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**Online Options:
Needs and Benefits Study
for the
Combat Poverty Agency**

Susan O'Donnell
Brian Trench
Kate Ennals

**Dublin City University
School of Communications**

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Executive Summary

This research report for the Combat Poverty Agency reflects a movement by state and voluntary sector agencies in Ireland, the EU and more widely to explore how the new communication and information technologies can be used to improve interpersonal communications, disseminate information to the public, and share information on issues of social concern.

The preparation of this report included a review of Agency reports, a survey of Agency staff, a review of relevant published case studies on how the new technologies are being used by progressive organisations for strategic communications, and the development of new case studies in an Irish and wider European context.

The survey of Agency staff, on which the Agency information profile is based, found that the heaviest concentration of information exchanges takes place among staff and contract workers. External communications occur most frequently with community groups, and then with the general public and other government agencies. The staff's IT skills were adequate but there was a widespread reported need for more computer training. Agency staff members had an overwhelmingly positive response to the possible introduction of online technologies in the Agency.

A significant issue raised by the survey was the role of the Agency as either an active or a pro-active agent: the online technologies could be used to support existing communication networks or to encourage the creation of new online networks. Given the Agency's role in combating poverty and empowering people, it was suggested that the Agency could take the lead and use online technologies to provide an example to the community sector as well as provide support and information to the community.

The review of published case studies and the survey of Irish and other European organisations suggested that many of the new technologies could be used to enhance the Agency's communication and information processes. In particular, e-mail could reduce the exchange of paper documents both within the Agency and between it and community groups, the general public, and government departments and agencies.

However, the use of online communications for information exchanges will be limited to the persons and organisations who are themselves online. The Agency could well have a role to play in the growing debate, in Ireland and the EU, on how access to these new technologies could be broadened and how they could be used to promote social inclusion.

The report suggests Agency options for the adoption of online technologies, based on a phased programme beginning with the move to the new premises later in 1996. The suggested options include making available to all staff internal and external e-mail facilities concurrently with that move.

Contents

Introduction	1
Background	1
Research Brief and Methodology	3
Agency Information Profile	5
Information Exchanges.....	5
Specific Information Activities	8
IT Skills and Attitudes	9
Online Technology Management Issues	11
Case Studies	15
Description of Case Studies.....	16
Case Study Review: Online Technologies	20
Internal E-mail	20
External E-mail.....	23
Information Services: Users vs. Providers	27
Internet Mailing Lists	28
Bulletin Boards (newsgroups)	31
WorldWide Web.....	34
Online Databases	38
Automated Fax Services	40
Information Exchanges.....	41
With Community and Voluntary Groups	42
With the General Public.....	43
With the Government	45
Creating New Communication Networks	47
Online Technology Management Issues	48
Agency Options	52
Implementing Online Technologies.....	52
Computer Hardware Requirements	58
Online Technology Management Issues	60
Costings	61
Table 1: CPA Options for Implementing Online Technologies	63

Introduction

Background

The Combat Poverty Agency decided in late 1995 to investigate how online systems could meet its information and communication needs. This report is one outcome of that investigation.

The Agency's decision may be seen as part of an international trend by state sector agencies to explore the opportunities for information exchange through computer communications. An increasing number of state sector agencies around the world are applying the new communication and information technologies to improve interpersonal communications, disseminate information to the public, and improve access to public documents, records and other information.

In the past few years there has been a sudden rise in the number of government agencies in the industrial world which use Internet e-mail. Government agencies are also expanding their presence on the WorldWide Web, as is the European Commission. At the time of preparing the final draft of this report, the Irish Government put up its site on the Web, with home pages provided for many departments and agencies; the government proposes to continue to develop the site until all remaining departments and agencies requiring a Web presence are on-line. Plans are underway to give Internet e-mail addresses to all ministers and senior civil servants.

During the preparation of this report, the government set up a steering committee to develop a National Information Society Strategy and Action Plan. A public debate is beginning within Ireland - and is already more advanced elsewhere in Europe, notably within the European Commission - on issues of access to, and benefits from, the so-called Information Society. In announcing the new steering committee, the Minister for Enterprise and Employment warned against the danger of creating a society of "info rich" and "info poor" in Ireland, divided by unequal access to the new technologies.

The CPA and other agencies which work with community organisations could soon benefit from the growing online presence of the voluntary sector. A continuing DCU survey indicates that about half of the community development groups surveyed plan to connect to the Internet in 1996. The move to online communications by the voluntary sector is being encouraged by guidelines for EU-funded initiatives; for instance, groups receiving funding from the HORIZON - Employment initiative are required to use computer communications to submit project reports. Many of the HORIZON groups as well as other organisations in the voluntary sector are linking up to the Internet through Aonad, an Internet service provider with links to the commercial provider Ireland Online but run as a cooperative organisation.

For comparative purposes, it is worth noting that a survey of 250 of Ireland's largest companies in late 1995 showed that 44 per cent stated they already had an Internet connection and a further 35 per cent stated they would have one within the next 12 months. One of the service companies providing access to the Internet, Ireland Online, stated in April 1996 that 74 per cent of its "almost 12,000 users" are in the business community.

A Forbairt report, *Ireland, the Digital Age, the Internet*, focuses largely on commercial applications of online technologies but also draws attention to issues of unequal access.

In this context, it is worth noting that the voluntary and community sector has been very largely absent from the public debate thus far. The circumstances present not only opportunities for the Agency but also, perhaps, certain obligations in considering how online technologies can be applied to its own benefit, and to that of the voluntary and community sector with which it is so closely associated.

There is, however, a contradiction implicit in using online systems such as the Internet in an anti-poverty context. One analyst has noted "a contradictory position between the obvious potential benefits of systematically applying information technology to community development, and the prevailing market forces which makes the challenge ever-more important and difficult." Computer communication is made increasingly important by the growing information-intensity of community work. The falling cost of computers and Internet access make computer communication more affordable. However, the increasing dominance of private market forces on the Internet means that considerations of profitability may increasingly determine who gets access to the Internet and who is left out and what kind of services are provided on the networks.

Despite the rapid increase in the number of individuals, community groups and government agencies online, the Internet is still very much an elite communications medium. Clearly, even the most optimistic predictions for CPA's use of the Internet and other online technologies must acknowledge that telephone, fax and post will be the Agency's main external means of communications for many years to come.

The implications of using online technologies remain unclear for state and voluntary sector organisations. Almost all the existing research and analysis of online systems has been conducted on the private sector, with the aim of finding ways to increase competitiveness and profits. Research on the state sector has largely focused on how online technologies can improve delivery of information and services to the public. However, the CPA shares with the voluntary sector a communication ethos which, at least in theory, promotes non-hierarchical communication, sharing information with those with less of a voice, and creating participatory information strategies for community development. A central feature of this report is an analysis of the few published reports describing how the new technologies have been used to further a democratic communication ethos.

The Agency is well-positioned for implementation of online technologies. The survey conducted for this research report found an overwhelmingly positive attitude among Agency staff towards the possible introduction of online technologies. As well, the forthcoming move to new premises and, with it, the need to review the Agency's information technology infrastructure and services, presents an excellent opportunity for change. Indeed, the simple requirement to acquire new stationery, including business cards, gives urgency to decisions on introducing electronic mail and establishing a WorldWide Web presence.

Research Brief and Methodology

The brief for this research project included the following elements:

- A profile of the Agency's internal and external information and communications systems, including a staff IT skills audit;
- An analysis of case studies of online information and communication systems in relevant Irish, European and wider international contexts;
- A description and evaluation of relevant online resources, systems and technologies; and
- An outline of Agency options regarding adoption of online systems.

The research methodology included a review of relevant Agency reports, a survey of Agency staff, a review of relevant published case studies, and the development of new case studies in an Irish and wider European context.

The Agency reports reviewed for this study included:

- The Annual Report, 1994;
- The Consultancy Report on the Current Computer Network, 1996;
- The Report on the Assessment of Administrative Support Needs and Structures, 1996;
- The synopsis of non-staff library usage in 1994-95; and
- The 1993-95 Strategic Plan.

The survey of Agency staff was conducted during one week in March 1996. A brief questionnaire was distributed to 28 full-time and contract staff members; 20 were completed and returned (71 percent response rate). The purpose of the questionnaire was to identify patterns and modes of information and communication exchange by the Agency and to audit the staff's IT skills. In addition, interviews were conducted with nine key management and information

staff members. The purpose of the interviews was to identify management issues that might influence the use of online communications.

A comprehensive search for relevant published case study material was conducted by the DCU researchers. More than 40 published studies of online communications were reviewed; seven case studies were selected for analysis and the remaining articles served to inform the analysis. A survey based on phone interviews of 15 selected Irish and European organisations was conducted in March.

Agency Information Profile

Information Exchanges

Information and communication activities are the essence of the Agency's work. Its role is to advise the government, initiate debate and activity to combat poverty, provide information on poverty issues, and research and develop community activity through supporting pilot programmes and a grant aid structure. Combating poverty is an enormous brief within which communication and information activities are pivotal.

Our survey of Agency staff examined the most prevalent channels of communication, asking staff to rate in order of pre-eminence communications with other staff, with consultancy staff, with community groups, with the general public, with government agencies.

The survey found that **internal communications** among full-time Agency staff was ranked first, as the most "likely" kind of communication activity taking place. Communications with consultancy staff was ranked fourth. Most of the internal communications took place through face-to-face contact, through informal exchanges or meetings. Other exchanges among full-time or consultancy staff occurred over the phone or by post. Most of these exchanges were a mix of information provision or receipt, or resolving problems.

Information is also processed and exchanged internally from computer to computer. The Agency has a network server but the survey revealed that many staff are unaware of being on the network or do not know how to use it. This lack of understanding of the network operation could reflect a lack of strategic management in the use of computer technologies. The Agency's network server is currently loaded with software for Word Perfect, Tin Lib, Paradox and other applications. Agency staff members with network access and understanding can share work files. Sharing of files for comment, consultation and amendment represents a significant part of the Agency's work. However, the procedures for doing this on the computer network are somewhat ad hoc and insecure, not allowing users to keep track of the contributions of each user to shared documents.

Communications with community and voluntary groups was the second most "likely" communication activity for Agency staff. It was reported that most of these information exchanges took place on the telephone, with considerably fewer exchanges occurring through face-to-face contact, or by fax or post. Again, most of these exchanges were a mix of information provision or receipt, or resolving problems. Of the three, information provision was the most "likely" reason for the exchange.

According to CPA publications, a probable reason for these exchanges was discussion of issues involving pilot projects and the community development programme, grant aid, or general public information. The Agency is involved in

supporting and funding pilot projects funded by the Department of Social Welfare or the EU. In the period 1993-5, these included projects supported under the following programmes:

- The Poverty 3 programme;
- A three-year pilot programme of support for five national networks of disadvantaged groups;
- A pilot programme for disadvantaged young people;
- A three-year pilot programme supporting women's networks; and
- A Community Arts pilot programme.

The Agency also has a supporting role in the Community Development Programme set up by the Department of Social Welfare. The Agency supports Community Development Education and a training Grants Scheme. As well, the Agency supports the work of a large number of community groups by producing resource materials such as handbooks on a variety of subjects, providing quality training courses, producing publications and administering grant schemes to over a hundred groups. It seems safe to assume that much of the information disseminated in these exchanges is of a standard type which might readily lend itself to electronic storage and, possibly, electronic transmission.

Communications with the general public was the third most "likely" communication activity taking place by the Agency. Information provision was by far the most "likely" reason for the exchange, although some exchanges were a mix of information provision or receipt, or resolving problems.

According to Agency publications, the Agency's information and public education staff promote and develop the Agency's policies. There is a schools education programme, a publications service, a media section, a library and an information service.

The survey found that **communications with government agencies** was the fifth most "likely" communication activity (after communications with consultancy staff). Most of these information exchanges took place on the telephone, with considerably fewer exchanges occurring by fax or post. Face-to-face meetings were the least likely mode of exchange. Most of these exchanges were a mix of information provision or receipt, or resolving problems.

These exchanges were no doubt related to the Agency's advisory and policy role. The Agency reports to the Department of Social Welfare. The Agency has developed an advisory role with the Departments of the Taoiseach, Education, Enterprise and Employment, Equality and Law Reform, the Office of the Tanaiste, Area Development Management and the Arts Council.

The peace process and national anti-poverty strategy have been two major developments in the work of the Agency. Last year, two major policy submissions on these issues were published:

- *Bridging the Divide, a Medium Term Strategy to Tackle Poverty and to Promote Economic and Social Cohesion, Submission on the 1995 Budget,* and
- *Tackling Poverty, A Priority for Peace,* submitted to the Peace and Reconciliation Forum.

Nine other policy submissions were made to the government last year.

The survey found that **other information exchanges** - with members of the business community or private sector organisations, journalists or other media representatives, or with international bodies including EU agencies - occurred rarely. Communication with international agencies and the press tended to be restricted to the staff working within those fields (information or research and the Peace and Reconciliation project).

Of the four possible modes of communication cited in the survey - face-to-face exchanges, telephone, fax or post - the most "likely" to be used overall was the telephone; within the Agency, the most common mode was face-to-face although the phone was also frequently used. The second most "likely" form of communication overall was face-to-face exchanges. The third most "likely" form was the post, including both internal memos and external letters. Of the four modes of communication, the fax was least "likely" to be used.

The Agency's 1996 Report on the Assessment of Administrative Support Needs and Structures measured switchboard and reception activity; the finding was that daily telephone calls to the Agency averaged between 100 to 150, or 15-20 per hour, with 50 to 60 percent being put through and 20 to 30 percent involving messages taken. Post items into the Agency averaged between 40 and 50 per day. About 20 faxes were sent each day, representing a total of 70-80 pages.

