

## TEAM TOOLS FOR TEAMWORK

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System performance has been for long a major concern, both in research and in commercial products development. However, systems are a mean to a service. If we look from the other end, that is the user of the service, do we know what criteria, models, or tools are relevant to user performance ?

In a corporate environment, people must work as teams, not individuals. Thus, any tool that would make group participation ineffective is inappropriate. Computer tools, thought as "personal" fall into this category. Taking into account the existing office world, this paper suggests a number of simple "team tools" intended to fit in the paper world, while taking advantage of computer aids. The rationale is that bringing people value added services without disturbing their existing group structure might sell them on becoming computer users.

### INTRODUCTION

System performance has been for long a major concern, both in research and in commercial products development. However, systems are a mean to a service. If we look from the other end, that is the user of the service, do we know what criteria, models, or tools are relevant to user performance ?

### WHAT SORT OF USER PERFORMANCE ?

The term "user performance" may be interpreted in various ways. It may relate to the ease, speed, and correctness displayed by a person in learning and using a particular tool, for example a text editor, or a data base, or a programming language. It may relate to the end result in using a particular tool, for example making money on the stock market owing to a clever use of a data analysis system. In this paper, the term user performance relates to a common chore of day to day life in offices that we call task pushing.

### THE PUSH : A METRIC OF PERFORMANCE

Many office tasks are carried out piecemeal because they involve a number of people in different structures or the on-going task is preempted or it must wait for specific events. Task queueing and switching is a basic ingredient of office work, very much like in a multi-tasking system. Some differences are that processors (people) may be unreliable, work at a variable speed, and tend to leave in queues tasks they don't like.

Usual counter-measures are progress review meetings, telephone calls, memos, scheduling, and so on. We might call this task pushing, while the reality is people

pushing people. Most everyone being pushed, by the boss or colleagues, and pushing others. In this context, typical of large and bureaucratic organizations, getting results turns into an art. Admittedly, no computing system could rival human talent in applying or evading pushing, but computing systems may help in picking out tasks in need of a push, and within the limits of accepted rules, exert some of the pushing. We all receive at home computer generated letters reminding us of pending bills and so on. Thus, we already are used to some forms of computer pushing.

#### COMPUTER PUSHING

Why would computer aided pushing be more effective than old fashioned techniques ? It may not be, of course, depending on many other factors. A first assumption is that most people in most situations are willing to do their work, provided they have the required resources and feel they contribute something towards a common objective. A second assumption is that some planning and reminding do help.

As we can observe it, most of us need to take notes, keep a calendar of events, scribble down what was said or promised by whom for when, tolerate some grace delay for missed deadlines, expect a letter within six weeks, send off an agenda for a coming meeting, submit a manuscript no later than August 15, and go on vacation on July 14. Keeping track of oneself along with what others are supposed to do is no trivial task. As it takes time and a good deal of paper shuffling, this is the kind of chore that lends itself to some computerization.

#### WHO NEEDS COMPUTERS ANYWAY ?

One major difficulty with people in offices is that they do not feel that terminals and computers could help them. Such tools are used by programmers, secretaries, data entry typists, and a few original minds, but the average office person would not touch a keyboard. When terminals are installed, they remain mostly unused, save for a few unconvincing demos. Before we try to improve user performance, we have to have users at all.

In many places, some experiments have been attempted, with limited success. For example, filling forms, such as expense reports (people prefer paper forms), document distribution (people ask for a paper copy), or messaging (people do not check their in-box). There are obvious reasons why those experiments fail, e.g. communications problems, inadequate user interface, lack of hard copy, or outdated files. However, we should wonder whether there might be more fundamental dysfunctions than mere technical matters.

#### TEAMING TOGETHER IN A PAPER MILL

A number of computers, be they hosts or personal computers, come equipped with software intended for personal activities management. Some terminals are specifically designed to provide easy access to personal and corporate data bases. This tool kit approach has now become very popular with personal computers, and software packages exhibit major improvements in handling the user interface. Without depreciating the usefulness of such tools, one may observe that their user model is an individual trying to cope with his own duties. They do not take into account the corporate dimension, that is, the obvious fact that people are working with people.

Working together is not just accessing corporate applications (also dubbed main frame link). It implies a common set of goals and commitments, backed by a common set of documents, and frequent interactions by way of meetings, telephone calls,

memos, and grapevine. On the other hand, some information is likely to remain personal, or shared only by a few people. This concept of tailored visibility is paramount in corporate life where consensus and peer pressure tend to be more effective than plain authority. Without visibility a commitment would be easier to rescind, and too much visibility would void leeway in deadlines.

When people try some piece of a software tool kit, they discover quickly that they have constantly to switch back and forth between a paper world and a computer world. Not only text processors, messengers, spreadsheets, calendar, to name but a few, are hardly usable in conjunction with one another, but there is no **team tool**. Other colleagues would not use computers, or if they did, it would be in their own closed environment. Dealing through computers with only a minute fraction of colleagues may be termed an experiment, but it certainly would do little to handle the real work. In the end, the only medium at hand for adjusting levels of visibility in corporate life is paper.

