

FINAL REPORT

UR 1022 PERIPHERA

Telematics Applications and Strategies Combating Social and Economic Exclusion

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TELEMATICS APPLICATIONS PROGRAMME Urban & Rural Sector

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UR1022 PERIPHERA

Telematics Applications and Strategies Combating Social and Economic Exclusion.

PERIPHERA

PERIPHERA demonstrated the use of Telematics for remote working to improve social inclusion of groups isolated by geography, culture, social circumstances or ability / disability issues.

Setting the Scene

Marginal groups of citizens are unable to access the opportunities so easily accessed by the rest of European Society, either because of location, ethnic origin, disability, etc.

The objectives of PERIPHERA were to establish a strategy and working demonstrators showing Telematics support for marginalised groups whereby they may exploit new technologies and new ways of working for socio-economic integration.

The targeted user groups were long term unemployed, ethnic minorities, remote rural populations, and disabled people.



Approach

The project brought together participants from seven Member States of the European Union, including seven development and training organisations who recognised that training is not enough. What was needed was a more concrete strategy for accelerating previously marginalised citizens into new employment opportunities.

The needs of the user groups were carefully analysed and it was decided that each hosting organisation should extend its infrastructure to provide

a 'work-space' where trainees could together develop business opportunities with support from the host experts.

For each site a unique mix of Telematics applications was devised to meet user skills and potential customer requirements in the immediate market.

The project developed these sites in an iterative 3-phase model allowing testing and refinement of the concept in each project year.

Throughout the process the user group were the primary reference and are now the beneficiaries.

Results and Achievements

The project developed new strategies for economically viable small business in the new information society, including Customer Call Centres (Small Scale), Multimedia Production, and Web Site Design.

The technologies of Internet, Multimedia Production, Call Centre (CCC), ISDN connection of Virtual Sites, and Remote Education have all been used to good effect.

The benefits include demonstration of small scale enterprise as an access mechanism for socio-economic integration, and even disabled and remote rural communities have shown success.

In each site a committed community training organisation has hosted the new PERIPHERA centre. Each is now set up as a self-help venture, with continued host support. The technical and financial success have proven the concept in each case, and the end users are busy extending their competence and new business through Telematics exploitation. The key applications are Customer Call Centre

using CTI (computer/ telephony integration), Multimedia Production from remote locations, and Web Site Production by distributed teams of previously unemployed people.

PERIPHERA has also launched the first European Telework Centre for Deaf people, which is a joint venture between the NL Instituut voor Doven (IvD) and a commercial employment agency - such is the power of Telematics Applications when designed to fit the real user needs.

Conclusions and Plans for the Future

The seven PERIPHERA sites now have an added value enterprise with proven capability through controlled demonstration.

Telematics solutions will continue to be exploited, and the ideas are already being transferred to other organisations in Europe. In each site a firm business plan has been developed detailing commercial exploitation on a larger scale, some involving commercial partnership.

Contact Details

Project Name:

PERIPHERA - Telematics Applications and Strategies Combating Social and Economic Exclusion

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Telematics for Improving Employment and Quality of Life / Employment and Teleworking

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Part II

(The Final Report main text)

1. Setting the Scene

Within the diversity of the European Union there are a number of barriers which work against full economic and social participation. These are created by features of geography, social context, market development, and ability issues amongst others. As a consequence, many marginalised groups of citizens are unable to access the opportunities so easily accessed by the rest of European Society, either because of location, ethnic origin, disability, etc.

In each Member State there exist many local initiatives which attempt to reduce marginalisation. At a European level there are also strategic initiatives aimed to reduce barriers to full participation in European life. However, many of these are aimed at increasing the direct competence of the individual, in terms of personal marketable skills for example, but do not fully take account of the ensuing difficulties of skill exploitation in a competitive environment.

In many regions of Europe, series of training programmes provide respite from unemployment through transition to the status of 'trainee' in a new skill area. What happens later is an incredible success for a great number of people who go on to employment armed with new skills. However for a minority, the training period concludes with a return to unemployment because the enduring barriers of geography, cultural minority, ability, etc. cannot be fully overcome simply through training.