From this survey, a number of pointers to possible application of online technologies emerge:

- Use of internal e-mail for 'phone calls received' messages.
- Use of internal e-mail for notice, agenda and minutes of group and staff meetings.
- Use of internal e-mail for sharing and editing documents.
- Use of external e-mail for exchanges with government and European Commission.

- Use of external e-mail for transmission of information sought by voluntary and community organisations, and by general public.
- Use of internal and external e-mail for collaborative preparation of policy submissions.

Other such pointers will emerge from our further consideration of the Agency's specific information activities and the staff's attitudes to, and skills in, information technology.

Specific Information Activities

The Agency's specific information activities are its publications, and its library and information service. An important part of the Agency's work is developing accessible **publications** on poverty in Ireland. The quarterly periodical *Poverty Today*, available free of charge, is circulated to a wide audience throughout Ireland and Europe.

Commissioning, promoting and funding research and policy on poverty in Ireland is central to the Agency's function. The Agency has numerous research and policy publications in print, including:

- 19 research and evaluation reports;
- 10 reports in the resource materials series; and
- 13 other publications including conference reports, policy statements and policy discussion papers.

There is a charge for the research and resource materials. The number of publications sold in 1995 was 1,204. Many other reports were disseminated free to target audiences. The *Poverty Briefing* series, available free of charge, summarises research data, findings and policy recommendations. Other recent publications activities included a 24-page newspaper supplement on poverty in Ireland produced jointly with the *Sunday Tribune*.

Another important information activity by the Agency is its **library and information service**. According to the synopsis of non-staff library usage in 1994-95, the CPA library is the only library in Ireland to collect systematically information on poverty and community development. The collection at that point consisted of 5,650 catalogued books and reports, 200 journals, compilations of statistics, government publications, 150 videos, and directories, abstracting and indexing bulletins. A unique library feature is its large collection of information files containing newspaper cuttings, journal articles and shorter reports. The report identified a major gap in the library's holdings as its lack of access to any electronic information either online or in CD-Rom format. The Agency plans to acquire a CD-Rom facility in 1996, allowing users access to materials available in this format. (The full text of more than 20 British and Irish national newspapers, including *The Irish*

Times, is stored in searchable form on the subscription-based online database, FT Profile; the full text of several 'quality' British newspapers is published quarterly on CD-Rom.)

The library handled about 550 visits in 1994 and figures indicated a 65 percent increase in 1995. However, most of the information and reference work was carried out over the telephone and by fax and post, and this work was not monitored. There is no charge made for the library service. A free photocopying service is available to library visitors. In 1994-95, approximately 26,000 photocopies were made in the library.

The most frequent library visitor was a student (43 percent, about half of whom were university students); the second most frequent visitors were members of the community or voluntary sector (32 percent). Many of the students were not conventional but attend adult education or other courses which did not have conventional university standard library features, and many were not very confident about using libraries and required some guidance.

IT Skills and Attitudes

The Agency has 18 full-time posts (20 people) and 9 consultancy posts, most not full-time (10 people), divided into four sections: Research, Administration, Information and Public Education, and Projects. Most of the staff are women ranging in age from mid-twenties to early fifties.

Information and communication activities are central to each of the four sections. The Agency's (confidential) 1996 Report on the Assessment of Administrative Support Needs and Structures found that the Agency's work has increased greatly in the last few years and the workload has become unwieldy. There is a strong ethic of "overwork" in the Agency, and the report recommended a re-evaluation of the way in which information and communication activities are structured in the Agency.

The survey conducted for this study found the staff's IT skills to be adequate although there is a significant problem of computer access and a need for more computer training. All staff used their computers regularly; most staff members used their computers "often," "constantly" or "very often."

Almost all staff members used Word Perfect 5.1 software for word processing; other software packages were used by a minority of staff members. Administrative staff use Propay and Lotus 1-2-3. Other respondents quoted Windows, McAfee Virus Scan, Microsoft Money, Lotus Smartsuite, Freelance, Ami-Pro and Tin Lib. The range of software includes at least two word processing packages and two spreadsheets.

No staff members surveyed considered themselves to have "excellent" computer competence, and only a fifth said they had "very good" computer competence. More than half of staff members said they had "good" computer skills, and the

remaining fifth were "coping." Almost all staff members surveyed believed they would benefit from more computer training on existing software packages. Almost two-thirds of the respondents were familiar with e-mail or the WorldWide Web; the remaining third were not.

The majority of staff members who responded to the questionnaire had access to their own computer but almost one-third shared a computer. Almost every staff member who shared had difficulty getting access to a computer. There are 24 PCs in the Agency, and a total of 18 full-time posts and nine, mainly part-time, consultancy posts. There would seem to be an adequate number of computers which makes the access difficulties of a third of the respondents difficult to account for.

The Agency staff members have generally positive attitudes towards information technology. The survey found an overwhelmingly positive response to the possible introduction of online technologies in the Agency. Of the respondents familiar with the online technologies, all but one believed that they offered potential benefit to their own work, and all believed they offered potential benefit to the Agency.

In addition to participating in the questionnaire survey described above, nine management and administration staff members were interviewed. The overall impression from the interviews was that there is a high level of commitment to the introduction of online technologies by management and administrative staff. As well, several of those interviewed believed that CPA staff members in general have a positive attitude toward new technologies.

Most staff interviewed did not believe there were any specific organisational pressures to going online, except for the need to respond to the presence of online technologies and not to be left behind. Aside from the issue of training and technical support, there were no major apprehensions expressed by the staff interviewed. The only fear expressed was unauthorised access to personal information.

Online Technology Management Issues

The survey revealed many attitudes and expectations toward online technologies which can be characterised as management issues. These included: the potential impact of online communications on the Agency's reputation, mandate and role; expectations regarding work practice and staffing implications; set-up, training and implementation issues; and procedures and maintenance.

Potential Impact on the Agency's Reputation, Mandate and Role

Staff members stated that online communications had the potential to enhance promotion of the Agency, by establishing a Web presence with information on the Agency, especially on grants schemes, forthcoming events, publications and library materials, and common questions and answers (or "frequently asked questions", FAQs, as they are known in Internet jargon) about poverty in Ireland. It was stated that by making Agency information available in an up-to-date format, the Agency's ability to act as a "pressure point" on the government would be increased, and the Agency's target audience would be broadened.

A broad question was raised concerning the role of the Agency as either an active or a pro-active agent, and whether the online technologies would be used to support existing communication networks or to encourage the creation of new online networks. Several staff members stated the Agency could be a model for online communications, setting the example for others to follow, especially regarding the Community Development Programme. Given the Agency's role in combating poverty and empowering people, it was suggested that the Agency could take the lead and use online technologies to provide an example to the community sector as well as provide support and information to the community in this field. Considering the context, mentioned in the Introduction above, of government initiatives to improve public access to official information by online means and of a developing national and international debate on the social implications of the so-called Information Society, there is a wide potential scope for the Agency to play a leadership role.

Some staff members interviewed stated that the Agency needed to improve its links and communication channels with rural community groups and similar agencies operating in the North of Ireland and Europe. The technology was seen to have the potential to establish these strategic online links and networks and to break the Dublin-centred image of the Agency.

However, a cautionary point was raised regarding taking on online technologies too quickly: it would not be a good idea for the Agency to buy into the technology for its own sake without clear strategic reasons, or without sufficient understanding, training and skills.

Impact on Research Activities

Regarding the Agency's research role, it was suggested that online technologies would improve communications with participants in existing research networks and assist communications with community groups regarding the grants scheme. Given that research institutions and universities are among the most visible and active users of online communication, it would appear to have significant potential for expanding the Agency's research contacts.

Work Practice and Staffing Implications

Many staff members stated that internal e-mail would result in more efficient internal communications, reducing written memos and telephone messages. Management and administrative staff stated that e-mail could improve internal communications, particularly the editing of documents, memo despatch, and sending simple information messages to colleagues.

The increased use of internal e-mail would mean increased exposure to documents in digital format. When the survey asked staff members if they preferred working with a document in paper or digital format, most answered that it depended on the document, with the remainder preferring paper. It should be noted that paper and digital formats are, however, not mutually exclusive; the same person may prefer to read and edit long documents on paper, but also be able to implement any changes on computer and to transmit electronically.

Many staff members stated that external e-mail would make external communications more efficient. In particular, e-mail would offer more efficient communications with government agencies, especially outside their office opening hours, eliminating the need for "telephone tag", leaving phone messages for another party and waiting for response. It was stated that e-mail would strengthen links with government agencies, with the existing national networks of projects funded by the Agency, also with the CPA office in Monaghan, rural community groups and other similar bodies. It was also stated that e-mail could make the Agency more efficient by reducing the time staff spent waiting to make contact or meet people.

A number of survey respondents stated that access to the WorldWide Web would offer staff members better and faster access to information at their own desks. However, concerns were expressed about the quality and quantity of information on the WorldWide Web as well as time required to access specific information. Concerns were also expressed regarding the possibility of information overload.

Set-up, Training and Implementation Issues

It was in relation to issues of set-up, training and implementation that staff expressed most concern, with all of the respondents stressing the importance of training on any online technologies introduced and on other computer software packages. Online technologies should be implemented carefully, with adequate planning, training, and not too-high expectations, it was stated. Staff further stated that access to e-mail should be available to all Agency staff and that therefore all staff had to appreciate what it was, how it worked, what its benefits were to them, and how to use it.

It was stated that a training programme should be planned to make sure online technologies would be used to their full advantage. The technology should be introduced on a phased basis, with a focus on staff involvement and training, in order to avoid having responsibilities and expertise located in individuals rather than in the organisation. Staff stated that training should not be simply once-off training but be on-going and systematic. It was suggested that the aim of training should be to allow staff to say: "I know and understand enough about how it works and what it can do to decide how, when and if it might benefit me in my work."

Procedures and Maintenance

Staff also identified the importance of establishing procedures which would be used by all staff members - particularly regarding file management, so that documentation would not get lost in the system.

A final issue raised concerned management and maintenance of online systems. In particular, concerns were raised regarding the resource implications of the technology.

A major concern regarding the introduction of e-mail was that of identifying the staff responsible for its maintenance and operation. It was suggested by several survey respondents that a staff member should be designated as being responsible for its implementation and provide support for staff on applications and procedures.

Similar concern was expressed regarding an Agency page on the WorldWide Web. Some staff wondered where the resources would be found to maintain a CPA Web Page. A key concern identified was the difficulty of ensuring that the information on the Web page was kept up-to-date. If information is not current, it may not be useful. It may be difficult to identify which would be the most relevant information at a given time.

Staff in the Information Section were keen to point out that online technologies were not simply an information tool alone and therefore not just the responsibility of that section.

Conclusion

Agency staff are very positive about the possible introduction of e-mail, one of the online technologies at issue in this study. They have high expectations that e-mail will reduce work loads, increase the efficiency and ease of communication and opportunities to communicate, and result in less paper wastage and better working practices. Their major apprehension, reportedly based on past experiences, concerns training. Staff want systematic and on-going training, extra staff resources to provide and oversee the implementation of online technologies, and better organisation of computer systems and software.

Their responses indicate, on the whole:

- A considerable unevenness in the implementation so far of computer-based technologies.
- A fairly well developed awareness of the opportunities and threats of implementing online technologies.
- A particular concern about the need for a systematic, planned programme for introducing online services, including, and especially, the designation of a (presumably non-IT-specialist) network administrator.

Case Studies

Introduction

This review of case studies was based on the best material published on the subject as well as the current experiences of Irish and European organisations with information and communications technologies. The organisations studied were selected because their circumstances and their use of the technologies were considered relevant to the Agency's situation. As noted earlier, more than 40 published studies of online communications were reviewed; seven case studies were selected for analysis and the remaining articles served to inform the analysis. In addition, 15 Irish and European organisations were surveyed for their experiences with online technologies.

Both popular and academic reports of new technologies tend to focus on "impacts" or "effects" which may only be partly relevant to the Agency's situation. People and social relations, not technologies, determine communication and information processes. The experiences of one organisation with communication technologies will never be replicated exactly in other organisations. The description and analysis which follow are intended to suggest options and guidelines for use of online technologies and to highlight some potential benefits and pitfalls, but not to predict how they would be used if adopted by the Agency.

It is expected that any online technologies adopted by the Agency will complement, and to some extent replace, some existing communication processes, including face-to-face meetings as well as telephone, fax and postal communications. While it is possible to analyze these existing processes and make some predictions of how the new online technologies could be best used by the Agency, it should be recognised that online technologies can open up new, and therefore unpredictable, opportunities for information exchange.

This section of the report begins with a brief description of the 22 organisations studied followed by a review of the specific online technologies used by some of these organisations. Next is an analysis of how these technologies are being used for three kinds of information exchanges: with voluntary and community groups, with the general public, and for new communications networks. Finally, there is a review of key online technology management issues raised by the case studies.

The technologies reviewed are the following:

- **Internal e-mail:** for exchanging messages between people in the Agency with computers connected to the office network.
- **External e-mail:** for exchanging messages between people in the Agency and people outside who also have an external e-mail connection.

- **Internet mailing lists:** an information service for the automatic exchange of e-mail messages between many people on a specific topic.
- **Electronic bulletin boards:** an archive of e-mail messages written by many people on a specific topic.
- **WorldWide Web:** the graphic information service on the Internet, used as a means both to gather and to publish information.
- **Online databases:** information on designated subject areas or from designated sources which can be accessed through a computer and modem, generally by subscribers only.
- **Fax server:** a network computer which sends and receives fax messages in digital format.

