Experiences of an electronic mail vendor

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Computer Message Systems (CMS) are a relatively new phenomenon (5-6 years) and are the result of work done in the Time Sharing Services industry, computer networks, and Advanced Research Projects Agency R&D activities. Computer Message Systems use the computer as an integral component of human communication.

Using a computer terminal, the CMS performs or aids in message creation and distribution, electronic filing and retrieval, and message reading.

Computer Message Systems are a unique form of electronic mail because their use results in the direct linking of two or more people wishing to communicate. Up till now there were three means of such direct communication: face to face meetings, the mails, and the telephone.

It is interesting to note that two of these so-called “direct communications means” (mail and phones) have been so corrupted in the business world with administrative overhead that it seems rarely plausible to use the term direct (witness the secretary opening/copying and distributing mail and placing phone calls for the manager). Noting this, let’s review some specific problems with these three traditional means of direct communication (in particular telephonic communication) and relate them to CMS.

THE PROBLEM OF LOCATION

If I want to communicate with Mr. X by phone, mail, or meet with him, I have to locate him somewhere on the face of the earth. This is often very hard to do and, as the modern business environment becomes more and more mobile, it becomes harder and harder. Where in the world is Mr. X?

If the time is during normal business hours, one assumes he is at his desk. But is he really? A lot of the time, it turns out, he is not. He is in a meeting down the hall, he is in the men’s room, he is in transit to another office, or perhaps he is not in the building at all. He may be sick, out to lunch, making a customer call, in a car, an airplane, or the Lord know where.

Furthermore, I may want to talk to Mr. X outside of working hours. This is even harder. He may be at home, at relatives, out to dinner, or at the movies. One thing is for sure. In today’s fast-paced world, Mr. X is very hard to find.

THE PROBLEM OF INTERRUPTION

But our problems have only begun. Suppose I know where Mr. X is, that he has a phone nearby, and that the phone is not busy. What makes anyone think Mr. X will be willing to be interrupted? The chances are that he will not, and I can’t say I blame him. I do the same. A lot of the time I’m in a meeting, because I’m doing some work that I would like to continue doing. (Of course, for me even to say I’m in a meeting requires an interruption in my work.)

So what happens? I call Mr. X and leave word. He calls back and leaves word. I call him back and leave word. He calls back, etc. (This game is called Telephone Tag.) I have known cases where this has literally gone on for weeks. By the time I got through to the other person, I had forgotten what I wanted to tell him.

Let me give you some statistics of my own use of the phone. I did a study and discovered that, of the calls I placed, only 26 percent of them went through on the first try. This means that on the average I have to place almost four calls in order to get a single one completed successfully.

What were the problems? All kinds. In 38 percent of the unsuccessful cases, the person being called refused to be interrupted. In another 38 percent of the cases, the number didn’t answer (most of these were internal calls). In 14 percent of the cases, the called number was busy, and the remaining 10 percent represent miscellaneous problems such as the line being lost before the called party answered.

Altogether, a great deal of aggravation.

THE PROBLEM OF TIME ZONES

So far we have been assuming we are communicating within the same time zone. But what if we’re on the East Coast calling the West Coast? Let’s assume that business executives work 9 to 12 and 1 to 5, five days per week. That means that at best, a manager is in his office 35 hours per week. But if two managers are on opposite coasts, they are simultaneously in their offices, at best, only 15 hours per week. As we have seen, it’s hard enough to reach anyone on the phone given 35 hours to try in. When the window is reduced to 15 hours, the problem is roughly doubled.
And what happens if we’re in New York trying to communicate with Tokyo? Now the “telephone window” has shrunk to zero. There is simply no time at all during working hours that one manager can hope to reach another.

THE PROBLEM OF RECORDS

When you use the phone, there is no record of who said what to whom when. For many business purposes, this makes the call virtually useless. In my own case, I have long ago gotten into the habit, after all but the most trivial calls, of picking up my dictating machine and dictating the substance of the call. The dictation belt goes to my secretary, who types it out, and eventually sends me the typescript. I then scan the typescript, make corrections if necessary, and put it in for filing.

In short, one phone call generates a dictation task and an editing task for me, as well as a typing task, a duplication task, and a filing task for my secretary.

THE ONE-TO-MANY PROBLEM

In the business world, one person often wants to communicate with many people. Yes, it is possible to set up a conference call on the phone. But it’s so hard to set up and it’s so unsatisfactory that it’s very rarely done in practice. Typically, if a business man wants to communicate with a group, he gives up on the phone and has a meeting or writes a memo.