A number of established training agencies have long recognised the above truth, and have actively sought ways to overcome this consistent problem for a proportion of new trainees. They have experience from a range of situations where different barriers drive socio-economic marginalisation for specific reasons, and were well aware of the need to develop an overall strategy focused on skills, but also including other forms of support to make skill exploitation a reality for all.

Rural Ireland - Produces some of the highest levels of education in Europe, and yet because of the historic low level of Industrial and Commercial enterprise, faces an established outward migration of its most talented young people. This loss of skill encourages a reluctance towards inward investment, and so the cycle is propagated. The participants from this region recognised the need to develop a strategy which would allow building of new business, acquisition of experience in new skill areas, and competition at the European level for work which would encourage local development and local enterprise. In addition, the concept of 'small scale' customer call centres was an idea which they wished to investigate since the emergence of the technology might allow exploitation at a local level (in a Telework centre).

Post Industrial East Midlands of England - Hosts an environment where small business must carry the major portion of the social burden and yet survive in an extremely competitive environment. The examining areas include two significant populations requiring re-training and re-skilling: those who cannot find work in heavy industry and so must move on; and those who have been disabled by industrial accident and so must adapt to new forms of work. The participants in this region recognised that the many small-scale training centres needed to develop methods of distributed work / collaborative working in order to both achieve economies of scale and allow themselves to compete for larger contracts.

Inner City Deprived Area in London - Is home to an established paradox whereby the home of new media enterprise and the fringe of the successful finance district of London are situated alongside some of the most depressed areas in the city. Local initiatives exist to train young people from the depressed areas in skills which are in demand in the financial service and new media sectors. However a minority of able students cannot find work for different reasons. Single parents cannot work standard

hours; ethnic minorities still face obstacles; older trainees lack standard educational history, and so on. The participants in this area recognised that many unemployed trainees could explore their own business opportunities if they had a work space and support infrastructure for startup.

South Limburg after Mining - Shares many of the features of the East Midlands of England, and is even more dependent on its SME culture. In addition, the local initiatives geared towards disabled people were very supportive of independent living and provision of skills for new employment opportunities. The participants in this region were determined to facilitate the development of small independent business by disabled people who possessed the necessary skills, and to provide support for users of the work-space, and for new SMEs moving out to compete in the open market.

Flanders Small Enterprise Environment - Provides an example of a region where SME culture has been very successful. The region is also keen to integrate its disabled population and provides a range of training and workshop facilities. They even started a telework centre for disabled people, but recognised that the traditional low-skill work given to such groups is not completely appropriate. The participants in this region wanted to increase the skill level of the user group and to exploit new technologies for remote working in new and interesting ways. Especially ways which would increase skills, social integration and self esteem of disabled people. A customer call centre was envisaged as a good initial target.

Objectives: Based on the background experience of the participants, the objectives of PERIPHERA were to establish a strategy and working demonstrators showing Telematics support for marginalised groups whereby they might exploit new technologies and new ways of working for socio-economic integration. The targeted user groups were long term unemployed, ethnic minorities, remote rural populations, and disabled people.

The key intention was to work closely with the target groups and, based on agreed perceptions of real needs, to develop work-spaces, Telematics solutions, and exploitable strategies which could be developed as part of the local infrastructure. The results should show how marginalised groups might find work opportunities and increased success through Telematics exploitation.