It will be noted that the review extends beyond the more usual representation of online technologies as electronic mail, on the one hand, and WorldWide Web, on the other. The attention given to mailing lists and bulletin boards reflects the authors' view that these technologies are, by comparison with the more widely-known Web, more readily established, more easily used, more capable of close definition by topic and user, and less expensive in staff time, cash and technical expertise.

Description of Case Studies

The 22 organisations studied are introduced here in three categories: statutory, voluntary and commercial. These organisations include the following:

- **Statutory (11 organisations):** the Agency for Personal Service Overseas (APSO); the Employment Equality Agency (EEA); the Environmental Protection Agency; Forbairt; the Radiological Protection Institute of Ireland (RPII); Enfo; Santa Monica City Council, US; the Secretary of State, Canada; US Department of Agriculture Extension Service; a US federal office; state-sector organisations surveyed by the US Office of Technology Assessment.
- **Voluntary and community (eight organisations):** Amnesty International, Irish Section; Apple Computer Community network, US; ARIES, Brussels; Centre for Research on European Women, Brussels; Dublin Inner City Partnership; European Women's Lobby, Brussels; Teachers' Union of Ireland; and the Telecommunications Policy Roundtable - Northeast, US.
- **Commercial (three organisations):** Newmarket Information Services; ComputerScope; and Slattery Public Relations.

Statutory

The **Agency for Personal Service Overseas (APSO)** has seven overseas offices and is expanding at headquarters and outside Ireland as a function of the Irish Aid programme. Its 31 employees all have PCs, linked by a LAN. APSO uses internal e-mail and has an external e-mail connection as well as WorldWide Web access.

The **Employment Equality Agency** is expecting to expand and to be redesignated as a Commission, operating under new equality legislation, and with a wider brief. The Agency's current staff of 14 all have PCs, linked by a LAN. The EEA uses a software package to share casework reports but does not use internal e-mail. They expect to implement external e-mail in 1996.

Enfo, the Irish government agency for information on the environment, provides access to its continually-building catalogue of publications and article references from public libraries around the country. The database is compiled and stored on computers at Enfo's headquarters in Dublin and can be consulted, using keyword searches, over dial-up links from libraries.

The **Environmental Protection Agency** was established in 1992 and moved to its present headquarters in 1995. The EPA has 130 staff, 120 of whom have PCs linked by a LAN. The staff is concentrated at headquarters in Wexford and there are also two sites in Dublin and six other sites around the country. The EPA uses both internal e-mail and external e-mail.

Forbairt's approximately 700 staff almost all have PCs, running on several LANs. The staff is located at two offices in Dublin and 8 regional offices. All PC users in Forbairt have access to internal and external e-mail, and the agency has a Web page.

The **Radiological Protection Institute of Ireland** is concentrated at Dublin headquarters and one other Dublin location, with small numbers at remote sites around the country. Its 45 staff all have PCs. RPII uses external e-mail, and plans to establish a Web home page.

The **Santa Monica City Council** launched the Public Electronic Network (PEN) in 1989, the first free-to-users, government-sponsored, interactive computer network in the US. The aims of the project included providing access to public information, assisting the delivery of city services, providing electronic forums that would increase the sense of community in Santa Monica, promoting the exchange of information on homelessness, and stimulating political action.

The Canadian **Secretary of State's** Disability Information Services of Canada (DISC) computer network was set up by the federal government in the late 1980s to facilitate exchanges among disabled persons and those working to improve their status. By 1988, the network had more than 850 users based in all the Canadian provinces and several users based in the United States. The focal point of exchanges on the DISC network was a set of more than 43 bulletin boards where users could exchange information.

The **US Department of Agriculture Extension Service** set up the Dairy-L electronic mailing list in 1990 to establish an information exchange network for professionals who advise dairy producers. After two years of operation, Dairy-l had 322 subscribers in 23 countries, including Ireland. More than 1,300 messages were sent during the two-year survey period; most were questions and associated responses.

A small, decentralised **US federal office** in a major American city was surveyed in the late 1980s just before implementing an internal e-mail system; the office was surveyed again about nine months later. The e-mail system was consciously implemented to improve productivity for managers and professional and technical specialists. The research focused on how internal e-mail affected how the staff conceptualised their work.

The **US Office of Technology Assessment (OTA)** prepared a report reviewing numerous state-sector initiatives in the American northeast which used computers to improve interpersonal communications, disseminate information to the public, and improve access to public information.

Voluntary and Community

Amnesty International, Irish Section, based in Dublin, is an international human rights lobby with Irish membership of approximately 10,000. Its number of staff varies; there are 14 PCs available, linked by a LAN. They do not use an internal e-mail system but can share documents over the office network. Amnesty uses Internet e-mail. It has used a fax server in the past and plans to re-install it shortly.

The **Apple Computer Community Affairs Program**, set up in the mid-1980s, provided computers, modems, training and support to 72 small community-oriented nonprofit organisations in the US. Almost half of the groups served poor and low-income populations.

ARIES, a European network of NGOs working in the 'social economy' field, has disseminated information via bulletin boards since the early 1990s. Among the constituent parts of ARIES are networks of workers' co-operatives and of citizens' action groups. Subscribers to the ARIES electronic information service (at 50 ecu per year) have access to 20 bulletin boards, some with closely defined topics, others more general.

The **Centre for Research on European Women (CREW)** in Brussels has 10 staff, all with PCs. CREW has access to external Internet e-mail and disseminates information through a bulletin board and a searchable database.

The **Dublin Inner City Partnership (DICP)** in conjunction with Dublin City University set up the Inner City Computer Network to introduce community organisations in the inner city to electronic information exchanges, using electronic bulletin boards and e-mail. The ICCN began to operate in June 1995.

The **European Women's Lobby** in Brussels has six staff, all with PCs. EWL uses external e-mail to gather and distribute information.

The **Teachers' Union of Ireland** has a membership of approximately 9,000 throughout the country. There are 15 staff and 14 PCs, linked by a LAN, in its Dublin headquarters. The TUI has an Internet e-mail link and a Web page.

The **Telecommunications Policy Roundtable - Northeast (TPR-NE)** has since 1994 been promoting the public interest in telecommunications policy in the US. The TPR-NE used the Internet extensively to bring together non-profit and public interest groups in the Boston area. In less than one year, their electronic mailing list had about 250 subscribers and the TPR-NE had established itself as the focal point for grassroots telecommunications policy activism in the Boston area.

Commercial

Newmarket Information Services, based in Dun Laoghaire, researches and publishes information on the construction industry. Its 14 staff all have PCs, linked by a LAN. They have Internet e-mail and WWW access.

ComputerScope publishes trade magazines and organises trade shows. Its 16 staff all have PCs, linked by a LAN. The company uses internal e-mail and external Internet e-mail intensively and has recently established an elaborate set of Web pages, including a searchable database of company information.

Slattery Public Relations, based in Dublin, is a corporate communications and public relations consultancy. Its 16 staff all have PCs, linked by a LAN, and all have access to a fax server for sending faxes directly from their PCs. Some Slattery staff have external e-mail and WWW access.

Case Study Review: Online Technologies

Internal E-mail

The review of internal e-mail begins with a brief description of the technology and focuses on its adoption by six organisations: four statutory, APSO, the EEA, the EPA, and the US federal office; one voluntary, Amnesty International, and one commercial, ComputerScope. Two of these organisations have not yet adopted e-mail but have been using software with e-mail capabilities which would facilitate the introduction of internal e-mail if required in the future.

The experiences of internal e-mail adoption by the organisations have been consistently positive; reported experiences included:

- No persuasion was needed to have staff use the e-mail system, a small amount of training was required, and there was little additional load on information systems management.
- There was a "very large-scale reduction" in the amount of paperwork circulating internally.
- After the introduction of internal e-mail, the staff considered mail to be more of a communication function, implying a greater sense of meaning in their interaction with others rather than just handling the mail.
- One organisation has come to regard internal e-mail as "essential" and as the organisation's "lifeblood."

None of the organisations surveyed reported overall negative experiences with internal e-mail. This technology would appear to be a good candidate for adoption by the Agency.

Internal electronic mail is a means of exchanging messages among persons with access to computers linked by an office network loaded with e-mail software. With e-mail, messages, large texts, and graphics can be quickly delivered across the office network and, if necessary, can be printed onto paper. The message exchange can be one-to-one or one-to-many.

To send a message, the user calls up the e-mail software on her or his terminal and prepares the message. Messages can be attachments of previously-prepared computer files. Once the message is sent, it will be instantly delivered to the intended recipient(s).

Recipients may be alerted to an incoming message by a noise and/or a message on screen. They have the option of replying to the message, forwarding it - perhaps with a comment - deleting it or storing it. When a user logs into the mail system she or he will be made aware of any messages not dealt with in one of these ways.

Research has shown that an internal electronic mail system achieves its full potential only when the entire staff of an organisation is connected to the network. With only a few staff members connected to the system, e-mail can only be used within this group, making it necessary to use conventional methods for exchanging information with other staff members. This may create a need to duplicate the messages sent, for instance by sending some messages by e-mail and others in printed memo format, and result in an increase in workload.

Generally speaking, organisations which have successfully introduced electronic mail have experienced beneficial changes in the way they work. Questions and responses have been quicker and more direct, messages have been shorter and less formal, and it has been possible to draw together new teams for group tasks which would previously have been more difficult to organise.

It is also possible to set up internal bulletin boards on the office network. An internal bulletin board is an archive of e-mail messages on a given topic which can be read by everyone on the network. Internal bulletin boards can be used as a central storage place for important or reference documents in digital format.

APSO installed ccMail, one of the most popular electronic mail packages, on its office network in early 1995. The decision to install e-mail was made as a matter of policy, or as the organisation's principal administrator put it: "This is something we must do." The choice of e-mail package and the installation were entrusted to the company which services APSO's computers. The existing network server was capable of accommodating the new service. There has been no noticeable requirement for additional maintenance; this continues to be carried out by an external agent.

Introducing ccMail in APSO took approximately one month, with staff being given an average half-day's training each. E-mail is used by all members of staff, including those who at first had been most reluctant to use computers. The result has been a "very large-scale reduction" in the amount of paperwork circulating internally.

The **Employment Equality Agency** does not have an internal e-mail system. It does, however, use the groupware product, Lotus Notes, to share casework reports. Groupware of this kind allows formatted documents, such as case histories, schedules, complex reports and order forms, to be passed from user to user on the network either according to an established routine, or arbitrarily. Each user's contribution and the progress of the document around the network can be audited. Notes was developed by Lotus, also the developers of ccMail, with the result that Notes can be configured on a network to include ccMail and thus to handle simpler messaging.

In its present status and size, however, the Employment Equality Agency has not found it necessary to use ccMail within Notes. With the expected expansion of the agency into a commission with doubled staff and a wider remit, this may change. Training of staff to use the current Notes system, including the word processing

package, Ami Pro, contained within it, took an average two days per staff member. Technical support is provided from external sources, including the Central Information Technology Service (CITS), recently renamed CMOD (Central Management and Organisation Division), based at the Department of Finance.

The **Environmental Protection Agency** offices and laboratories are concentrated at locations in Dublin and Wexford and those elsewhere are being linked to the organisation's network over recent months. The agency uses MS Mail, a Microsoft product, for internal e-mail spanning its two Dublin sites and the Wexford headquarters through an ISDN link between dedicated mail servers at its offices in Ballsbridge and Wexford.

This system services approximately 85 of the total computer-using staff of 120. The Cork laboratory opened last year and will be shortly linked into this system too. Other sites may be given dial-up access, using modems, into the mail system via Dublin or Wexford. A new server was installed in early 1996 which will accommodate a range of services, including electronic mail.

According to the agency's information technology manager, no persuasion was needed to have staff use the e-mail system. Most are technically trained and were familiar with the concepts of e-mail. A small amount of training was required. There was little additional load on information systems management.

Amnesty International, Irish Section does not have an internal e-mail system but through the Exchange facility on MS Office, a Microsoft suite of programs which includes Word, computer users on its internal network can share documents. Amnesty has recently doubled the capacity of the network and, with the planned expansion of other network-based services, notably a database of membership records, found it necessary to recruit, in March 1996, its first information technology specialist, albeit on a 12-month contract.

ComputerScope has had internal electronic mail (MS Mail for Macintosh) since 1988 and, according to a company executive, has come to regard it as "essential" and as the organisation's "lifeblood." All staff are required to use the system. Electronic mail is used, for instance, by the receptionist to distribute phone messages for staff away from their desks. This has replaced the post-its and other means of communicating short messages. The system has allowed the organisation to track messages in a way which a paper-based method could not allow. There has been some resistance from receptionists to having to key in messages.

As ComputerScope's event management activities have expanded, the limits of the internal e-mail system have been reached. And as part of the link-up with a US publisher for which ComputerScope is the local licensed agent, the groupware product, Lotus Notes, is to be installed on the (recently upgraded) network in a similar configuration to that used at IDG headquarters. Notes will replace both MS Mail (internal e-mail) and Eudora (external e-mail).

Only one of the case studies looked at the long-term effects of introducing internal e-mail. The **US federal office** study focused on a small, decentralised federal office which consciously implemented internal e-mail to improve productivity for managers and professional and technical specialists. The analysis focused on generic office activities, such as copying, collating, filing and searching for information, mailing, analysing, reading and meeting with others. A major finding was that before e-mail, the staff considered mailing materials as simply another way to manage information, similar to filing and copying. After implementation and exposure to electronic mail, however, the staff considered mail to be more of a communication function, implying a greater sense of meaning in their interaction with others rather than just handling the mail.