#### **PAPERLESS IS OUT - VIRTUAL PAPER IS IN**

At this point, we might try and explore ways of improving user performance with paper based tools. Although basic principles are still often neglected, paper based tools have been explored in depth over the past forty years, and this shall not be our concern here. The argument is that we need paper as the **most suitable medium for handling visibility** in corporate structures. But, we could take advantage of computers to update and shuffle pieces of (virtual) paper in order to speed up the production of the real ones we need. Again, this is hardly a new concept, as it is just what conventional data processing has been doing for years. The novelty is in trying to adjust to an environment of irregularly coupled data processors, which are people working in offices. We would like to introduce some way of distributing processing not only among people, (this is routine), but also among computers, if they can improve people performance.

Presumably, granted success, the office population sold on computer aids would grow, and gradually they would use less paper, more data bases, more standards, and so on. However, this predictable evolution cannot be taken as a goal per se. People are not opposed to it, they just do not see any reason to make their work more cumbersome. What is needed is some evidence that improvement does occur and could continue to occur, in proportion of the additional effort required by the introduction of computer "aids".

#### **TEAM TOOLS**

The temptation to overdesign is a constant plague in the computing field. When we are designing for office people, we should keep in mind that very simple and unassuming tools have a better chance to stand initial trial, and eventually to become permanent fixtures.

Summarizing the concepts discussed so far, task pushing appears as a compound of the following ingredients:

- tracking:        what happened,
- scheduling:    what should happen,
- pushing:        make things happen,
- visibility:     make sure all and only the right people know.

Acceptable tools should fit in a paper world by gradual adjustment.

Our user model consists of a group of ten to twenty people working in the same organization, but located in different buildings. We consider them as interdependent peers. They meet formally once a week, but may skip meetings. Minutes are distributed, but may be delivered after the next meeting. Internal mail takes one to three days. Secretarial help is available, but introduces an additional delay of one or two days. What tools would they like, or tolerate, to improve their interactions ?

#### Tracking

Events are reported by memo, or verbally at weekly meetings. People take their own notes, and the minutes contain a weekly summary report. In addition, some events are reported to only some people without being mentioned to the whole group.

To the extent that no significant additional secretarial work would be required, it could help if some memos were also distributed as computer messages.

Tools: word processors or personal computers with access to a message system, for memo composition and distribution; terminals, personal computers or word processors to get soft and hard copies.

Minutes of meetings could be entered in a shared data base, so that they become raw material for people who want to update their own tracking records, including events not disclosed to everyone else.

Tools: same as above, plus software for record keeping.

#### Scheduling

Tasks are assigned by memo, or verbally, following discussions in the weekly meeting or elsewhere. Minutes of the weekly meeting contain a summary of assignments and deadlines.

Again, entering minutes in a shared data base would help keeping personal records.

Tools: same as above.

#### Pushing

Weekly meetings are the place for reminding or checking with people one has not been able to reach by other means, or who do not seem to have got the message.

Significant help would result if everyone were given, or able to produce, a list of things that should have been done by now, or should be done by next week, or soon. Manual preparation being somewhat tedious, they could be compiled from the data base of weekly summaries, sorted out and printed. This facility could be offered to the whole group as a corporate service. Optionally, everyone could include personal records to get personalized lists.

Tools: same as above, plus software for entering formatted summaries and personal records, and prepare lists.

Memos and messages could be sent off automatically to relevant people when some predefined conditions are met, e.g. burning deadline, task finished, rescheduling or cancellation.

Tools: more facilities in the software formatting entries; printing and mailing service for computer generated memos; something to call attention on pending messages, e.g. warning light, pager, signaling tone or voice prompting on the telephone line.

Reminders and inquiries could be placed by telephone calls. Lists of calls could be compiled from the data base, either by browsing through, or on predefined conditions.

Tools: same as above.

Reminders could be put in a voice box, which people could not miss hearing, as they would be prompted whenever they pick their telephone handset.

Tools: voice message system coupled with PABX.

### Visibility

In the context considered here, visibility is not affected by computer tools, and it should not be. Indeed, by assumption, not everyone in the group is using computers, or at least not routinely enough to rely on it. Therefore, things that should become visible must be distributed through traditional channels, such as paper, meeting or grapevine. On the other hand, computer leaks could harm. As shared records and personal records are kept separate, there is nothing to leak. Shared records are accessible by the whole group, hence visible, and distributed on paper. Personal records are invisible as far as computers are concerned. Then, people can finesse their level of visibility as they wish, as usual.

If at a later stage some computer tools were commonly accepted to the point of being taken for granted, then we might consider levels of visibility enforced with computer mechanisms. But we are not quite there yet in the office world.

There remains the typing. Who would key in entries in the data base and memos and so on ? Should we say, typists, secretaries ? Most likely, this is what is going to happen, as usual. With time, some people will do their bit, not soon though. The next generation of managers will see keyboards as ball points.

As one can guess, the development of software tools as considered previously is hardly a challenge, provided that the user interface is designed to minimize typing and useless effort. On the other hand, one should expect frequent adjustments taking into account users reactions. This is also a way to attract their interest in demonstrating responsiveness to their suggestions.

### IS THIS RESEARCH ?

Graphic systems and windowing and data bases and so on became products after years of research. Calculators and word processors and spreadsheets and CP/M just happened. The environment discussed in this paper presents similar characteristics: there is no new problem to solve, no new technique to invent, we only need to apply the right technique to the right task and keep the ball rolling in a real environment. Whether this resorts to research or mayonnaise is not clear. Anyhow, interested readers may get a flavour of ongoing research work, and a bibliography, in (1) and (2).

### REFERENCES

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