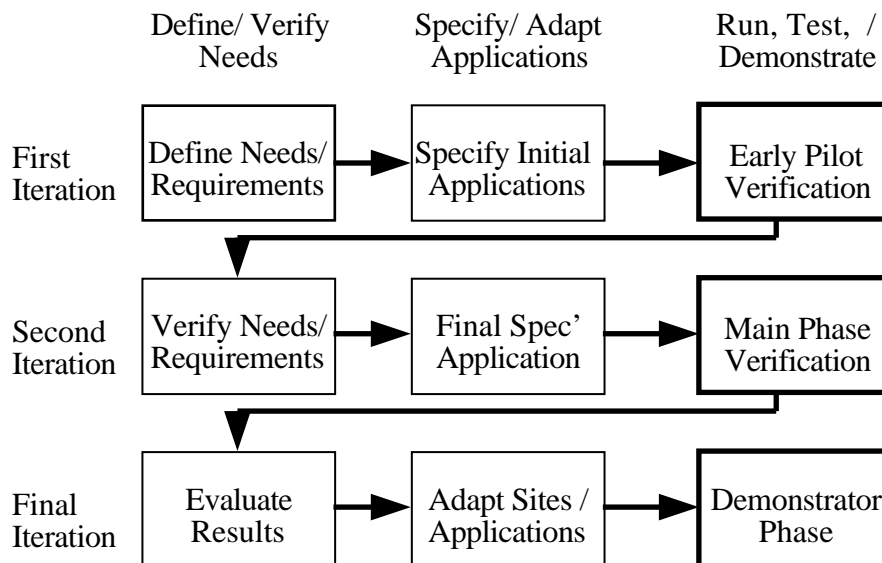
2. Approach

2.1. General Approach

The participants in PERIPHERA, in fulfilment of the objectives previously mentioned, decided to adopt a user-centred design approach with ‘iterative design’ at its core. This was because of the large number of uncertainties in the problem area, the high degree of complexity (especially in social/cultural dimensions), and the lack of established success examples from preceding work.

The traditional 5-phase model is well established for technical development where a great deal is known (high certainty). However it is very much a “one shot” operation (study needs, define specification, build demonstrator, test with users, exploit). In cases where the requirements turn out to be ill defined or very complex, or where the specification turns out to be inaccurate, the resulting demonstration may show a need to re-iterate the design process and, if the timescale has been used up by the one-shot approach, this may lead to failure.

The participants adopted an iterative cycle whereby the elements of the five phase model would be repeated in each of the three project years. The diagram below shows the main components, and in parallel the design activities were ongoing, as were the activities associated with exploitation planning (this also started in year one !).



The project also included a set of matrix functions :

- **Technical coordination** - to ensure technology issues were centralised and known.
- **Application coordination** - to ensure all usage and application issues were exposed.
- **User / Evaluation coordination** - to keep user issues in focus at all times.
- **Exploitation coordination** - to develop exploitation actions incrementally.

2.2. First Iteration - Early Verification Pilots

In the first year of the project (1996) each application site conducted a rapid definition of user requirements and then set out to test these in an early-verification pilot trial. The main purpose of the pilot trial was to allow early user involvement and a rapid evaluation of the user requirements definition. Because the project was breaking new ground where not much was known, it was felt necessary to minimise the initial steps of 'theoretical' requirements enquiry and to allow users some early experience. The early experience with sample and prototype applications was intended to allow access to real understanding by users, observation and assessment of usage by users and experts alike, and a rapid revision / verification of the end user requirements within the first year.

In each of the sites a realistic application was mounted to show what might be done in response to the needs defined in the early study. These applications included shared workspaces and distributed working scenarios, and addressed tasks such as distributed multimedia design, distributed web site design, small scale customer call centre services, and collaborative working for database production.

In each case a small set of users were used as a 'focus group' and were allowed to conduct realistic tasks with the systems implemented (see deliverable 4 for detail). The main aims and objectives were to :

- test the accuracy of the initial user requirements
- allow user to gain real experience for requirements verification
- test the initial system designs with real users
- prove/demonstrate the basic concepts before investing in full scale production.

The evaluations were conducted in each site and included observational studies, user interviews and questionnaires, focus group discussions, and assessment by external experts. The criteria for success were similar for all sites, and included 'conformance with user requirements', 'enablement of remote and distributed working', and 'acceptance by users and experts alike as a sound basis for new strategies towards social and economic inclusion'.

The results obtained showed that the overall concepts were sound, and the initial implementations were very close to an acceptable target. They also showed a number of areas where functionality and support should be extended, including :

- need for mediation and support in working with commercial companies (users not able to cope with all business functions on day 1)
- need for increased support for business development
- need for access to ongoing training for staff development
- necessity of exploiting immediate market to allow quick activation.

These findings (detailed in deliverable 4) allowed the sites to quickly adapt the applications for launch in the main verification phase.