External E-mail

Following a brief description of external e-mail, this review of the technology focuses on the experiences of 11 organisations: five statutory, APSO, the EEA, Enfo, the EPA, and the RPII; three voluntary, Amnesty, the European Women's Lobby, and the Teachers' Union of Ireland; and three commercial, Newmarket Information Services, ComputerScope and Slattery Public Relations.

The organisations' reported experiences of external e-mail included:

- In some organisations, only one or several staff members have external e-mail access; in others, all staff members have access.
- Several organisations have used a move to new facilities or the upgrade of computer facilities as an opportunity to implement or extend external e-mail access.
- External e-mail is used for communications with similar organisations and information sources worldwide.
- Research staff use external e-mail for collaborative projects with partners outside Ireland and with university-based researchers.
- A reported benefit of external e-mail was better and more prompt feedback from journalists receiving publicity material and greater coverage for the information in the releases distributed by e-mail.

None of the organisations surveyed reported overall negative experiences with external e-mail. This technology would appear to recommend itself for immediate adoption by the Agency.

Whereas internal e-mail allows the exchange of messages between computers connected to an office network, an external connection allows e-mail messages to be exchanged outside the office. A now-standard way of sending external e-mail is via the Internet and the Internet form of addressing, eg. user@cpa.ie is now universally recognised where e-mail is used.

The Internet is an international federation of computer networks which use the same communication protocols; these networks can exchange information, most easily text-only e-mail messages, but also now complex files, including graphics, audio and video. E-mail is the earliest and still the most widely used service of the Internet.

The several means of connecting with the Internet, in ascending order of cost, complexity and capacity, are:

- A user-activated dial-up connection, via modem and conventional phone line, from a single computer to an Internet service provider (local examples include Ireland Online and Indigo);
- An office network connection, via network modem, set to dial the Internet service provider periodically, eg. hourly;
- A continuous leased line connection from office network to Internet service provider allowing multiple Internet sessions to proceed simultaneously; and
- A continuous ISDN (integrated services digital network) connection from office network to Internet service provider offering more rapid response and accommodating heavier traffic than a standard leased line.

To send external e-mail, the user creates the message on her or his own computer, using the e-mail software supplied by the service provider. When the message is marked for sending, it is transmitted on the next occasion the user's computer is connected to the Internet service provider. At the same time, e-mail messages waiting for the user on the provider's computer are transferred. On an office network, a software mechanism called a mail gateway is used to route messages into and out of the office network, so that incoming messages are delivered directly to the mail address of the individual user to whom it is addressed. With a leased line or ISDN link an office network has full-time access to the Internet.

APSO has a single dial-up connection from the desk of the General Secretary to an e-mail service provider. This facilitates communications with the four of its seven overseas offices which have e-mail addresses. Connections are not always reliable - reflecting the level of development of telecommunications in those countries where the overseas offices are located. **APSO** is actively considering the possibility of providing e-mail access for all users on the headquarters office network.

The **Employment Equality Agency** expects to implement external e-mail in the first half of 1996, using a single dial-up connection to an Internet service provider. The modem will also be used to get access to the Labour Court's database of recommendations on disputes adjudicated by the court.

The **Enfo** librarian uses external e-mail intensively, via a single dial-up connection, for communications with environmental organisations and information sources worldwide, among them the United Nations Environment Programme and the Environmental Protection Agency in the United States.

The **Environmental Protection Agency** has a leased line connection to an Internet service provider and its own Internet domain, meaning that all staff members have a personal e-mail address @epa.ie. The agency's information technology manager stated that this facility is used little for sensitive business purposes, because of the difficulties of guaranteeing security and delivery on the Internet. The agency may implement the CCITT (international telecommunications organisation) X400 standard for electronic mail in order to achieve higher security levels.

The **Radiological Protection Institute** has used external e-mail since its establishment in 1992. The Institute is required to provide data to the International Atomic Energy Agency. Its staff members are involved in collaborative and comparative research with partners outside Ireland, and with university-based researchers, and most, if not all, of these external partners use electronic mail. All members of RPII's staff have addresses in the form: jbloggs@rpil.ie. According to the Institute's information technology manager, audits of the traffic show that "90 per cent" of the e-mail use is for business.

The Institute also collects data from around the country through a leased line computer-to-computer connection with the Meteorological Service and with one of its out-of-Dublin locations. Data collection from other monitoring stations is done via dial-up (modem) connections.

Amnesty International, Irish Section, has had a single modem link and e-mail address since 1993. This is used primarily for communications with the International Secretariat in London. With the organisation's move to new premises in 1995 and the expansion and upgrading of its computer network in 1996, it is intended to install internal e-mail, possibly ccMail, and give all staff a personal e-mail addresses through a direct link to an Internet service provider.

The **European Women's Lobby** in Brussels has had a single PC linked to a modem and an electronic mail account for less than a year. Few of the Lobby's member organisations use e-mail but the group is preparing a proposal for EC funding under which more of these organisations might acquire online capabilities.

The **Teachers' Union of Ireland** has a single e-mail address, although the relationship with its Internet service provider makes provision for up to five addresses. The e-mail address is promoted in the union's newsletter and, according to an official, "traffic is building up slowly," principally with union members in third-level institutions such as Regional Technical Colleges, who have e-mail access at their places of work. The official stressed how much more efficient the recent dealings under the Programme for Competitiveness and Work with the Department of Education over a new retirement scheme would have been had both parties been using electronic mail. The "inertia factor" in both organisations

was constraining the adoption of a measure which would benefit them mutually, the official said.

Newmarket Information Services compiles information on the construction industry in a computer database and publishes it, to subscribers only, on paper. As only a small proportion of customers use electronic mail and an even smaller proportion require the information by e-mail, electronic delivery accounts for little of their outwards traffic. When a new network server was being installed in 1994, however, it was decided to put on a range of services, including a link to an Internet service provider who has provided personal e-mail addresses for all Newmarket staff. External e-mail has been in place for 18 months and its usage is "growing naturally."

ComputerScope recently acquired personal Internet e-mail addresses for all staff through a leased line link to its Internet service provider. As an organisation with a strong orientation to sales (of advertising space, of exhibition space, etc.), Scope notes the benefits of e-mail in terms of more reliable dealings with customers. "An e-mail message sits on the screen until it is answered or deleted," a company executive noted.

Slattery Public Relations has had external e-mail access for all staff members since late 1994, through a direct link to an Internet service provider, but only the three account executives dealing with clients or media outlets which themselves have e-mail addresses use it regularly. There were "teething problems" on the e-mail system, for instance, with incoming messages from Britain. But the benefits have been quickly measured, both in better and prompter feedback from journalists receiving the material – and, it is claimed, in greater coverage for the information in the releases distributed by e-mail.

Information Services: Users vs. Providers

The main online processes discussed until this point – internal and external e-mail – are used mainly for person-to-person private communication. The remaining online technologies to be discussed involve public communication, where the messages sent are intended to be read by many persons. For this reason, these technologies – including electronic mailing lists, electronic bulletin boards, the WorldWide Web, and online databases – can be seen as publishing or broadcasting media, although they are also different from traditional media in important aspects.

To understand these technologies, it is important to distinguish between a user of the information service and a provider of the information service. The key distinction is that a provider controls the technological process and to some extent, the way information is shared on that process.

An information service user is a person who uses or participates on one of these media. To be a user of these information services, a person needs only to be able to access them. For instance, she or he can subscribe to an electronic mailing list,

read and post information on a bulletin board, or "surf" the WorldWide Web. In this capacity, this person can provide information and participate in the process to the same extent as any other user of that information service.

An information service provider is someone who controls the media technology. For instance, she or he can set-up and "own" an electronic mailing list, choose the topic and moderate the discussion on a bulletin board, or "own" a page on the WorldWide Web. In this capacity, this person can define the parameters of information flow on the process and maintain control over the technology.

To be an information service provider, a person or organisation needs access not only to the technology but also to the computer on which the information is stored. For three of the technologies discussed below - mailing lists, bulletin boards and the WorldWide Web - the information needs to be stored on a computer with a full-time connection to the Internet. Anyone who wants to be an information service provider must therefore have a special arrangement with their Internet service provider to allow them to provide this information service on their computer.

The distinction between an information service user and information service provider is made here because it relates directly to a key concern raised in the survey of Agency staff: the role of the Agency as an active or pro-active agent; whether the online technologies will be used to support existing communication networks or to encourage the creation of new online networks.

Generally speaking, an active, supporting role could be taken by using, or participating on, existing information services. This would involve subscribing to mailing lists, participating in bulletin board discussions, and gathering information on the Web. A pro-active role would entail creating new information processes: setting up and maintaining electronic mailing lists, creating and moderating bulletin boards, and putting up a page or pages on the WorldWide Web.

Internet Mailing Lists

This review of Internet mailing lists begins with a brief description of the technology and then looks at how it has been used by two organisations acting as information providers: one statutory, the US Department of Agriculture Extension service; and one voluntary, the Telecommunications Policy Roundtable Northeast. Both organisations set up and maintained mailing lists for strategic communication purposes.

These organisations both had positive assessments of the mailing list technology, although some negative impacts were experienced. Reported experiences included:

- A mailing list can be used for information dissemination, including minutes of meetings, review of forums and information from other sources; it can also be used for questions and answers on a specific topic.

- One organisation found that the mailing list has given the group visibility, has helped it to define its role, has established a regular constituency, and has enabled the group to distribute information more effectively.
- To the extent that mailing lists require the formalisation of communication patterns, they risk creating divisions among groups.
- The mailing list will likely require the active participation of a moderator until a critical mass of subscribers is reached; after that point, the list can be largely self-sustaining.

This technology should be considered for adoption by the Agency as a means for disseminating information to, and exchanging information with, known (at least by their e-mail addresses) persons and organisations. Access to mailing lists, for purposes of gathering information and following and participating in debates, comes with access to external e-mail.

Mailing lists are one of the most popular methods of group communication on the Internet; many thousands of free mailing lists exist for exchanges on different topics, mailing lists that can be accessed free-of-charge by anyone with an Internet address.

Internet mailing lists are called collaborative media because they exist only through the collaboration of the participants. The essential features of the technology are as follows:

- A list owner can set up a mailing list on a server computer.
- Any person with an Internet service provider can subscribe to the mailing list, free of charge.
- A subscriber can send an e-mail message to the server, which will automatically distribute the message to all other subscribers.
- Other subscribers can respond by sending their own e-mail message to the server, which will again distribute it to all other subscribers.

The distinction between a mailing list subscriber and a mailing list owner is the difference, described earlier, between a user of the information process (a subscriber) and a provider of the information process (a list owner).

A mailing list owner is the person responsible for the mailing list. The list owner decides on the topic for the mailing list – say, for example, poverty research – and makes arrangements with the Internet service provider to set up the list on their computer. The list owner can also "moderate" the mailing list, reviewing all e-mail messages coming in from subscribers and approving them for distribution, and approving new requests to subscribe. Having the list owner moderate the mailing

list is desirable because a moderator can filter out messages sent in error to the mailing list. It should be noted that mailing lists do not have to be interactive but can also be used to disseminate information to a group of people from whom feedback is not required.

The study of the **US Department of Agriculture Extension Service's Dairy-L** list concluded that factors for a successful interactive electronic mailing list include: the appropriate breadth or narrowness of the topic; a common bond or easily identifiable mutual need of subscribers; appropriate and efficient recruitment of subscribers by the list moderators; exchange of useful information; and responses to all requests by moderators until the subscriber base was large enough to support the system. More than 1,300 messages were sent during the two-year survey period; most were questions and associated responses. At the end of the survey period, the list was judged a success.

The Dairy-L mailing list required the active participation of a moderator until a critical mass of subscribers was reached. Most of the questions received a response in one day. After critical mass was reached, responses from other users were sufficient in number to relieve the moderators from responding to the majority of requests for information.

It is important to note that when starting a new mailing list, it may be necessary to stimulate interest in the list by conventional communication methods. The study of Dairy-L found that the volume of messages on the mailing list did not increase until after the list owner made direct contact by personal letter or telephone to potential subscribers. Growth also came from word of mouth. After the list was established, moderator maintenance consisted mainly of responding to requests to subscribe or to cancel subscriptions, contacting subscribers who send inappropriate messages, and loading retrievable files.

The **TPR-NE** mailing list was heavily used for information dissemination, including minutes of meetings, review of forums and information from other sources. When draft legislation appeared in Washington, for example, the text was posted to the mailing list. The mailing list was also used for administrative coordination, particularly to arrange meetings times. Finally, the mailing list was used for public announcements of forums.

One of the organisers of TPR-NE said that the electronic mailing list had been critical for the group. They do not have the money to advertise their forums using traditional means. In her opinion, the mailing list has given the group visibility, has helped it to define its role, has established a regular constituency, and has enabled the group to distribute information more effectively. She found that TPR-NE's electronic constituency is giving them legitimacy and authority as they expand into traditional avenues of fund-raising and membership recruitment.

The TPR-NE experienced problems when they tried to separate the original mailing list into three separate lists for people with different interests, including a core administrative group. The three tiers of mailing lists threatened to create a

class structure within the organisation, as important information was only shared among those insiders subscribed to the core list. This undesirable trend was quickly recognised and corrected: discussion of meeting times and general concerns moved back to the general mailing list with the full subscriber base. To the extent that mailing lists require the formalisation of communication patterns, they risk creating divisions among groups, and this problem is likely to appear in any group that uses the technology.

Bulletin Boards (newsgroups)

This discussion of bulletin boards, newsgroups or computer conferences begins with a brief description of the technology and then notes how four voluntary organisations, the European Women's Lobby, Dublin Inner City Partnership, CREW and ARIES, and one statutory organisation, the Secretary of State, Canada, are using them, the last three principally to post information.

