflect the change of technology
- total and swift integration for both new work flow and system
- educate yourself and your staff and have at least one person you can rely on for answers
- monitor your system performance and customize to optimize

However general this advice may appear, please try to mould it to your own applications. Each implementation is different. However, one common thread exists, systems do not fail, only implementation of systems fail. Careful research, planning and implementation can help to achieve a successful system for your office.

This article should be published prior to our next annual meeting and I would like to take this opportunity to invite you to Ottawa. The city has much to offer as I am sure you are aware. Bring your skates! If you have any comments or suggestions regarding this article, bring them to Ottawa as I will be more than happy to discuss them with you.



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Do you have a specific question or problem you would like Mr. Perkins to address in one of his articles? Send them to the AOLS Office to the attention of Brian Munday, Editor.