2.3. Second Iteration - Main Verification Phase

Based on the early verification results, each site launched its application with some confidence and quickly established an active user group. The following table illustrates the site locations, the technology used and applications mounted, and the user group who were its initial beneficiaries.

Site	Technology / Applications	User Group
Host : ARTEC Site Location : London, GB	Asset generation tools (2d and 3d rendering plus video), Quicktime VR, Multimedia authoring tools, Animation and modelling tools, Internet and regular office IT, Web page design tools.	Target Users : Long-term unemployed, multimedia graduates from ethnic minorities, disabled people, and socially marginalised people. Number fully active : 5
Host : East Clare Telecottage Site Location : East Clare, Ireland	ICE call centre system, 7 ports (3 agents, 4 analogue trunks), expandable to 96 as required.	Target Users : Rural teleworkers and Customers Number fully active: 5
Host : FASTT Site Location : Hoensbroek, NL	Remote access software, H320 videophones, HTML/JAVA editing tools, web management software, multimedia presentation tools. Web-Database applics and CSCW Groupware, providing collaboration platform, Fixed (leased) ISDN line to accommodate multiple site traffic	Target Users : Disabled graduates Number fully active: 6 NGO's and SME's: 8
Host : IvD Site Location : Sint Michielsgestel, NL	H320 videophones, T120 applications, Internet and regular office IT	Target Users : Unemployed deaf adults Number fully active: 6
Host : Newlink Site Location : Nottingham, GB	H320 videophones, Centrex site interconnection, ISDN links between servers/sites, Intranet and standard office IT.	Target Users : Unemployed and disabled Number fully active: 8
Host : TeleOffice vzw Site Location : Hasselt, BE	Distributed call centre technology (InfoKiosk), Software for registration of requests (DB), normal office IT.	Target Users : Disabled people Number fully active: 4
Host : NP/Workspace Site Location : Magherafelt, GB	Pentium PCs, Novell Ethernet network, multimedia authoring tools, Web page design tools, Internet.	Target Users : Rural unemployed and SMEs Number fully active: 5

In each site the operation relied on a local partnership between the host training organisation, the public authority or local administration, and the commercial organisations who were in most cases the initial customers. A number of highly innovative features were seen in the main verification phase, including :

- small scale customer call centres (CCC)
- distributed teams of web designers who were people with disability
- distributed Lotus Notes applications linking several small sites (virtual organisation)
- distributed call centre technology (including disabled agents at home)

2.4. Final Iteration - Demonstration of Periphera

The verification phases of PERIPHERA ran for more than a year, and in each case allowed the local partners and the site users to fully explore the technology in use, the applications employed, and the overall concept underpinning the site design. Each site saw a range of benefits around the common theme of providing access to work opportunities for specific marginalised groups.

At the end of the verification phase, when all of the participants were sure that they had ‘got it right’, the project moved into its demonstration phase where they became much more ‘public’ in their orientation. Several publications and public presentations were made at the European level to disseminate emerging results and indicators of success, and at the local level a great many demonstrations and visits were arranged in every site.

The public demonstrations allowed ‘concretising’ the local initiatives and planning for exploitation was then made more real. Planning for a real future.

2.5. Exploitation Planning

The activity of exploitation planning was conducted as a parallel activity throughout the project period (3 years). It started in year one with a definition of exploitation **targets** (what the sites wanted to achieve when they were ready for action - how it should really be). Targets included achieving financial independence, creation of a viable business model, establishment of a management process, and startup of operation in the selected market. These were then specified (in the second year) as realisable objectives in a set of exploitation **actions**, i.e. what had to be done to reach the targets. The local actions began in the second year as sites and users developed their initial business activities as part of the realistic ‘verification’ work. In most cases this was developed incrementally towards operational readiness in the demonstrator period, but in all cases was encapsulated in a clear **business exploitation plan** (see deliverable 12 for details).

The benefit of treating exploitation planning and development as an ongoing parallel activity with targets, actions, and detailed exploitation plan, is that each site was continuously concentrated on the final target - an operational entity, and not just an experiment.