These organisations' experiences with bulletin board technology include the following:

- Some systems were set up so that messages can be sent to the bulletin boards from any e-mail address.
- Bulletin boards have been used to release information to audiences which might not otherwise be reached, and generate feedback from previously unconnected sources, notably from abroad.
- Users have found it necessary to establish information procedures within an organisation to facilitate the use of bulletin boards.
- One experience indicated that it may take a critical mass of 200-300 users to create an interactive bulletin board on which lively discussion takes place.
- One organisation uses bulletin boards as a means to publish a monthly publication which is accumulating as a searchable database.
- Bulletin boards maintained on partly closed networks can be made more generally accessible through the Internet, thus opening up to wider audiences, but this may be complicated and expensive.

None of the organisations surveyed reported overall negative experiences with posting information on an existing bulletin board, and this process would appear to offer potential for the Agency. However, although no negative experiences were reported by bulletin board providers, moderating or providing a bulletin board could open up potential pitfalls for a state agency such as the CPA; these will be noted in the final section of the report.

A bulletin board, conference or newsgroup contains all information sent for posting there. As with a mailing list, a bulletin board is a collaborative media form, meaning that the information on it is put there by the many different users. A bulletin board may also be "searchable", meaning it is equipped with software enabling readers to search for key words and find postings on specific topics.

While mailing lists and bulletin boards are similar in some ways, they also differ in several aspects:

- A person must register with a mailing list; access to bulletin boards is open.

- Postings to a mailing list go directly to the registered user's mailbox; bulletin boards have to be sought out.
- Messages can be, and often are, sent to multiple bulletin boards, meaning that matter extraneous to a bulletin board's topic may be found there.

Bulletin boards can be maintained on private online services, albeit services which are linked to the Internet. Thus, bulletin boards on a wide range of development and human rights issues can be found on GreenNet, based in London, to which a specific subscription is required. Similarly, there are bulletin boards on social issues which are accessible only to registered users of the closely-related services, Poptel (Britain) and GeoNet (Germany). At the last count, however, there were more than 14,800 freely-accessible bulletin boards or newsgroups on the Internet.

The distinction between a bulletin board user and a bulletin board moderator is the difference discussed earlier between a user of the information process (a bulletin board user) and a provider of the information process (a moderator).

To be a bulletin board user, it is necessary to have access to an external computer network, usually that of an Internet service provider. Once connection with the network is made, the bulletin board user can read messages posted to the board by other users.

Bulletin board users can also post messages for public consumption; posting messages to existing relevant bulletin boards is a popular way to disseminate public information on the Internet. The **European Women's Lobby** uses its electronic mail account with GeoNet principally to release information to audiences which might not otherwise be reached, through established bulletin boards focusing on women's and European issues. The EWL has found that posting information on bulletin boards has generated new feedback, mainly from abroad.

The **Dublin Inner City Partnership's** ICCN network was set up in part with the intention of sharing information through bulletin boards. Pressures on staff time and resources have led to problems in identifying persons in each subscribing organisation with the time and commitment to check and update regularly the bulletin boards. As well, it has been found that new information procedures were needed within the organisations: someone had to have access to the relevant information within the community group in order to be able to upload it on to the bulletin boards. That person also then needed to know what information was relevant to download from the bulletin boards and circulate to the relevant people. The bulletin boards presented a level of work which had not been anticipated and which was not perceived to be urgent.

In contrast to a bulletin board user, a bulletin board moderator, or facilitator, is the person responsible for maintaining the board. If it is a new bulletin board, the moderator decides on the topic for discussion and makes arrangements with the Internet service provider to set up the list on their computer. A bulletin board

moderator has the responsibility to keep the discussion flowing and on track and the power to delete or edit any postings made to the board.

Two of **CREW's** staff have access to external e-mail, using the organisation's account on GeoNet. According to a spokesperson, this is principally important as a means for **CREW** to publish its research and commentaries on EU developments. All of the material contained in **CREW's** monthly paper publication is also released onto the organisation's own bulletin board and searchable database which can be accessed by other GeoNet users. The two members of staff using the e-mail link have, in the words of the spokesperson, been self-selected and self-trained. They also use the modem link for research on European Commission databases and other online services. The archive of electronically stored material goes back to 1989 (**CREW** was established in 1985). Thus, any search of the **CREW** database for the phrase "urban poverty" should provide a record of all occurrences of that phrases in **CREW** reports since 1989.

A key issue of concern to any person considering setting up a new bulletin board is whether there are enough people interested in the discussion topic to have lively and active exchanges. When the **Secretary of State Canada's** DISC network set up its first bulletin boards, it experienced "the embarrassment of having a party with nobody there." However, when a critical mass of 200-300 users was reached, "a magic of creation occurred," and there was a sudden surge of information exchanges and significant relationships forming through the network.

ARIES, the Brussels-based European network of NGOs, has disseminated information via bulletin boards since the early 1990s. The information on the bulletin boards is posted principally from three locations, in Britain, Belgium and Germany. A principal source of information is an EU Briefing published by Reuters which costs the network upwards of £6,000 a year to receive. But many organisations derive benefit from that one subscription, thanks to their access to the bulletin board. Reuters grants permission for the information to be re-used on the understanding that this is confined to a closed group. At any given time, there may be 300 users of the **ARIES** bulletin boards, of whom upwards of 100 may be taking a free trial.

Over the nine months to March 1996, on one of the host computers, users posted 5 megabytes of text-only messages (equivalent to approximately 1,000 A4 pages) and there were 16,400 'reads' of this information. Any user wishing to comment on an item posted in the bulletin boards can do so and, as of recent date, messages can be sent to the bulletin boards - with the exception of a couple of read-only boards - from any Internet e-mail address.

Until earlier this year, only those with e-mail accounts on Poptel in Britain or GeoNet in Germany had access to the **ARIES** bulletin boards. The network now has a home page on the WorldWide Web and, from there, a password-protected 'gateway' to the bulletin boards. The presence on the WorldWide Web has encouraged new subscriptions but also made the service accessible to those who do

not use Poptel / GeoNet services. The software development necessary to build the gateway cost ARIES approximately £6,000.

WorldWide Web

Following a brief description of the WorldWide Web technology and a discussion of concerns raised regarding the quality of information on the Web, this review notes the experiences accessing the Web by one state sector organisation, APSO, and two commercial organisations, Newmarket Information Services and ComputerScope. Organisations using the Web to publish information or planning to do so shortly include: two statutory, Forbairt and the Radiological Protection Institute; two voluntary, Amnesty International and the TUI; and one commercial, ComputerScope.

The organisations' reported experiences of the Web included:

- Some offer Web access to one or several staff members; others offer it to all staff.
- The Web is used for research purposes, mainly for international sources, but also for searching the limited database of the *Irish Times* Internet edition.
- The information contained on a Web page may be simple or complex, with multiple cross-references; in either case, there may be a problem keeping the information up-to-date.
- To maintain an elaborate and complex Web site, one organisation has found it necessary to recruit a full-time information technology manager.

None of the organisations surveyed reported negative experiences either accessing the Web or publishing information on a Web page. The WorldWide Web offers potential as an information source for the Agency and would seem to recommend itself as a means to publicise the Agency's activities, services and publications.

The WorldWide Web (aka the Web) is an Internet information service. The Web can be accessed through different software packages called Web browsers; the most popular Web browser is Netscape. Internet service providers in Ireland offer their customers Web access through Netscape as part of the basic subscription service.

Since 1992, when the WorldWide Web became part of the public domain, it has been the fastest-growing information service on the Internet. The Web has proved popular because it is the most graphical Internet service with the most powerful linking abilities. A distinctive feature of Web pages is "hyperlinked" information which allow the reader quick and easy access to further layers of information. Following hyperlinks from one information source to another is known as "surfing" the Web. Several increasingly sophisticated and powerful search mechanisms are now available which allow the Web to be trawled for narrowly defined information.

The information available on the Web includes online newspapers and magazines, commercial and technical information, museum and library collections and university resources. Organisations which publish information on the Web include major international bodies, governments, corporations, research institutes, colleges, NGOs and many, many individuals.

A distinction can be made between Web access and a Web page: to have Web access is to use the information process; to have a Web page, Web pages, a Web site, or a Web "presence" is, in effect, to publish information by that means. All Internet service providers in Ireland now offer Web access, and several provide the means for subscribers to present themselves on the Web, through "home pages." More elaborate Web sites, or multiple pages, are often maintained on the source's own computer, which is linked permanently to an Internet network node.

Valid concerns have been raised about the quality of information available on the Web. In general, it should be understood that the forces driving the growth of the Web are concerned not with information per se but rather with finding a new basis for the economy. The growth of the Web has been spurred by an intense industrial push to sell new computers, peripherals, and software to consumers, and to promote the use of Web pages which market goods to consumers. In the popular discussion of the Web that surrounds this industrial drive, concerns about the quality of information on the Web have been noticeably muted.

Among the most vocal critics of the information on the Web are librarians, one of whom made the following remarks at a recent US conference of Computer Professionals for Social Responsibility:

On the Internet, many electronic information sources that we are declaring worthy of "universal access" are administered by part-time volunteers, graduate students who do eventually graduate, or network hobbyists. Resources come and go without notice, or languish after an initial effort and rapidly become out of date. Few network information resources have specific and reliable funding for the future. As a telecommunications system the Internet is both modern and mature; as an information system the Internet is an amateur operation... Too many Internet sites today are a terrible hodge-podge, with little intellectual purpose behind their holdings. It isn't surprising that visitors to these sites have a hard time seeing the value of the information contained therein.

On the other hand, there are now so many information sites available on the Web that having Web access can be a useful tool for any organisation involved in research and other information-gathering activities.

APSO's General Secretary, whose computer runs the organisation's external link with the Internet, makes occasional research use of the WorldWide Web, generally for gathering information on comparable organisations elsewhere.

Newmarket Information Services make limited use of WorldWide Web access, mainly to consult the archive of the *Irish Times* at that newspaper's Web site. (The archive is open-access, but limited; it runs from late 1994 only and is searchable only by date.)

ComputerScope staff make "extensive use" of WorldWide Web access, which they have through a leased line connection to an Internet service provider. All staff have had such access from late 1995 and, says an executive, the company has been willing to bear the cost of staff members "downloading images of Ryan Giggs scoring a goal" in return for the benefits of access to sites where 'patches' for faulty software or company or technical information can be found. For the present, Web access is not monitored and is unrestricted; as other traffic to and from the Internet service provider increases, the limits of the leased line connection may make it necessary to impose some restrictions.

To have a WorldWide Web page is to publish information on the Web. Every Web page has a unique Web address, to which anyone with Web access can be referred. Setting up a Web page can be either an inexpensive or a costly venture, depending on the quality and complexity of the page, and the amount of information it contains. Some Internet service providers now offer their customers, at no or low-cost, a very basic Web page. Once a Web page is set up, it needs to be maintained; a Web page with outdated information has low credibility in the eyes of a reader.

Forbairt presents an outline of its activities and services on its Web pages, similar to the Web pages of all the other industrial promotion agencies of the Irish state. The information on its Web pages is limited and not always up-to-date. For instance, on 20 March 1996, the latest edition of Forbairt's journal, *Technology Ireland*, to appear on its Web pages was the January/February edition. The Forbairt Web pages also offer very limited interactivity to the person "visiting" the site; the only e-mail link directly from the Web pages is to the external consultant, a final-year student, who developed the pages and maintains them part-time.

However, Forbairt's Web pages demonstrate how a Web page can be used to gather information about the people who access the page. Unusually, this information is displayed on the Forbairt Web pages themselves. Thus, one of the Forbairt Web pages reveals the information that more than two-thirds of the Internet users who have viewed the Forbairt home page have addresses ending in .ie, that is, Irish addresses. (The pattern of other users' addresses largely mirrors the pattern of Internet penetration: North America and the UK account for as many 'hits' as all other regions combined.) That same Forbairt Web page also contains the information that the rate at which the Forbairt home page is being visited has increased steadily since its establishment in February 1995: the daily average number of visits over the full 13 month period is 523; the daily average number of visits over the week to 17 March was 1,613.

The **Radiological Protection Institute** recently received a notice from the Department of Energy to the effect that the agencies under its supervision would be expected to have a 'presence' on a Web site which the Department was establishing. Independent of the outcome of that process, the Institute may soon put up pages on the Web, through an Internet service provider, principally to let the public know about its activities and to promote its services, such as testing and licensing of equipment using radioactive materials.

The **Teachers' Union of Ireland** became the first Irish trade union to present itself on the WorldWide Web when its 'home page' was initiated in January 1996. The TUI sees the token presence it has established on the Web as a means to demonstrate the potential of the technology and to appeal in particular to the technically literate of its members, notably those in the third level sector. On its Web page, the TUI has posted a limited description of its structures and services but, at the time of writing, was also planning to publish material relating to its April 1996 congress.

Amnesty International, Irish Section, like all other AI national sections is being "nudged" and "guided" towards greater use of Internet services. The International Secretariat plans to establish a WorldWide Web site during 1996 (currently Amnesty International in the United States maintains an extensive site, with the support of a donor). The Irish Section expects to give its staff WorldWide Web access when the new International Secretariat site is in place. It will also be expected to establish WorldWide Web pages, to which links can be made from the international Amnesty site.

As a trade publisher and exhibition organiser in the computer industry, **ComputerScope** has a particular need to be seen to make its presence felt on the WorldWide Web. The company had its then Internet service provider post pages on the Web in 1994, but since September 1995 Scope has been working, with contractors, on the development of a more ambitious Web site directly under its own control. It took six months to complete the development project. The earlier pages were used to take registrations for events but the new pages provide access to a database of computer trade companies, an archive of articles from the company's publications, classified ads, and information services acquired through Scope's affiliation with US publisher, International Data Group. A 'Contact' link allows the site visitor to send an e-mail message to any member of Scope's staff merely by clicking on the screen "button" beside that person's name (the e-mail addressing is hidden from view).

