Electronic mail

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In the late 1960s computer service bureaux and multinational organisations developed techniques enabling them to transmit computer data from one point to another over the telephone network using expensive private leased lines. The computers cost over £100,000 and had to be housed in specially air-conditioned buildings. Today it is possible to carry in one's briefcase a more powerful computer costing only a few hundred pounds, capable of transmitting data from virtually anywhere in the world over the public telephone network - even from a public call box.

Data are transmitted by converting electrical data signals from the computer and converting them into tones which may be sent down the telephone line by a device called a 'modem'. It also takes incoming tones from the other computer and turns them back into data. Modems can either be of the 'acoustic' or 'direct connect' type: the former has a pair of rubber cups into which the telephone handset is placed, while the latter is connected directly to the telephone line. Many people prefer the acoustic type because they are easily portable and can be used from virtually any location.

It is the modem that determines the speed of transmission within the limits of the band width used by the telephone, which is from 300 to 3.3 kHz. Speed of transmission is expressed in 'bauds'. A 300-baud modem can transmit data or texts at approximately 30 characters per second, which is equivalent to 1,000 English words in 3.3 minutes. A 1200-baud modem enables the transmission of the same length of text in 50 seconds. A 300-baud modem will cost you today anything between £50 and £70.   A 1200-baud

modem will be in the order of £300.

Transmitting directly from one computer to another in this way is referred to as 'point-to-point' communications. Two computers, each using a communications program which is generally an asynchronous one and their respective modems (which must transmit at identical baud rates), exchange data over the line (Figure 1). If both computers are of the same make and model the information exchanged will be identical in content, format and layout. It would make life so much easier for everyone if we all used the same machine but manufacturers have determined that we don't, and we can expect a bewildering variety on the market.

One of the most recent advances in data communications, and for me the most exciting, has been the introduction of what is known as 'Packet Switching'. Packet switching is simply a way in which data are transmitted over long distances at very high speeds using advanced technology. Information is transmitted at speeds in excess of 4,800 characters a second in segments referred to as 'packets'. A packet consists of 64 characters; however each packet requires identification, which uses up a certain number of these characters, so in terms of text transmission it is better, for practical purposes, to assume 32 characters when calculating speed and cost of transmission.
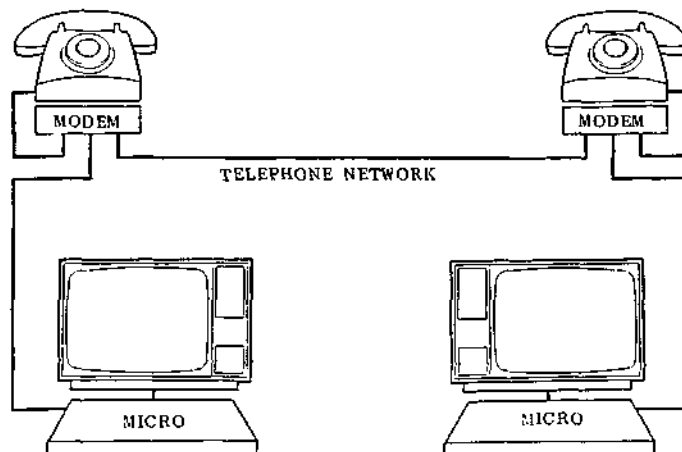

Figure 1.   Point-to-point communications

The difference between using packet switching and direct dialling is that in direct dialled text transmission, one is supporting the full telephone charge rate, which can make it very expensive over long distances. There are other considerations to be taken into account, such as the risk of transmission errors resulting in loss of data etc. This risk does not arise with packet switching, and the method of charging is also different. When you transmit data using the packet switching network, the cost is determined on the amount of data sent in conjunction with the time of connection rather than on the distance. For example, to phone from London to Paris to send information at 30 characters a second will cost £2.20 to transmit 1,000 English words; doing the same over packet switching would only cost 40.5 pence.

In electronic mail systems, instead of transmitting the information directly as in the case of 'point-to-point' communications, data are sent to a central computer (Figure 2). These computers can be likened to an 'electronic mailbox', all users having their own personal mailbox, or electronic 'in' and 'out' trays. When users 'sign on' or access the central computer, they are given a list of mail messages that have arrived since their previous use of the network. By use of simple commands, these items can be read, deleted, saved in files or downloaded into the user's computer.

The advantage of such systems is that users can act independently of each other, transmitting information when they want, as well as having a choice of baud rates.