2.6. Peer reviews, Feedback and General Impressions

Throughout the project period the partners submitted their deliverables and reports for peer review. The reviewers were selected for the complementary skills which overlapped significantly with the application area : one was a public authority developer of Telematics Applications with experience of community building programmes; the other was a Human Factors engineer with application development experience in the commercial sector, plus experience as a PhD supervisor in an academic research environment. Together they provided a supportive peer review environment plus an ever critical appraisal of the project activities (most important).

Feedback from the peer review process highlighted the extreme relevance of the work in PERIPHERA for European authorities concerned to minimise exclusion of European citizens. They noted that the project illustrates the potential for **socio-political impact** of the introduction of Telematics technologies, and also emphasised the need to examine the effect of introduction of state of the art technologies on the development of **new work practices for disadvantaged groups**.

Other forms of feedback were obtained from local authorities, national authorities, and regional groups also concerned with economic development and the effect of European developments on potentially marginalised groups. Again, the power of **Telematics technologies to help minimise social exclusion** was emphasised, and the project was generally well received as an example of good practice in that regard.

Most importantly, the user groups and focus groups unanimously accepted the applications trialled in PERIPHERA as **an access route for new forms of work to reduce marginalisation**. Here, the enthusiasm was driven not only by the prospect of increased access to the world of work, but also by the increased self esteem and 'technology-able' identity afforded participants in the new enterprises.

Presentations made to conferences such as European Digital Cities, and fora such as the annual Telework Conference, were used as vehicles for dissemination of good practice, and the feedback form such events seems to confirm local findings - public authorities Europe-wide could gain benefit by exploiting Telematics to help reduce social and economic exclusion at a local level.

2.7. European Collaboration

It is accepted by all participants in PERIPHERA that they could not have achieved the same results without European collaboration. By exposing and sharing their local problems they were able to develop a more complete picture of social exclusion issues Europe-wide. They were also able to learn from each other, and through a spirit of open collaboration they were able to become active participants in the development of each other's local solutions. This increase in critical mass of experience and skills was probably the main power behind the success of the PERIPHERA project, and was greatly added to by the extended breadth of understanding developed by such a participation.

In addition, the exposure to and collaboration with a wide range of complementary projects in the TAP concertation process allowed many participants to learn and extend their grasp of the wider range of Telematics applications. This allowed a more considered view of forward planning and extension of the original local plans for future development.

3. Results and Achievements

3.1. General Summary of Achievements

The PERIPHERA demonstrators have been implemented in seven distinct sites addressing complementary aspects of the overall concept of exploiting Telematics technology to reduce marginalisation, improve social inclusion, and show opportunities for new ways of working to overcome exclusion. The demonstrator model has been conducted in all sites and the main success features include :

Site	Description of demonstrator model implemented.
Host : ARTEC Site Location : London, GB	A production studio was set up and has developed a portfolio of services to secure contracts in the multimedia design sector employing ARTEC training graduates from marginal groups. ISDN, FTP and email, allow remote working for clients country-wide. The centre supports a large number of users on a 'shared usage' basis allocated by project needs, and has proven its operational capability in the verification period. "ARTEC Studio" is now fully operational.
Host : East Clare Telecottage Site Location : East Clare, Ireland	A 'distributed' customer call centre has been launched as a 'small scale' operation suitable for remote rural areas. Teleworkers have developed and secured new business from within an established and successful telework initiative. Business plans to further develop the centre are complete, with links to home agents/ other Telecottages established. The demonstrator has involved expansion of the translation service and shows the potential for a competitive rural-based business.
Host : FASTT Site Location : Hoensbroek, NL	A web-site design, implementation, and management initiative has been launched as an addition to an existing and successful training programme for disabled people. The demonstrator shows that disabled people can exploit a 'self help' approach to provision of services to customers from a remote location. Linux based Groupware and distance collaboration scenario's have been implemented to facilitate virtual teamwork. This low cost "package", including training, is a service also provided to NGO's, disseminating the idea beyond PERIPHERA. Two satellite sites have also been installed for other groups of users.
Host : IvD Site Location : Sint Michielsgestel, NL	A telecentre has been launched to provide training in administrative work for unemployed deaf people. The results show the concept is workable, and the deaf group are keen to exploit further opportunities. The centre is now being used to initiate and support remote employment initiatives for deaf people with exploitable skills from within a remote location, and is a partnership between commercial (employment agency) and public (IvD) initiatives.
Host : Newlink Site Location : Nottingham, GB	A 'distributed organisation' has been implemented by interconnecting four existing training/work centres in remote locations. Training in Telematics usage has been completed within the centres, and trainees are now also able to work from their homes as part of a distributed initiative exploiting opportunities in DTP, administrative work, and data processing for remote customers.
Host : TeleOffice vzw Site Location : Hasselt, BE	A distributed 'customer call centre' has been implemented allowing disabled people to work from home as part of a self help initiative whereby they provide a front-end to local authority services in multiple languages. The results prove the concept as practical and viable, and clearly demonstrates how disabled people can be better included in the socio-economic life of the region through creative exploitation of new Telematics technologies.
Host : NP/Workspace Site Location : Magherafelt, GB	A multimedia training and production centre has been launched to enable people in remote , rural areas to access new skills and qualifications, and to conduct work for external employers in the region and beyond. Active users have opportunity to translate skills and experience into real employment through fulfilling projects for remote customers in the region and beyond.

