

Flexible Working for Social and Economic Inclusion

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Introduction

An emerging theme of concern for the European Parliament, its Council of Ministers, the European Commission, and its new Framework Programme 5, is that of 'Social Inclusion'. This concern is widely shared by National, Regional and Local authorities. It is widely recognised that a number of groups of European Citizens are marginalised to the periphery of European life with causes stemming from Geographical, Cultural, Social, Economic, Ability, Technical and other factors. However, the advent of advanced communications and services has already demonstrated a number of opportunities for socially constructive uses of technology to combat these issues, and to allow social and economic inclusion of less favoured groups and regions. The CEC ACTS programme (ACTSLINE 1999), and other programmes exploiting new communications technologies, have demonstrated a range of novel applications which provide examples of social inclusion, plus emerging technologies which can be exploited in further actions in this area. This paper explores the potential benefits of ACTS technologies to help deal with problems in the social and economic spheres of European society.

Social inclusion of older people, minorities and people with disability

It is widely recognised that the social margin is increasing in Europe. The increasingly 'grey' population means that larger numbers of older people must be supported by relatively smaller numbers of working population. There is also a trend towards 'care in the community' which means that more people with disability are trying to rejoin the social and economic spheres, often without much success. In addition, the ever increasing flow of refugees from troubled regions ensures an ever-present migrant population struggling to integrate in the socio-economic life of Europe. These features present increasing problems for service provider authorities who must ensure quality of service in the public domain.

The trials activities in the ACTS programme have included consideration of how advanced communications can respond to some of the evident demands. For example, the project IBCoBN (IBC on broadcast networks - AC101) has set up demonstrations in a number of member states which clearly illustrate the potential of high quality communications as an agent for change. In Kortrijk (Flanders) older people have been put in touch with their service providers using high quality Videotelephony from the TV set. This allows them flexible access to a service centre where they can discuss and solve problems as they arise. The service centre is in turn linked to mobile care-staff who can attend any location where their presence is required, and this kind of 'human contact' ensures increased independence and quality of life for older people.

Similar trials have been conducted in other sites in IBCoBN, and elsewhere in ACTS, and have shown benefits for migrant groups and people with disability (IBCoBN 1998a). Service delivery to marginalised groups can be improved using advanced communication technology and flexible working techniques. A key outcome is the reduction of costs to provider authorities while increasing human contact, human safety, quality of services, range of services, and satisfaction in citizens benefiting from new service provision.

Flexible working for people with disability

Increasingly, the community of people with disability (PwD) in Europe is becoming empowered through knowledge of the benefits of the information society (IS) and through increasing social reform which acknowledges their rights to exploit their abilities to develop as equal citizens. PwD want to join the mainstream of socio-economic life for a number of reasons - sharing in financial benefit, self esteem, self development, reduction of dependence on society and family, importance of autonomy, and so on.

communications usage (INFOWIN 1999) and developed clear guidelines for adaptation of devices for wider benefit (GAM 1998). Such applications show how adaptation of mobile communications can significantly enhance the quality of life of PwD, and can allow them to exploit advanced communications anytime / anywhere (Bristol 1998 - UMPTI DUMPTI site).

In parallel to the ACTS programme a number of community-based projects in UK, Netherlands and Flanders have shown how people with disability can telework in a range of scenarios allowing them to join social and economic activities despite barriers of mobility (PERIPHERA 1998), or barriers of communication due to deafness (IvD 1998). In all cases the success is remarkable, yet is still restricted by the lack of broadband services in remote areas and to households. People with mobility impairments are running a 'one stop shop' in Flanders, operated as a customer call centre with clients such as the local authorities, but need to develop further as a distributed call centre to allow PwD to work from home while retaining good quality visual contact for inclusion, reduction of isolation, team building, and all of the features we recognise from CSCW developments.