Recent developments have made it possible to add extra facilities or added-value services to the basic electronic mail concept, and amongst these is access to the telex network. This makes it possible, using a £250 electronic typewriter and a £70 modem, to send and receive telexes from a hotel bedroom or even a public callbox.

Computer service bureaux were the first to develop such facilities in the late 1970s for their multinational clients who saw it as a way of speeding-up and improving inter-company communications. Some companies, such as the First National City Bank, make extensive use of electronic mail, having over 1,500 mailboxes. As *a* result information can be disseminated automatically throughout the organisation in a matter of minutes regardless of the countries in which the branches might be located. But electronic mail is not just for large organisations, it is a very practical tool, well within the budgets of independent translators and small businesses.

The example of an electronic mail session in Figure 3 illustrates the simplicity of commands. To make it clearer, text input by the user has been underlined. Accessing an
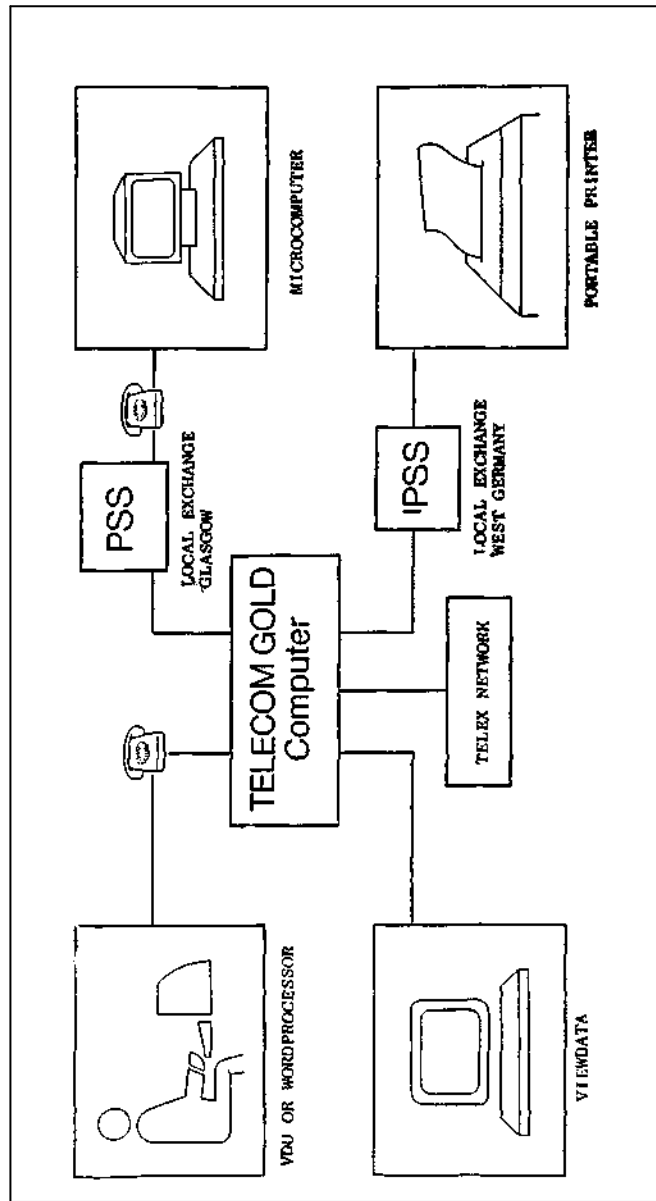
Figure 2.   Electronic mail network

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Telecom Gold Network: For assistance type 'HELP LOGIN'
at the prompt 'PAD>'
This is pad 27 line 10 speed 300
PAD>CALL 84
*** Call connected
Primecom Network 18.4K System 84
Please sign on
>id txt001
Password: XXXXXXXXX
TELECOM GOLD Automated Office Services 18.4k(84)
On At 15:05 16/11/84 GMT
Last On At 15:00 16/11/84 GMT

Mail call (2 Read, 1 Unread, 2 Read express, Total 5)
>MAIL
Send, Read or Scan: READ UNREAD


        To: TXT001
      From: TXT002   Posted: Fri  16-Nov-84   15:03 GMT Sys 84  (4)
  Subject: TYPECRAFT
---More----
Iain telephoned to say he forgot to keep a copy for himself of the
scale of charges he sent you. Could you please mail him one back
asap.
Karin
Action Required: XXXXXXX
End of Mail
>MAIL
Send, Read or Scan: SEND
To: TXT002
Subject: TYPECRAFT
Text:
Still have one in my mailbox, so will forward it back to him
Robert
S.
TXT002  -- Sent
To: QUIT
>OFF
Off At 15:08 16/11/84 GMT
Connect Mins = 4
Compute Secs = 2/1
Mail call (3 Read, 2 Read express, Total 5)