Material previously published in directory form in supplements to the company's flagship publication, *Computerscope*, has been transferred to a database developed for the purpose in the relational database management software, Oracle. This will allow complex searching of the database, for instance by multiple variables. A 'Newsfeed' from IDG will be drawn down every 24 hours from the US company's computers using a routine written into the Irish and American partners' versions of the Lotus Notes software.

Scope aims to generate revenue from its Web venture by selling 'profile pages' and strip advertisements and, eventually, by licencing the software which it has developed for its Web site. The development over-ran by several months due to the complexity of the design tasks Scope set itself. The online publishing initiative, along with other initiatives within the company, required the installation of new network servers. And, for the first time in the ten years since the company was established, it has become necessary to recruit a full-time information technology manager who will be responsible for the installation of Notes software and for the maintenance of the WorldWide Web site.

Online Databases

Largely predating the development of the Internet as a commercial medium of information exchange, online databases have been published for nearly two decades with very specific audiences of researchers in science, technology and commerce in mind. They have in recent years become of more general interest and more easily accessible, with easier-to-use search software.

While a number of online databases can now be accessed through the Internet, most are based on proprietary (non-standard) software and require users to subscribe, paying either a periodic fee or for usage. Examples of the larger such databases include:

- FT Profile, which carries the full text of a wide range of (mainly British) newspapers, magazines, news broadcasts and news agency reports, as well as (premium-priced) company information;
- Dialog, an American database of databases, containing the full text of hundreds of general, business and technical publications, and abstracts from several thousand more;
- Lexis, an indexed record of legal decisions from many countries; and
- Medline, abstracts and full text of material published in medical and life science journals from around the world (also published in CD-Rom).

Smaller databases are maintained, largely through the accumulation of bulletin board postings, by such organisations as Amnesty International, London Hazards Centre (compiling information on chemical hazards), CREW (see above), and Statewatch (compiling information on abuses of state power). Several units of the European Commission maintain searchable databases on ECHO (European Commission Host Organisation), for which registration is free but which is difficult to use. Much of the information on ECHO can now be accessed through the Commission's WorldWide Web site.

Access to an online database can be achieved by using a computer hooked up to a modem and an ordinary phone line. The person wanting to access the database directs her or his computer to telephone the phone number to which the database

computer is linked. Once connection has been made, the database can be searched for information. If a relevant information file is located, it can be transferred electronically to the person's computer, where it can be re-used subject to copyright restrictions.

Librarians and researchers in the **Environment Protection Agency, Forbairt** and **RPII** all use online databases which carry material specific to their areas of interest. However, **Enfo** maintains its own database of library acquisitions and journal articles on the environment which can be consulted, using keyword searches, over dial-up links from libraries. A store of tens of thousands of references which had been built by the library service of the now extinct Foras Forbartha has been expanded under Enfo's auspices since 1990. Communications take place on Telecom Eireann's packet switching data communications network, Eirpac, which gives greater security and reliability than voice telephone lines. However, Enfo is actively considering alternatives to this means of access, partly in order to protect libraries from readers' improper use of the system.

Libraries have had excessive telecommunications charges arising from users leaving the Eirpac connection open. The possible alternatives include publishing the updated catalogue twice a year on CD-Rom or establishing a WorldWide Web home page with links to the database. Enfo's policy on this will be influenced by the decisions of an inter-departmental committee considering the government's use of the Internet, and of which the Enfo librarian is a member.

Automated Fax Services

Documents can be sent directly to a fax machine from a computer, without printing or without using a fax machine, by several means:

- Sending an e-mail message, via a fax 'gateway', to a fax number (not all e-mail services facilitate this);
- "Printing" a document to the fax modem of a computer to which a fax modem is connected (and it, in turn, to a phone line) and on which fax communications software has been installed; and
- Sending a document from any point on a computer network to which a fax network server has been connected (and it, in turn, to a phone line).

Any of these means represents an obvious saving of time, materials and expense by comparison with using a conventional fax machine. All of these means also make it easier to send a single message to multiple fax numbers than is possible with all but the most sophisticated of fax machines.

It is also possible to receive faxes either on a standalone computer equipped with a fax modem (the second option above) or on a network with fax server (third option). In both instances, it is possible to have the incoming fax converted from image to text so that it can be further edited within a word processing package.

However, as faxes are images they are also data-intensive and careful management of their storage is necessary if they are not to clutter the system. A normal fax machine may still be needed for receiving incoming faxes, but also for sending faxes which include attachments not generated on computer, eg. drawings, photocopies, or other images.

In this section, we consider principally the experiences of two organisations which have used or are using a fax sever, **Amnesty International** and **Slattery Public Relations**. Their experiences with the fax server include the following:

- It was found to be much more reliable than cheaper non-network fax communications packages.
- The fax server was described as having contributed very significant time-savings and an "almost immediate" payback in one of the organisations.

Neither organisation surveyed reported negative experiences with the fax server; it would appear to be a technology which could be of use to the Agency.

Amnesty International, Irish Section, received a donation of a fax server from the distributor. It was found to be much more reliable than cheaper non-network fax communications packages and was used mainly for sending media releases. When the network was reconfigured to run on Windows NT the server could no longer operate on it; that incompatibility has now been addressed and the fax server will be re-installed.

When **Slattery Public Relations** installed a new computer network in 1994, the company took the opportunity to acquire a fax server. A large proportion of external communications, including those with clients and with media, take place by means of fax, and "almost all" faxes are, according to a company executive, now being sent through the server.

This particular executive has a national sports organisation among the clients she services; with a stored list of fax numbers she can send news of a team selection to 30-plus fax machines in media organisations, with a single command. Other executives have more need than she to send media releases by mail or courier in parallel with the fax transmission.

The fax server is described as having contributed very significant time-savings and an "almost immediate" payback. It offers the further advantage of tracking all fax traffic, including receipt notices for outwards faxes from the destination. The server is also used to receive incoming faxes, which are converted to digital form, for further editing if required. A standalone fax machine is still used for faxes with attachments which were not generated on the office network. Staff were given an average one day's training each on the fax server.

Information Exchanges

This section reviews the case studies for guidelines on how the online technologies discussed above could be used for at least three kinds of information exchanges of relevance to the Agency: between the organisation and community and voluntary groups; between the organisation and the general public; and for the creation of new communication networks. The technologies can obviously be used for other kinds of exchanges; those between the organisation and the government were not specifically discussed in the case studies reviewed, but are considered here.

With Community and Voluntary Groups

External e-mail and automated fax services are probably the technologies that will most often be used by the Agency for these kinds of exchanges in so far as much of the information disseminated in these exchanges, such as computer-prepared documents, lend themselves to electronic transmission.

Internet mailing lists offer some potential for information exchange, either with the Agency as a participant or as a provider of the mailing list. The Agency could use existing Internet bulletin boards to publish information which could then be read by community and voluntary groups with access to those bulletin boards; these groups could use the same bulletin boards to comment on the information posted by the Agency.

The Agency could use Web access to look at Web pages maintained by community and voluntary groups and do research pertaining to this sector. Similarly, the Agency could publish information on a Web page which could be accessed by community and voluntary groups with Web access.

The case study review raised two major problems associated with using online technologies for communication with community and voluntary groups: limited access by these groups, and the associated danger of deepening existing divisions between "information rich" and "information poor" groups based on access to online technologies; and the uneven, ad hoc use made of the technologies by those groups who do not have such access.

It will be noted here that preliminary analysis of an ongoing DCU survey indicates that almost 10 percent of community development groups in Ireland used Internet e-mail in 1995, and 50 percent of community development groups plan to do so in 1996. The figures varied for other interest sectors; for instance, only 20 percent of women's groups surveyed plan to use Internet e-mail in 1996.

While it is significant that almost half of voluntary and community groups in Ireland plan to go online, it is perhaps just as significant that more than half do not. One concern raised by this fact is that the groups with no Internet access could become increasingly marginalised as important communications increasingly take place on the Internet.

The **Apple** study found that the organisations which made successful use of networking had access to more resources than unsuccessful organisations.

Successful groups had a larger number of paid staff members and a higher average budget, with a greater percentage of their budget derived from the government. They also showed better pre-project planning and were more likely to have had access to and made use of outside assistance. The major obstacles to computer adoption faced by resource-poor groups were the lack of staff time and lack of training.

The study of the Apple network also found that the biggest barrier for community groups to developing network projects was the difficulty in coordinating efforts with other groups. Different levels of commitment to the network among organisations made it difficult to bring all groups up to the same standard of computer competence. Often, just getting groups together physically, agreeing on a joint project and approach, and accommodating organisational differences were major undertakings.

Similarly, the **TPR-NE** study found that a serious problem with using the Internet for grassroots organising was the limited diffusion of Internet technology. Some participants at early meetings did not have access to the Internet, and they frequently missed meetings or could not follow developments. Although an attempt was made to send out copies of electronic mailings also by fax, this procedure was dropped due to time pressures, and individuals and groups without Internet access simply did not receive the information.

With the General Public

Figures for those with e-mail and other forms of Internet access from home are unreliable, but the total in Ireland seems to be less than 10,000. On the other hand, many of the estimated 50,000 people with e-mail access at work use that facility in part for purposes not strictly related to work. And a considerable cross-section of those, particularly those in higher education, do work in disciplines which are closely related to the Agency's areas of interest. Thus, external e-mail could likely be used for exchanges with members of the general public who are online. Mailing lists and bulletin boards also offer potential for the two-way exchange of information between the Agency and the public.

It is apparent that an Agency Web page would offer the most potential for contact with the general public, through providing information of interest to a wide audience. In so far as a wider public without home computers has access to online services, whether through the colleges at which they are students, through public libraries, "electronic village halls" or "cybercafes," that access is principally through the WorldWide Web and takes the form of "surfing." Thus, a Web presence for the Agency is a means to reach this section of the public.

A key question raised in the **US OTA** study regarding using online technologies for government agencies' exchanges with the general public, was whether the public is interested in exchanging information online. In most cases, the public will choose whether to use the new online media or more conventional communication methods. Citizens active and interested in public affairs can find

many ways to satisfy their appetites for news and information. In this case, any new channel must be sufficiently superior to or different from already available means of communication in order to grab their attention.

Surveys of Internet users and usage indicate that the Internet is a communications medium more for the "haves" than the "have-nots", more men than women, more whites than blacks, more intensive computer-users than occasional computer-users.

If state sector agencies, including of course the CPA, are committed to exchanging information online, then public access to these technologies becomes a significant policy issue. Recent suggestions, such as Ireland Online's plan to provide free Internet access to public libraries, are important in this context. The Agency may wish, or need, to develop its own policy proposals on these social access issues.

The **Santa Monica City Council PEN** network, the first free-to-users, government-sponsored, interactive computer network in the US, was designed to extend the use of the system to low-income users. The design of the PEN system ensured that individual participation in PEN was not limited to people with access to computers at home or at work, through the installation of terminals in public buildings. Because of this capacity for widespread participation, PEN served as a means for the exchange of diverse perspectives among men and women, as well as among individuals representing high and low income groups.

The public access terminals were found to be a significant factor in allowing large numbers of women to access the network, since women were less likely than men to own or use personal computers and modems. For the homeless, the public terminals provided the semblance of a home address from which they could initiate and maintain contact with others.

Almost one-fifth of all access to the PEN system was from public terminals. In fact, use of these terminals proved so popular that the city government had to develop rules for how long an individual could stay at a terminal when others were waiting to use it.

One evaluation of the PEN network concluded that public providers of information services must insure that the public has the capability to access electronic information; this access will only come through the provision of public facilities and support to groups that will otherwise be electronically disadvantaged, if not disenfranchised, without vehicles and "on ramps" to the many information highways being built.

With the Government

There is little doubt that online exchanges could become a significant form of information exchange between the Agency and the government, if current trends continue.

Although exchanges between government agencies and departments were not discussed in the case studies, it will be noted that there are currently major initiatives underway in many industrial nations, including Ireland, to give governments more of an online presence. The governments of Australia, Canada, New Zealand and the US, all of which currently have a substantial online presence, are leading this initiative.

In the UK, efforts in this direction include plans to put the full daily text of the House of Commons *Hansard* on the Web, updated within 12 hours of any speech or vote taking place, with free public access. (The printed *Hansard* currently costs £5 per daily edition.)

The Irish government made the following commitments in late 1995 regarding its own online presence:

- An Irish government site on the WorldWide Web will be established with information on the economy, incentives and development priorities, among other issues; and
- Internet e-mail addresses will be provided for all ministers and for senior civil servants and departments and agencies.

The Agency may be directed, or expected, as part of this initiative, to be targeted as one of the agencies which must have an e-mail address. Regardless of any such requirement, we can, on at least three counts relating to the Agency's dealings with government, identify how use of electronic mail and access to a government WorldWide Web site might make these exchanges more efficient:

- Access to government documents in digital form would make it possible to distribute them among Agency staff;
- Access to government documents in digital form would make it easier to include citations in Agency publications, policy submissions and other documentation; and
- Access to government ministers and officials by e-mail would make exchange of minutes, draft speeches, programme proposals, and other documents more rapid.

In March 1996, the Minister for Enterprise and Employment established a steering committee to develop a National Information Society Strategy and Action Plan, a committee whose work, according to the Minister, has "significant implications for

Irish society." When announcing the formation of the committee, the Minister warned against the dangers of "creating a two-tier society of the "info rich" and the "info poor." However, none of the 20 current members of the steering committee represent community or voluntary sector groups; all but two of the members come from the government or business sectors, the exceptions being a trade union official and an academic librarian. The Agency has a brief to provide policy advice to the government; this is an important area of policy in which it could only be in a position to provide credible advice if it is itself a user and provider of information by means of online technologies.