THE PROBLEM OF INFORMATION DENSITY

The phone shares a problem with all speech communication: the information density of speech is very low. Generally, the electronic transmission of speech requires about 60,000 bits per second. These 60,000 bits of speech carry about the same information as 15 characters of written text. (Try it—in one second you can read out loud a passage of about 15 characters).

But you can transmit 15 characters directly as text by transmitting only 120 bits of information, rather than 60,000 bits of speech. If you insist on transmitting speech you are transmitting 500 times too many bits. And all these bits have to be paid for. In a very fundamental sense, speech is an uneconomic medium of communication.

THE PROBLEM OF LONG-WindedNESS

My final problem is that the conventions of our society require us to be long-winded on the phone. One must enquire about the other person’s health, or the health of his family. How’re the kids, George? There is the obligatory discussion of meteorological conditions. Pretty chilly out today, wouldn’t you say? When I measure the length of my own phone calls, I was surprised to find that my average call took 4.8 minutes.

It is almost impossible to get someone on the phone and say, “This is Jeff, your plan is approved,” and hang up. That would only take 3 seconds instead of 4.8 minutes. But our social conventions won’t allow it.

THE COMPUTER MESSAGE SYSTEMS

Let’s now turn our attention to CMS. CMS do not require you to locate anyone. They never interrupt. Time zones don’t matter. All communications are automatically recorded and filed. One message can go to multiple recipients. Computer Message Systems are based on transmission of text, which has high information density, rather than transmission of speech, which has low information density. Messages are short rather than long-winded.

In fact, now I believe one can appreciate this definition of CMS. “Computer Message Systems are a means to communicate and record communication in a timely manner without locating or interrupting the recipient and without undue administration.”

I concur with some “experts” who predict a doubling of the CMS business in the U.S. over the next 3 years. During that time, most major corporations and government agencies will have accomplished some pilot evaluations of CMS and some will even begin full scale implementation. Interestingly, the real movers in this market may be in the secondary tier organizations where a bolder attitude prevails.

In the longer term, CMS may earn their places as an assumed means of managerial communication, once again establishing control of person to person communication in the rightful place of the individual doing the communicating.

Prior to this happening, though, there is the necessity to address certain real or imagined problems with CMS.

The organizational concern

The first of these problems is how does the Computer Message System fit in the organization. Or, who is in charge here?

This, of course, leads us to the debating candidates.

MIS—Telecommunication services—and administrative services. Certainly there are strong cases for all three but in the end I doubt that it really matters. What does matter is a corporate level of commitment (in terms of funds and moral support) to whoever is assigned the responsibility. Beyond this is the overpowering requirement that CMS be understood as a service entity allotted nearly no margin of error. The key to success is response to demand. A rule to heed is that the Computer Message System is only as good to the user as his last experience with it. Note that the lack of this response to demand has been the very downfall of the mails such that today nothing important happens by way of the mail. Would you bet your job on a USPS delivery?

The cost concern

A second immediate problem we are all faced with is the cost justification hurdle. Anytime anybody needs to kill anything this is the mode of attack.
Before venturing on a path to establish an air tight cost justification model for CMS, I maintain it is important to establish relative affordability. So let’s compare some unit costs:

First, let’s compare the COMET Computer Message System and the telephone. A three minute telephone call from Boston to L.A. during business hours costs $2.44 plus tax, while a measured 16-line message to be composed, edited, filed, transmitted—and in L.A. read and filed—costs $1.07 using the COMET Service Rates.

Next, let’s compare COMET and a memo or letter. According to Dartnell Institute, the cost of producing a single business letter is $4.47; others say the cost is as much as $18.00.

Finally, let’s compare COMET and TWX. A recent review of a company’s TWX service indicates that what costs $20,000 a month in TWX services would cost only $13,000 using COMET.

These cost comparisons provide proof of affordability; however, it should be noted that when one considers CMS value added services, the case becomes even clearer. Still, we have to go beyond merely comparing costs and, for this, let me suggest various “Justification Scenarios” which may serve to be more important as they point to individual productivity improvements.

One is span of control, the idea being that the number of managers or supervisors could be reduced and the work remain constant. A second area involves reducing the extent of interruption thereby increasing the amount and value of work. Another scenario could be based on reducing supporting shadow functions around communications. An opportunity in some applications centers around the speed with which information is transferred. Finally, but perhaps most importantly, is time savings.