END OF SESSION
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Figure 3.   Typical electronic mail session

electronic mailbox is a simple matter. You first dial a given telephone number and listen for a high-pitched tone, which is the signal to commence transmission by pressing the data button on the modem. It is enough then to send a couple of carriage returns down the line for a message to appear - either on the screen, if using a computer with monitor, or printed out if using a printer-type terminal - inviting the user to commence LOG-ON procedure.

Firstly, you need to check that you are connected to the network. On the system I use - Telecom Gold - there is not just one but four central computers linked together, so in order to be connected to the computer on which my mailbox is resident I type in 'CALL 84'. When I am connected to the correct computer, I am asked to identify myself, which I do by typing in the letters 'ID' and the number of my mailbox which is TXT001. Electronic mail systems have built-in security procedures to prevent access to the mailbox if the user's personal password is not given. It should be noted that this password will not be printed or displayed, and that, as additional security, it can be changed by the user as often as required, unlike the PINs (personal identification numbers) used in bank cash dispensers. Once I have given my password, the system will display the current date and time, as well as when I was last on the system. It will also indicate whether any messages are waiting to be read. If there are any messages waiting, I can choose to read them immediately or leave them in store for later. Or I can choose any other options available.

Although electronic mail systems differ widely in the range of services or features available, as well as in the method of charging, the more comprehensive ones offer facilities such as automatic display of waiting messages, selective reading of waiting messages (you can choose to read only mail from a specified person or having a given subject), etc. Some can offer you an automatic acknowledgement when your electronic mail message has been read by the person to whom you sent it. I have already mentioned the worldwide telex link, to which can be added access to international packet switching networks, making it possible to obtain information from databases in many countries. Some systems offer online information files, games, statistical, alpha-numerical and even spelling checking programs. It is even possible, in the United Kingdom, to be radio-paged when a message has been sent to one's mailbox.

Without a shadow of a doubt electronic mail has a lot to offer to all of us and it has already improved efficiency in hundreds of businesses. For independent translators it provides immediate and tangible benefits. No longer are they 'time and distance dependent', in that the farther

they are away from their potential clients the less the likelihood of receiving assignments. There are no statistics available about the average length of texts sent to translators in Britain, but an approximation based on my own experience is that they are around 2,000 words and are required within 48 hours of receipt. With electronic mail, when the translator's work is completed it can be transmitted to the client's mailbox at any time - day and night - in the sure and certain knowledge it will arrive. No more panics to catch the last post in the pouring rain!

Most electronic mail systems and the International Packet Switching network use a character code for data transmission. This is a seven-element code and is known as ASCII (American Standard Code for Information Interchange) or International Alphabet No. 5. A seven-element code enables the generation of 127 different characters, some of which, by international convention, are used to represent some, although not all, European language accented letters (Figure 4).

While this is adequate for some texts, it does not allow for the transmission of additional characters or word processor program formatting commands. Modern computers, terminals and word processors use an 'extended' eight-element code which has a 255 character set (Figure 5).

This discrepancy between the character set available on one's equipment and that which can be transmitted can be easily overcome by means of a program which 'translates' the required character or formatting command either into another 7-bit character or a pair of redundant characters for transmission - the reverse 'translation' being carried out on receipt of text. Alternatively, if you don't have to do it often, the search-and-replace feature of your word processor program will enable you to achieve the desired result prior to transmission.

In my office we have a CPT word processing machine, with an extensive character set and we can either choose to transmit an accented character together with its accent as a given ASCII value or to send the accent separately. There's a lot to be said for sending accents as separate characters.

It is now estimated that one billion electronic messages are being sent annually and an American specialist has been quoted as saying that he estimates that the figure will rise to 19 billion by the end of the decade.

The differences between the eighteen electronic mail systems in existence lie in the way they charge for their service, and in their target markets. To give but three examples, Telecom Gold is the UK part of the International Dialcom network which has eleven systems and over 80,000 mailboxes around the world. Telecom Gold itself has 16,000 users while Comet, another UK network with international

Figure 4.   International Alphabet No. 5

links, has a total of 15,000 mailboxes worldwide. Lastly, Easylink, a recent arrival on the UK scene, has 1,000 mailboxes.