As previously indicated, this area of policy is the object of intensive deliberation within the European Commission and the European Union. This, as well as the possibility of having access to EC documentation and officials by electronic means, with all the benefits indicated above in relation to national government, should be a further incentive to "go online." As more units of the Commission establish a presence on the WorldWide Web, and this becomes an ever more important vehicle for citizens of EU member-states to gather information on EU-funded programmes, it should be expected that a description of anti-poverty programmes on a Commission Web site would direct Web users, through a "hyperlink", to a Combat Poverty Agency page or pages.

At the time of writing the final draft of this report, the Irish Government had launched its Web site, with home pages provided for the following departments and agencies:

- Departments of Education, Enterprise and Employment, Finance, Foreign Affairs, Health, Social Welfare, the Taoiseach, and Tourism and Trade;
- Office of the Ombudsman, Office of Public Works, the Revenue Commissioners, Government Press and Information Services, and the National Archives.

The government proposes to continue to develop the site until all remaining departments and agencies requiring a Web presence are on-line.

Significantly for the Agency, the home page for the Department of the Taoiseach includes a link to an information page on the National Anti-Poverty Strategy, which in turn includes a link to a brief mention of the Combat Poverty Agency. This page would be an obvious and ideal place for a link to an eventual Agency site on the Web.

Creating New Communication Networks

One of the most interesting questions raised by the development of new online technologies is whether they can be used by the Agency to create new communication networks, and perhaps more importantly, new networks of civic activism.

In a critical analysis of the democratic-participant experiments with new communication technologies that took place in the US almost three decades ago, it was found that the use of any technology will not likely result in drastic increases in participation or political interest, and specifically, that "new technology cannot be expected to build political communities where none existed before."

The study of the **Secretary of State's** DISC network bulletin boards suggested that the technology could open up new possibilities for exchange and collaboration among groups that were traditionally isolated from each other: consumers, service providers, professionals, researchers and academics, government officials, policy makers and members of the business community. Information exchanges for self-help, social action and public education on the same communications medium meant that DISC bulletin boards could be the tool to forge new coalitions and organisations of people. However, no information was available on whether these new coalitions were actually formed.

The **Apple** study found that computer communications did not create new and dramatic forms of interaction among the community groups involved in the project. There was no immediate impact on most groups' ability to form working coalitions with other groups; many groups did however, benefit from sharing resources.

The **TPR-NE** experience found that Internet communications fostered a sense of community among dispersed individuals who saw each other only infrequently. In the early weeks of the coalition, when participants were few and concerted activities non-existent, communication on the Internet kept spirits up. Without the online interaction, a sense of isolation and futility might easily have set in. However, the TPR-NE experience found that no amount of communication could compensate for a simple lack of interest by certain individuals and groups.

One study of the **Santa Monica City Council** PEN network found that in certain cases, the dialogue exchanged within the computer bulletin boards led to the formation of networks which included individuals who had previously been marginalised from political activism. For instance, the PEN network allowed significant exchange between civil servants and ordinary citizens, particularly homeless persons who would access the network from the public terminals. As well, the PEN network served as a catalyst for the formation of an action-oriented group that worked on several successful projects to combat homelessness.

Online Technology Management Issues

Analysis of the case studies has suggested some guidelines in the following areas:

- Incentives and barriers to adoption of online systems;
- Set-up, training, adoption, costs and technical failure; and
- Work practice and staffing implications.

Regarding **incentives to adoption of online systems**, the **Apple** study concluded that computer networking appeared to work when there was a general, well-defined need for it. Such applications might include the need to move instantaneously a large body of text material across a distance, or making important time-sensitive information available on demand. Computer networking worked better when participants already had a history of interacting through conventional methods.

A formal network coordination structure, with regular network meetings for project accountability also seemed important to networking success. Participating organisations needed to develop a shared sense of responsibility for the project. Strong leadership both at the network level and on the groups level was crucial.

The **US OTA** report drew a strong conclusion about the value of leadership, vision and commitment on the part of public managers as a critical factor to the most successful projects. The OTA report also found that the projects studied were fuelled by the belief that the new media are on the threshold of becoming so pervasive and sophisticated that they will be accessible to nearly everyone. The report noted that a great deal of hype surrounded the new projects, and that some hype was necessary: one could hardly expect state and local government officials to spend time and money on a project that was not vigorously and enthusiastically supported. However some of this hype could be dysfunctional, if not debilitating, by undermining valid arguments based on the actual potential of new communication and information technology.

As for **barriers to adoption of online systems**, the study of the **Apple** network found that lack of time was a major barrier. Many groups found telephone and personal contact to be quicker, easier, and better-established methods of communication. The study also found that technical problems were a major barrier to network implementation, especially at the one-year point. The failure of any one of the multiple variables - computers, modems, and telephone lines - could sabotage communication.

For at least one of the groups surveyed, expense was cited as a barrier to the adoption of online technologies. However, the **European Women's Lobby** expected to be able to raise funds from EU sources to support affiliated organisations in introducing e-mail and WorldWide Web access. (There are also EU programmes, such as Advanced Telematics, under which a project for the development of online services geared to the Agency's "constituency" might find support.)

Only one of the Irish organisations surveyed drew particular attention to problems of **set-up, training, adoption, costs or technical failure**, though all were given opportunities to do so. All of them highlighted the benefits they have had from implementing new services based on computer communications. Several organisations surveyed had reached the point where they could no longer maintain their computer services through part-time internal and contract external support.

Amnesty International and **ComputerScope**, for example, had new information technology specialists join their staff in the week the survey was done.

Amnesty appeared to accept this additional expense and specialisation as a necessary price to achieve greater efficiency and effectiveness. ComputerScope did underline the delays and expense in the development of its WorldWide Web project but regarded that as a commercially justifiable investment with a likely short-to-medium-term payback. Their managing director also insisted, on the basis of very extensive exposure to WorldWide Web sites that their company, perhaps above all others, needed to demonstrate how well a site could be designed for ease of use and for interactivity.

Regarding the costs of online systems, **ARIES**, the social economy network, took on two, for it, significant costs – subscribing to a Reuters service and providing a WorldWide Web gateway – because it expected, and subsequently demonstrated, that it could widen its subscriber base in this way.

The exception to this general picture of confidence in the ability to absorb the challenges of newer technologies is the Inner City Computer Network established by **Dublin Inner City Partnership**. That experience is the object of more considered evaluation but it can be suggested that the impermanence of employment and the high level of staff turnover which characterises the groups in the network has made adoption of e-mail and bulletin boards as a means of information exchange more difficult. Office organisation is so vulnerable and office resources are so stretched that dealing with any additional variable which did not impose itself as an absolute necessity has proven too much for some.

It also appears, however, that the groups, despite a common inner city location and a common community vocation, were not previously exchanging information very intensively and the development of new means of doing this did not alter that reality. In some perceptions, the slow development of ICCN has been represented as an issue of training, but the network has had significant training and support resources available to it.

Elsewhere, training was not cited as a barrier to the adoption of online technologies. As indicated in the review of case studies, some organisations provided for all users to be trained in the software in question, but others found that users achieved the necessary competence very largely through self-training. Some of the smaller organisations, it will be noted, left the operation of the Internet technologies to a core of self-selecting personnel.

The **Apple** study concluded that organisations need to set a realistic timetable for completing each stage of the adoption process. A well-thought-out training program and the availability of follow-up support were also considered crucial for successful adoption. The study suggested that organisation staff must schedule time for training, practice and development of project applications, as competing priorities will always be present.

Regarding **work practice and staffing** implications, there appears to be no way to predict accurately the impact of online communications on other communications activities. There is no simple relationship between computer networking and the use of conventional media. A probable explanation is that online communication substitutes for some post or telephone exchanges but stimulates other contacts that might not otherwise have taken place.

All indications are that using online systems will significantly increase the total volume of communication. Online communication use can expand the size and density of social networks, the total number of persons with whom one was directly or indirectly in contact and with whom one could fairly easily exchange information and ideas, and the density or the number of connections within the social network.

Information overload would seem to be a serious and common problem related to external e-mail, but not one which is immobilizing for most users. Users learn to cope with information overload after they gain sufficient experience with a system. Experienced users rarely feel overloaded. Apparently, they develop effective ways of coping with what may initially seem to be an overload of communications. Beginners tend to overextend themselves, not so much by reading junk mail as by trying to be fully informed on a multitude of activities. Individuals learn to self-organise communication flows that might initially seem overwhelming.

The **TPR-NE** experiences showed that the Internet complemented but did not replace face-to-face meetings. An electronic forum proved adequate for exchanging and even discussing relatively well-defined information. However, face-to-face meetings were essential for brainstorming and for reaching consensus on agendas. Such unstructured discussions could not be effectively carried out over a text-based system. Where face-to-face contact was not possible, collaboration was less effective. Nonetheless, the less important discussions of schedules and information sharing could be done online, allowing more important work to be handled on a face-to-face basis.

The **Santa Monica City Council** PEN network does seem to have increased the number of complaints and requests coming in to the local government. A survey of city personnel indicated that they perceived their workload to have increased, but so too had the responsiveness of the city to the general public.

The **US federal office** study indicated that significant effects of e-mail occurred in the way staff members conceptualised generic office activities; over time, those activities were seen as more integrated or unidimensional. The study concluded that if e-mail systems present new ways to conceptualise work, then management policies and training programs must not only prepare users for such changes but also provide workers with the tools to establish these new contacts.

Agency Options

Introduction

The major recommendation made is that the Agency should adopt online technologies to meet its information and communication needs, for the following reasons:

- Reduction of internal paper circulation.
- Potential reduction of post, fax and courier despatches.
- Greater ease of information exchanges with persons and organisations who are also online, including persons and organisations with whom there is currently no exchange.
- Access to online sources of information for research purposes.
- Increased public profile for the Agency and a widening of its target audience.
- Increased opportunities for communication with partners already developing their use of online technologies: community and voluntary groups, the government, and EU bodies.

The Agency's move to new premises in mid-1996 will require new printed materials with the new postal address. This presents an ideal opportunity to introduce the Agency's new e-mail address and, if it is decided to follow the recommendation to this effect, personal e-mail addresses for all staff.

Implementing Online Technologies

The options described below amount to a phased implementation programme. It would also be possible, however, for all Agency staff members to be given access to internal e-mail, external e-mail, and full Internet (WorldWide Web) services at the time of the move to the new premises. A convincing body of analysis on the introduction of new information technologies into organisations suggests that the technology itself is a secondary issue: the real problem is understanding the group and organisational objectives and providing the tools that allow individuals and groups to structure their own communications.

In view of the Agency staff's stated need to see evidence of a planned, systematic programme of innovation, a phased approach would seem to recommend itself. Phase One would be implemented at the time of the move. This phase would include universal (all staff) access to internal e-mail, external e-mail, Internet mailing lists, and a fax server. There would be limited access to Internet bulletin boards and the WorldWide Web through a terminal or terminals located in the library. The librarian would have additional access to one or more online databases. The

connection to the Agency's Internet service provider would be made through a LAN-modem connection on an ordinary phone line. The emphasis here is on using the Internet as a research, or information-gathering, resource.

Phase Two would be implemented by the end of 1996. This phase would add a basic Agency Web presence consisting of three or fewer Web pages. At the end of this phase, the staff use of the WorldWide Web on the library terminal(s) would be evaluated.

Phase Three would be implemented during 1997. This phase would add Agency provision of an Internet mailing list and a more complex Agency Web presence, including publishing online of, say, press releases, shorter reports, and articles. Here, the emphasis shifts more to the use of the Internet as a means for disseminating and exchanging information. Depending on the outcome of the evaluation of staff use of the Web, Web access could be broadened to include the personal computers of several or all Agency staff members. At this point, it may be necessary to install a dedicated, leased line connection to the Internet service provider.

The numbered sections in the following explanation of the options for phased implementation refer to the numbered items in Table 1.

1. Internal e-mail, Phase One

Internal e-mail should be implemented to improve and facilitate information exchanges within the Agency. All Agency staff should be given e-mail addresses at the time of the move.

Training for e-mail software should begin immediately. Training programmes for most mail packages take about one-half day. Follow-up training should focus on self-training, using on-screen tutorials and Help facilities. The initial training must be designed for the Agency's needs, however, and should include the establishment of secure procedures for document exchange.

Implementation of internal e-mail should include management directives designed to encourage the use of the service, for example, using e-mail for telephone messages, eliminating the need for messages written on paper. Internal e-mail could encourage the creation of regular internal publications; for example, the librarian could use internal e-mail to circulate regular notice of publications received by the library.

The use of internal bulletin boards on the mail software and internal document sharing on software other than mail should be reviewed by the Agency, with the aim of establishing the most efficient way of making resource documents available in digital format and of sharing documents.

A staff member should be designated as resource person for handling queries related to e-mail. One or more staff members within the Agency currently play this

role for computer-related queries, but the addition of e-mail will undoubtedly increase the number of computer-related queries. The role of this person or persons should be recognised and formalised.

In the short-term, Agency staff should be encouraged to have realistic expectations for internal e-mail. It is probable that internal paper circulation will decrease but information exchanges overall will increase. In particular, it should not be expected that the presence of internal e-mail will reduce the number of face-to-face informal and formal meetings within the Agency.

The mail software package to be used must include a gateway for external e-mail. Software packages such as Lotus Notes' ccMail for Windows, Microsoft's MS Mail or Pegasus for DOS or Windows would be obvious choices. The same software package should be used for both internal and external e-mail.