Let us use the last of these (time savings) and follow the scenario for possible cost justification.

In my view, the primary cost benefit of Electronic Mail is in the executive time which is saved. What is the cost of managerial time? Take a $50,000 a year manager. Add 30 percent overhead and assume he worked 1800 hours per year. It then turns out he costs his employer $0.60 per minute, or just one cent per second.

What are the costs of Electronic Mail? You can subscribe to an Electronic Mail Service (use of a time-shared central computer that runs the Electronic Mail program) for $60 per month, and you can rent a terminal for $90 per month. Hence, you are in business for $150 per month per subscriber. If a company buys an in-house Electronic Mail system, including terminals, and shares the terminals among a reasonable number of people, the cost can drop as low as $20 per month per subscriber.

But let us use $150 as an upper bound. Now, if our hypothetical executive can save just 12.5 minutes per working day through the use of Electronic Mail, he will pay for his use of the Electronic Mail service. If we are talking of an in-house system, 12.5 minutes per day will pay for his use of the system many times over.

In fact, it is my impression that an Electronic Mail system saves a manager not merely 12.5 minutes per day, but many times that amount. Take my own case. On an average working day I deal with 24 messages (I receive 14 and send 10). The time spent in doing that is 16.4 minutes. If, instead of using Electronic Mail, I used the phone for these 24 messages, considering that my average phone call takes 4.8 minutes, I would be spending 1.9 hours on the phone. I would therefore waste about 1.6 hours per day. For our hypothetical manager, this would cost $58 per working day. Over the course of a month, he would recover the cost of his use of an Electronic Mail service seven times over. If we are talking of an in-house system, he would recover the cost fifty times over.

(The costs of Electronic Mail discussed above have not included toll charges for telecommunications—Telenet and Tymnet. In comparing the cost of Electronic Mail with the cost of the phone, we can consider that toll charges are roughly equal in the two cases. If anything, since Electronic Mail interactions are so much shorter than phone calls, the comparison would probably widen the gap in favor of Electronic Mail.

It should be pointed out that our cost analysis so far has taken account only of the manager’s time in reading and writing messages as compared with talking on the phone. It has given no weight to the fact that, on the average, each phone call has to be placed four times, to the fact that if the executive wishes to have a record of the phone call he has to dictate or write it out, to the fact that Electronic Mail does not disrupt him many times a day, to the fact that he has no time zone problem, etc. If we took these additional matters into consideration, the cost advantage would be even greater.

But ultimately, cost savings may not be the real point. Perhaps the key is that the typical manager is overworked, always short of time, and constantly hassled. Electronic Mail provides relief. It makes him more efficient by organizing his communications and allowing him to be master of his own time. I would be very surprised if Electronic Mail did not become the communication standard for the business person in the next decade. It’s simply a better way to live.

The human behavior concern

A third issue of present concern is that of human behavior. Past experience has taught us a lot. Although there is plenty of room for improvement, many vendors are skilled at employing human engineering and growing numbers of users effect change through understanding and involvement.

Some particular human behavior problems CMS encounter are: the satisfaction curve, command language and typing.

The satisfaction dip, also termed buyer remorse, occurs when there is initial excitement surrounding this brand new thing, followed by a realization of the limitations of the system (disappointment) and, finally, a rise to a stable realistic satisfaction level.

The user command language problem is the responsibility of the vendor or designer. Failure to underestimate the needs
for simplicity of language, friendly response, and natural or expected flow surely dooms the CMS.

Finally, is there a problem in typing? Surprisingly little. One executive states he would be absolutely incapable of typing a business letter, but has no trouble with Electronic Mail. Why is that? I think there are three reasons. First, the messages are short (if I want to send a long one, I ask my secretary to type it for me from her terminal. But for ordinary messages, it’s much quicker for me to do it myself). Second, the system helps by providing editing facilities that make it easy to correct errors. Third, for some reason that I don’t fully understand, it doesn’t bother me to send out a message with a couple of typos. (By contrast, I would not tolerate a memo to go out over my name with even a single error.) Evidently the psychology of the Electronic Mailer user makes him very relaxed about such cosmetic issues.