In parallel, and promoted by ACTS participants, some PwD have formed a new initiative aimed to encourage inclusion in IS and advanced communications usage (ISdAC 1998). The emergence of groups such as ISdAC demonstrate the readiness of the communities thought of as 'disabled' to re-enter society - but help is needed. Current audio-visual communications over Internet are very poor, while solutions such as ISDN and ATM are too expensive. Yet ACTS has shown that high quality video communication is possible using IP (as IP over ATM and Fast Internet). This is made possible by H323 Videotelephony (H320 not suitable for connectionless environment) which has been demonstrated in ACTS trials using IP over ATM for broadband to the home and small business (IBCoBN 1998b).

The IBCoBN project has also tested 'cable modems' which allow broadband connections as IP over ATM arranged as "24hr live" links and, while this is a more recent technology the spread of cable modems in Europe promises even greater opportunity for new ways of working. People with disability can use new technologies and flexible working techniques to facilitate entry to the world of work, and access to a 10baseT hub in the home could greatly increase scope for flexible enterprise development. Existing advanced communications technologies have already been used to good effect to overcome barriers of disability and the most recent developments in ACTS can only strengthen and increase benefits in this area in the future.

Flexible working in remote regions of Europe

The general picture shown for people with disability is not very different for people in remote regions. They are excluded because of barriers (this time its geography) and need access technologies which overcome such barriers. Again, the basic needs are for access to work, cultural and social opportunities for reasons of finance, self esteem, self development, and importance of autonomy. In addition, they need to reduce outward migration, and to boost inward investment. Presently many people leave remote regions to find work, so we are still in the same condition as at the onset of the industrial revolution. The multimedia training centre in Magherafelt (in the north of Ireland) is a good example of need. Here, a community has fully embraced the promise of the IS and is training young people and small business in new technology usage. But still they have to operate over narrowband technology. Further south in Ireland, the East Clare Telecottage (PERIPHERA 1998) has established a low cost 'customer call centre' (CCC) and, after a two year struggle, has become the first user of ISDN in the area. The benefit to business is so obvious that they are rapidly stretching this technology to the limit and need genuine broadband to extend their community-based operation for greater benefit

Further exploitation of ACTS results

Progress is already being made to ensure that the benefits of ACTS results are directed towards programmes of social inclusion. The examples focus older people, people with disability, and people in remote areas, while others can readily be found addressing minorities and people in depressed urban areas. It is evident that there are many issues for consideration in the broader exploitation of ACTS for wider benefit, and some are briefly discussed below.

• Access to the technology

The general environment is moving to ubiquitous access to PCs. This ensures access to

technology to allow human-computer-interaction for people with disability. Added support for the general population is provided by USINACTS (USINACTS 1998) who address general usability issues, and UMPTI DUMPTI (UMPTI DUMPTI 1998) who focus mobile communications and special needs.

It can be assumed, therefore, that the key future issue is not access to terminals, but access to applications and connectivity for more advanced 'new ways of working' using ACTS technologies.

• **Technology for access to society**

A key problem for end users is acquisition of suitable access technology (the gap between the user terminal and the telecommunications backbone, sometimes referred to as the local loop). New access technologies are generally deployed first to larger business communities, so there is a need to ensure that affordable access technology is made available to small business, NGOs, community organisations, and even people at home. Projects such as IBCoBN have demonstrated a range of access technologies including IP over ATM using ATM switches and terminals, and also using cable modem technology. Other projects such as ATHOC have developed ATM based solutions showing access from the home and small business (INFOWIN 1999, ACTSLINE 1999) and demonstrate how disabled people, older people, and people in remote regions could be included in the European Information Society.

The technology horizon is, of course, not fixed and while the robustness and reliability of ATM continues, solutions such as IP over ATM seem to offer added flexibility and can easily exploit the rapid developments in IP based applications from the Internet domain. The rapid spread of cable modems allows completely flexible IP-based interconnectivity, and there are even ACTS trials showing IP over broadband wireless demonstrated for Teleconferencing and broadband WAN applications (IBCoBN 1998c)

It is encouraging that we are already seeing exploitation of ACTS results in technologies which facilitate access to society by previously excluded groups. This progress must be continued and its focus maintained in advanced communications developments.