2.External e-mail, Phase One

External e-mail should be implemented to improve external communications with community and voluntary groups, the general public, the government, the European Commission, the media and others. An interface should be built between the internal e-mail system and the external e-mail system, such that internal addresses and external addresses are made to correspond.

A contract should be negotiated with an Internet service provider which gives the Agency its own domain name, and thus e-mail addresses for Agency staff with a distinctive, but common, identity, eg <user1>@cpa.ie, <user2>@cpa.ie. etc, with <user1> being given a clear personal identity, such as <a.hogan>. With this kind of arrangement, further individual addresses can be added at will, including addresses for specific and temporary purposes such as feedback on the pre-Budget submission, to be sent to budget.sub@cpa.ie.

The training for internal e-mail software should cover external e-mail during the same half-day session. As with internal e-mail, follow-up training should focus on self-training. The Agency library should make reference books available on the Internet, its resources, its services and its etiquette.

Implementation should include management directives or suggestions designed to encourage the use of external e-mail. One example would be to encourage staff members to ask regular contacts if they have external e-mail addresses, and if so, to begin communicating by e-mail.

Again, Agency staff should be encouraged to have realistic expectations for external e-mail, particularly since many of the people and groups with whom staff communicate will not likely be online, at least not immediately. The presence of external e-mail is more likely to increase, rather than decrease, the number of information exchanges in which staff participate.

At the outset, the external e-mail connection will be made to the Internet service provider via a modem connected to the LAN, on an ordinary telephone line. The line may be upgraded to a dedicated, leased line in Phase Three of the implementation plan, subject to a review of staff needs for Web access.

3. Electronic mailing lists, Phase One

Staff members should be encouraged to subscribe to electronic mailing lists as soon as their basic e-mail training is completed. Participating on these lists would be a good way to learn how to use e-mail, to practice communicating with strangers by computer, and to make contacts with persons and organisations who share the Agency's interests. Little training is required to use mailing lists. If a staff member begins to feel overwhelmed with the number of e-mail messages received, she or he can simply unsubscribe from the list. Mailing list subscription is free of charge. Anyone subscribing to a mailing list generally receives a message outlining some of the principal features of the list and its correct usage. This message can be stored for future reference.

At the time of writing, a Web search for mailing lists related to issues of poverty and community development resulted in information on several lists run from the US. The two lists below might be of interest to Agency staff members:

- **America's War on Poverty Talk:** For information and to subscribe, send a message containing the words: "subscribe awp-talk" to the following address: listserv@mitvma.mit.edu
- **Community Development Society Urban Info-Sharing Forum:** For information and to subscribe, send a message containing the words: "subscribe cd4urban" to the following address: listproc@u.washington.edu

4. Electronic mailing lists, Phase Three

After Agency staff members have built up experience with electronic mailing lists, one or two members may be interested in starting and moderating an Agency mailing list. Having the Agency moderate a mailing list would be a pro-active approach to the technology that could raise the Agency's profile in the online world and possibly encourage both online and offline discussion of the topic by a wider range of individuals and organisations.

Starting and moderating a mailing list may take up considerable time by a staff member in the short term, especially since, as was noted in the discussion of mailing lists, it will probably be necessary to promote the mailing list through traditional offline communication channels. In the long term, especially after the list has been established, mailing list moderators typically do this work in their "own" time, or in the margins between other tasks; the mailing list moderating task should not be considered a significant addition to other work responsibilities.

The list will need to be set up in conjunction with the person responsible for the computer on which the mailing list software resides, probably a server computer owned by the Agency's Internet service provider. Costs, if any, should be minimal for setting up and maintaining a mailing list on this computer.

5. Bulletin boards, Phase One

Posting Agency information on existing bulletin boards would be a good way to begin raising the Agency's online profile. Good candidates for bulletin board information would be Agency press releases, which could also be distributed through a mailing list. Posting this information can be done by the appropriate staff member from the terminal(s) in the Agency library. It will take little training for anyone using e-mail to accomplish this information transfer.

Access to Internet bulletin boards or newsgroups can be readily provided in the same process as external e-mail is implemented. But it is envisaged here that such access would be available in the first instance, through the WorldWide Web linked from terminal(s) in the library. It is also recommended that the option be considered of providing access to bulletin boards which are not among the approximately 15,000 on the Internet's Usenet service. This would require a separate (approx £5 per month) subscription to the services accommodating such bulletin boards, namely Poptel and/or GreenNet.

Examples of bulletin boards which may be of particular interest to Agency staff are:

- ced. coops, a GreenNet conference on co-operatives;
- soc.org.nonprofit, an Internet (Usenet) newsgroup on voluntary and community groups; and
- crew-db (Poptel), a searchable archive of statements from CREW.

At some point in the future, the Agency may consider starting and maintaining its own online bulletin board on a poverty-related topic, which would rest on the computer of its Internet service provider. This would undoubtedly raise the Agency's online profile and encourage discussion of the bulletin board's topic. However, there is an important consideration which could discourage this initiative: it is possible that the Agency would be held liable or responsible for any information or comment posted to its bulletin board; although the Agency could delete or amend a questionable posting, this action could raise questions and charges of censorship and/or favouritism, to which it could be very difficult to respond.

6. WorldWide Web, Phase One

At the time of the move to the new premises, WorldWide Web access should be available on one or two terminals in the Agency library. The Web is a unique and wide-ranging information source; however, valid questions have been raised

regarding the quality of information on the Web. For this reason, it is suggested that one Agency staff member, such as the librarian, be assigned the task of evaluating the resources on the Web relevant to the Agency and the staff's use and perceptions of the Web after it has been available in the library for six months.

Staff members interested in using the Web should be given training on the Web interface software package supplied by the Internet service provider. After the formal training, staff members should be actively encouraged to use and develop expertise on the Web.

The terminal(s) with Web access may need to be upgraded to meet the minimum technical requirements for Web access. The link between the terminal and the Internet service provider should be made with a modem and an ordinary telephone line. The cost of Web access should be included as part of the basic package negotiated with the Internet service provider.

7. WorldWide Web, Phase Two

It was suggested that the Agency's use of the Web be evaluated at the end of six months' access. If, at that time, some or all of the Agency staff require Web access from their own computers, the hardware and network arrangements will need modification to accommodate this. Depending on the level of staff demand for Web access, it is possible the Agency would need a dedicated leased line to the Internet service provider at this point.

Also in phase two, the Agency should put up its own Web pages, three or fewer, with basic information about the Agency, a publication list, and details of and/or 'hyperlinks' to the e-mail addresses of key Agency staff. By this stage, the Agency staff should be sufficiently familiar with e-mail to respond to information requests arising from the Web presence. These pages should be developed and maintained by an outside consultant on instruction from a designated member of Agency staff who has editorial responsibility.

8. WorldWide Web, Phase Three

In Phase Three the Agency's Web pages should be expanded to include more information, such as home pages of some Agency staff members and links to other Web sites. The expanded Web presence could be used to disseminate Agency statements, shorter reports, the contents of *Poverty Today*, and the *Poverty Briefing* series. Any information contained on the Agency's pages should be well-maintained and kept up-to-date. The Web presence should always be maintained by an outside contractor acting on instruction from a designated member of Agency staff who has editorial responsibility.

9. Online databases, Phase One

The Agency librarian should be given access to at least one online database such as FT Profile for carrying out specified searches of newspaper archives or Dialog

which includes Social Science Citation Index as well as myriad (though mainly North American) newspaper and magazine databases. Depending on the kind of database selected, the librarian(s) may need formal or informal training on its use. It will also be necessary to install the access software which comes with the database subscription on the librarian's computer.

10.Fax server, Phase One

A fax server could be included in the new network infrastructure to be installed with the move to new premises, allowing all users of the network to send faxes directly from their desktop computers. This can be done either on a separate, dedicated server or on 'part' of the general network server, depending on the capacity of the latter. Fax communications software will need to be installed on each of the individual computers to be given access to the service. As indicated earlier, it may be prudent to have incoming faxes directed to a conventional fax machine, except in those circumstances where it is considered beneficial to have the incoming message available in digital form for further processing on computer. Here, too, the training is measured in hours rather than days.

Computer Hardware Requirements

In fitting out the new premises and re-installing the computer network, it should be assumed that, at some stage, all or most of the Agency staff will need to have access from their computers to the WorldWide Web or whatever graphic, multimedia Internet service succeeds it. This has implications both for the capacity of the network wiring and for that of the network server. These levels of the computer network infrastructure need to be addressed immediately.

The office network cabling should be twisted pair and provision should be made for eventual delivery of ISDN services to individual desktops, even if it is not considered appropriate to make full Web access available at that time. The network server should have sufficient processor power, memory (RAM) and storage capacity to allow it to operate as a server for:

- Shared Windows-based applications, specifically internal electronic mail;
- External (Internet) e-mail;
- Network fax services; and
- Operating a continuous link to an Internet service provider.

The storage capacity should be specified in anticipation of significant mail message storage and of much more considerable document sharing than at present. (Procedures will be needed to ensure users do not take up excessive storage with archives of personal mail messages or downloaded bulletin board postings. But such procedures, eg. periodic transfer to floppy disk, will not obviate the need for at least one gigabyte of hard disk space on the server.)

The precise specifications should be the subject of a recommendation from a technical services supplier. It is likely that the present network server will need to be upgraded or replaced or that additional, perhaps more modest, servers to handle electronic mail and fax services will be required.

A minimum specification of individual computers capable of running the network applications indicated should also be sought. It is likely that, even for the purposes of introducing internal e-mail, running an application such as ccMail, the computers of some staff will need to have memory upgrades to a minimum 8 megabytes of RAM.

It will also be necessary to upgrade the Agency's existing network server to handle the e-mail system and other services: storage and memory are certainly too limited; processor power and speed may also need to be upgraded.

Responsibility for maintenance of the electronic mail system should rest with the system suppliers. Similarly, the installation and maintenance costs would be subject to the advice of the suppliers and consultants. It is suggested that both the internal and external mail systems be handled by just one supplier or technical consultant, or, if necessary, a maximum of two.

Online Technology Management Issues

The Agency communications survey identified training as a major concern of Agency staff members, many of whom reported needing more training on existing computer software. However, the options outlined above suggest that formal training requirements for the online technologies are minimal; a half-day for mail software and perhaps the same for the Web interface software.

The distinction should be made between formal training and self-training. Research suggests that self-training is more important than formal training for online systems. Self-training may be done by trial-and-error, with the help of manuals or tutorials. It may also be accomplished with the assistance of a colleague who has developed some competence in the technology.

When a user first signs on, she or he is likely to feel that this mode of communication is "unnatural" and difficult and to feel awkward and inept. Successfully making contact with someone else online spurs the motivation to learn the basic mechanics. After several hours of experience, the mechanical procedures become transparent and she begins to feel comfortable with the system. As the volume and complexity of their interaction online increases, users are motivated to learn advanced features which enable them to communicate online more efficiently.

Agency staff members may require many hours of exposure to e-mail and other online systems to become fully competent with the systems; it is important that they be given the time and space to train themselves in the use of online technologies.

However, considering the related issue raised in the management report related to workload, it may be expected that staff members will be concerned with a lack of time to self-learn and believe that the suggested half-day formal training period may not be adequate. In these circumstances, it would be advisable to identify formally, very early in the process of introducing the new technology, the Agency's internal "e-mail expert(s)" and to make staff members aware that an internal resource is available should they encounter difficulties using the technology. It may also be advisable to arrange an information session or workshop with staff members from an organisation similar to the Agency which has successfully introduced these technologies, at which strategies for self-training and other practical issues could be discussed.

The options for implementation of online technologies suggest the following staffing and contracting implications:

- A consultant will be required to train staff in mail software and Web interface software, such training to be designed specifically for Agency staff.
- One or more staff member(s) should be formally recognised as resource person(s) for handling user queries in relation to e-mail.

- An outside contractor should be engaged to design and maintain the Agency's Web pages on instruction from a designated Agency staff member.
- One staff member should be formally recognised as responsible for providing information for updating of the Web pages.
- Library staff should prepare an evaluation report of the staff's use of the Web, and provide guidance to users of the library's Web access terminal.
- Technical consultant(s) will be required for implementation and maintenance of the mail system.

It may be advisable to allocate the responsibilities of online systems editor, identified in the second, third and fourth points above, to one staff member as part of their overall tasks.

Costings

The cost of implementing the options outlined will depend largely on the combination of options chosen. Due to competitive pricing in the hardware market in particular, the costs of individual items will be greatly reduced by purchasing several, or all, from a single source.

In software, the cost per user of installing multi-user applications such as internal e-mail falls as the total number of licences acquired increases. Further, the above-the-line cost of installing an internal e-mail system has to be set against the difficult-to-quantify savings on staff time, stationery, printer use, and more. On the other hand, to the cost of purchasing external e-mail licences and, if necessary, a mail server has to be added the telephone usage for connecting with the Internet service provider. In providing WorldWide Web access for some or all of the Agency staff, the telecommunications charges and staff time have to be balanced against the very likely benefits in terms of wider range of information sources and liaison with international researchers in the same field.

It is possible, however, to give indicative costings for some of the items mentioned:

- An Internet domain giving addresses @cpa.ie costs about £500 per year.
- A network modem for connecting periodically with the Internet service provider costs about £400.
- A leased line giving continuous connection to an Internet service provider costs about £2,500 to install and £2,000 per year thereafter.
- 30 user licences and server software for network fax services cost about £1,000.
- 30 user licences and server software for internal electronic mail cost about £1,200.

Table 1: CPA Options for Implementing Online Technologies