The technology concern

The final issue of concern I will address is that of the technology necessary to support CMS. Many of the technological pieces are obviously ready (witness progress in the terminal arena, packet networks, and the general cost performance trends of hardware). But underlying these obvious accomplishments is the realization that providing Computer Message System capabilities to a group of 1000 is one thing; for 100,000 quite another. At the latter user population level, distributed data bases which afford reliability, response, and the true technical challenges surface and they are concentrated in solving traditional data base problems.

As an illustration of the type of problems, let us note that when the user population exceeds 100,000 names, the probability of a name ambiguity for an addressee is over 70 percent. In contrast, below 1,000 addressees, the problem hardly exists.

To provide CMS for these large populations requires sophisticated new software techniques applied to the areas of distributed data bases which afford reliability, response, and reduced communication costs.

And, of course, the thousands of users of a CMS will be generating thousands of messages for storage and retrieval. It is encouraging to note that these supporting technological building blocks (that is, a distributed data base system and large scale storage and retrieval capability) have been accomplished on the ARPANET System. The latter is a system called Datacomputer which encompasses 3.2 trillion bits of storage (this is equivalent to 1500 IBM 3350’s) and allows users to store and retrieve messages by any word or combination in the header or text. The former is a system entitled SDD-1, which is the first working distributed data base management system in the world.

CMS SUCCESS STORIES

Nevertheless, CMS is beginning to make its mark, and to illustrate this, I will outline some CMS user experiences and glean sensitive factors for implementation consideration.

The first case is a Fortune 100 company that produces minicomputer systems and peripherals. They have an in-house Computer Message System that consists of a PDP 11/70 with 300 megabytes of on-line storage supporting over 700 users via 29 lines. For historical background; this Computer Message System has been in operation since January of 1978. For the active users of this system, the average number of daily logins is three, while average daily time logged in is 25 minutes. The user population profile is heavily weighted toward managers and professionals. Use of this Computer Message System includes broadcasting of information, information inquiry/response, task assignments, follow-up on task assignments, requests for action, status reports, meeting agendas and/or minutes, follow-up on conversations, and informal discussion of issues. As a result of its use there has been a decrease in the number of phone calls as well as the number of interoffice memos, while the number of meetings remained the same. Finally, the users have noted a productivity increase.

Our second success story is a Fortune 100 conglomerate in the communication and electronics industry using CCA’s COMET time-shared service. This system consists of backed-up 11/40’s with 250 megabytes of on-line storage. This account has been active since April, 1979. It places the number of subscribers at 150 while the activity level is again placed at 2-3 logins per user per day. The user profile chart indicates that managers and executives comprise 75 percent of the total user population, with salesmen at 10 percent, technicians at 5 percent, and office and clerical workers at 10 percent. The uses of this Computer Message System include broadcasting of information, information inquiry/response, task assignments, follow-up on task assignments, requests for action, status reports, meeting agendas and/or minutes, follow-up on conversations, and informal discussion of issues. The results of its use show, once again, a decrease in the number of phone calls as well as the number of interoffice memos, while the number of meetings remained the same, and the users’ productivity increased.

A third success story is that of a multinational oil firm also using the COMET service. The account history indicates that the Computer Message System has been in use in this area since March, 1978 with the number of subscribers at 50 and the activity level at 1-2 logins per users per day. The user profile, again, is weighted heavily in favor of managers and technicians, with managers at 43 percent, engineers at 4 percent, technicians at 40 percent, and office and clerical workers at 13 percent. The account applications for the Computer Message System have been in personnel (labor negotiations), finance, project control and inventory control. The results are consistent with a decrease in the number of phone calls, a decrease in the number of interoffice memos, with the number of meetings remaining the same and user productivity increasing.

Common characteristics of all these success stories are: a high level of management use and support—the CMS is solving a real communication need, a critical mass has been achieved, and there has been a reasonable time of experience.

The bottom line lessons for anyone implementing CMS are to obtain top level buy-in, use a real application, use the complete application (mass), and give it enough time.
In conclusion I will leave you with this. You have seen and heard and discussed Electronic Mail (EM), and I hope we can keep focused on the importance of all this. It is important for us as a nation in the face of a lagging economy and this fact is centered around the need for office productivity improvement. It is important for your organization because EM will allow it to run better and leaner, capture more market share, run higher profits, hire more capable people. This is especially true for those organizations that recognize the opportunity and seize it.

Finally, it is important for you and me because a more successful economy means better more plentiful goods, and improved company performance means better pay and benefits. Do not underestimate the value Electronic Mail can play in your life.