• **Technology for human contact**

Access to society is, of course, not a one-way process restricted to faster/better information access. A significant value of advanced communications in reducing social exclusion is the ability to support better levels of interactivity. It has been shown early in ACTS (Wilson and Descamps, 1996) that the required quality for visual communication (videotelephony, videoconference, VR moving image streams) cannot easily be supported by the more widespread telecommunications at present. That work showed, using many types of people and ranges of tasks in natural environments, that we need high quality videotelephony at 16 fps and upwards for natural speech reception and interaction. Good quality AV communication allows older people to enjoy human contact in remote service provision, and also allows people with disability, and people in remote areas, to work effectively as remote members of a distributed team without suffering isolation (see GAM 1998 for guidelines). The value of this strategy has been shown by BT in its Highlands and Islands operation where remote operators use Videophones to keep in touch with their team, albeit at lower quality at present.

Technology for human contact is also a requirement for remote service providers who deal with older and disabled clients. Real human contact is an essential part of social service provision and so must be better supported as the increasing social margin places greater strain on limited human resources.

Indeed, the demand for realism is such that even virtual reality (VR) applications have been identified by people with disability from ISdAC presenting to the ACTS workshop 'ACTS in the Home' (AIH 1998). Here it was convincingly argued that VR could allow PwD to access the world of work in a more visual way, and in a more realistic way. Shared virtual environments could allow isolated people to work together 'as if in the same place' so reducing the feeling of not really being 'in on the action'. This could as easily apply to any isolated person - someone in a rural area, someone acting as a carer at home, or someone working from within an ethnic community.

Summary

The general European concern about 'social inclusion' has been placed on many political agendas, and is now a firm part of any technical agenda which implies social engineering or social change. The less favoured minorities together present a significant percentage of the European population whose exclusion from the social, cultural and economic life of Europe must be addressed. A number of ACTS developments have provided a spearhead action which clearly shows different ways to utilise advanced communications to overcome the barriers which drive exclusion. More recent developments in ACTS and new development objectives in the Fifth Framework Programme suggest that there is a great deal of opportunity to build on the existing successes and to ensure that advanced communications technology and services are fully exploited for greatest social inclusion.

References and links to related information :

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Bristol 1998 - UMPTI DUMPTI project - online at <http://www.bris.ac.uk/Depts/DeafStudies/Projects/Research/index.htm>

INFOWIN 1999 - ACTS Information Window - online at <http://www.infowin.org/>

ACTSLINE 1999 - ACTS Results Channelling - online at <http://www.actsline.org/>

GAM 1998 - Generic Access Working Group, Guidelines online at <http://www.i-d.co.uk/gam/>

IBCoBN 1998a - Description and project results online at <http://ibcobn.nssl.co.uk/>
Example case online at <http://www.i-d.co.uk/ibcobn/>

IBCoBN 1998b - "Description of the Experiments", Wilson, F., December 1998, Deliverable D8, ACTS Project AC101 , IBC on Broadcast Networks. Contact the author.

IBCoBN 1998c - The UK Experiments in IBCoBN include wireless broadband carrying IP over different wireless carrier technologies - online at <http://www.mvds.com>

ISdAC 1998 - The Information Society disAbilities Challenge - online at <http://www.isdac.org>

IvD 1998 - The Netherlands Instituut voor Doven (Institute for the deaf) - online at <http://www.ivd.nl/>

PERIPHERA 1998 - the Periphera project sites are online at <http://www.periphera.org/>

USINACTS 1998 - A project of the ACTS programme addressing usability issues - online at <http://atwww.hhi.de/USINACTS/usinacts.html>

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CV of presenter.

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