On electronic mail systems you can either pay a monthly minimum charge or a one-off charge, which can vary from £50 to £100, or a combination of both. Some networks allow for a certain amount of access time in their minimum monthly charges; additional access to the networks is charged by the minute. On Telecom Gold, for example, the charge is 10.5 pence at peak rate (i.e. 8 a.m. to 7 p.m. weekdays) and 3.5 pence per minute at all other times. Assuming access to the computer at the 300 baud rate, a minute's access is equivalent to approximately 300 words.

It is possible to create files and store them on the central computer, in which case the facility may be free but offset by higher minimum monthly charges, or charged according to the quantity of data stored. The Telecom Gold rate is 20 pence per 2,048 characters per month. However, items of mail, whatever their length, can be stored for up to a month without incurring any charge.

When the electronic mail network offers access to the telex network, you can expect to be charged, in addition to access time, according to the number of characters in your telex message - on the Telecom Gold system this is about 5

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                TRANSMITTING ACCENTED CHARACTERS


   DECIMAL                              DECIMAL      CHARACTER
   VALUE    CHARACTER      SENT AS      VALUE

   242       UMLAUT         "   "        060     LESS-THAN SIGN

   243       ACUTE          "   "        091     LEFT SQUARE BRACKET

   244       GRAVE          "   "        093     RIGHT SQUARE BRACKET

   245     CIRCUMFLEX       "   "        094     CARET OR UPWARDS ARROW

   247       TILDE          "   "        126     TILDE OR OVERLINE

   147    C-CEDILLA (1/c)   "   "        125     RIGHT BRACE

   152       SZET           "   "        123      LEFT BRACE

   141      CODED C/R       "   "        092     REVERSE SOLIDUS


   ACUTE e                SENT AS      091 069

   ACUTE E                SENT AS      091 101

                            OR

     222                  SENT AS      091 069

     223                  SENT AS      091 101
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Figure 5.   Transmitting accented characters

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DECIMAL   CHARACTER    DECIMAL  CHARACTER

  146      C-cedilla (u/c)
  147      C-cedilla (1/c)
  148      Ø
  149      ø
  150      Æ
  151      æ
  152      Eszet ß
  158      ¡
  159      ¿
  161      Circumflex a        220    Acute a
  162      Circumflex A        221    Acute A
  163      Circumflex e        222    Acute e
  164      Circumflex E        223    Acute E
  165      Circumflex i        224    Acute i
  166      Circumflex I        225    Acute I
  167      Circumflex o        226    Acute o
  168      Circumflex 0        227    Acute 0
  169      Circumflex u        228    Acute u
  170      Circumflex U        229    Acute U

  171      Degree a            230    Breve a
  172      Degree A            231    Breve A
                               232    Breve u
  200      Umlaut a            233    Breve U
  201      Umlaut A
  202      Umlaut e            234    Tilde a
  203      Umlaut E            235    Tilde A
  204      Umlaut i            236    Tilde n
  205      Umlaut I            237    Tilde N
  206      Umlaut o            238    Tilde o
  207      Umlaut 0            239    Tilde 0
  208      Umlaut u
  209      Umlaut U            NON ESCAPE CHARACTERS

                               241    DEGREE
  210      Grave a             242    UMLAUT
  211      Grave A             243    ACUTE
  212      Grave e             244    GRAVE
  213      Grave E             245    CIRCUMFLEX
  214      Grave i             246    BREVE
  215      Grave I             247    TILDE
  216      Grave o             248    APOSTROPHE
  217      Grave 0
  218      Grave u
  219      Grave U
```

Figure 6.ASCII values of foreign language character set of
CPT word   processors

pence per 100 characters sent. When you consider that in the UK it costs around £800 p.a. to rent a telex machine alone, it requires little imagination to realise how many telexes could be sent for the same money from an electronic mail terminal. One of the factors contributing to the continuing explosive growth in the number of electronic mail users is unquestionably the telex facility.

Such is the appeal of Telecom Gold that many users have set up 'user groups' tailored to suit specific interests or common requirements, such as lawyers, music publishers and other special interest groups. Two examples of these are the Breakthrough Charitable Trust, which uses mailboxes on Telecom Gold's system to enable deaf users to communicate between each other, and, of special interest to all concerned with translation, is TEXTNET whose subscribers can select, locate and communicate with text-related service providers such as translators, translation agencies, typesetters, word processing bureaux, copywriters and editors, etc.

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