Each site has been hosted by an established training organisation who now provide new technologies and applications responding to the needs identified in the user group. Users have an established relationship with the host organisation, ensuring a level of commitment on both sides, and each host has a continued commitment to the selected user group, commonly embodied in their constitution as training agencies. The applications have the common theme of allowing 'remote working' as an access strategy either to overcome geographic limitations (remote area), physical/sensory limitations (disabled), or topological/topographical limitations (inclusion in 'virtual organisation'/ critical mass of small groups).

The specific applications range from 'customer call centres' where a 'front office' function is provided centrally by a 'telework team' to a large number of clients (Hasselt and Clare), through to remote and/or distributed production of Multimedia and Web Site content (London, Magherafelt, and Hoensbroek). There are also applications looking at remote working of a more conventional nature, such as office work and administration (Sint Michielsgestel, Nottingham), and all of these seek to exploit opportunities to overcome barriers through the creative use of Telematics for 'remote access' to the world of work.

The previous table summarises the key achievements of the seven sites, and in all cases the general approach of PERIPHERA has been localised to ensure a suitable response to local needs and specific opportunities. In addition, the groups concerned with people with disability (PwD) launched the Information Society Disability Challenge (ISdAC) as a project extension. This is now an International Association run by PwD for PwD (see the new web site at <http://www.isdac.org>)

3.2. Shared Experiences in the PERIPHERA Demonstrators

The results from the PERIPHERA sites show a significant level of success despite the barriers faced by each. The total costs per site for a three year design, setup and operation shows an average of around 450kECU per site. This level of cost is quite insignificant when compared to the costs of providing training and subsequent "activity" programmes for groups of disabled people for example, and illustrates the scope for cost savings by authorities through allowing user groups to generate (part of) their own funding. In some cases the additional funding from Telework has been small (but useful), while in others it has been so successful as to allow new SMEs to form as profitable enterprises.

The experience in PERIPHERA shows that unemployed people want to work and to participate fully in the economic life of society, but authorities often aim at "occupying" them rather than "providing a real occupation". Allowing people to exploit whatever skills they have, as part of a competitive market, ensures that the individual has the opportunity to maximise potential. There is also a need to ensure that the skills in the user base can be formed into something attractive from a commercial point of view, and this can be further supported by the PERIPHERA theme of 'shared workspace'. Workspaces can be physical or 'virtual', and a number of sites have mixed these modes to good effect so that people do not have to travel to the centre, and can operate as remote agents in a collaborative team.

Each PERIPHERA site contributed experience in the general requirement for launching a ‘self help’ organisation for Telework exploitation, and showed a need for an **operational model** providing a clear pathway from training to employment based on needs. The model must incorporate an **access mechanism** designed as a strategy for access to the world of work, and as an operational construct with characteristics mapped to users’ abilities (**suitable skills**) and market demands. This also requires a set of **technical solutions** to support the operational model and the defined access mechanism. These elements must be implemented within a **user centred** organisation which, in contrast to ‘owner’ or ‘profit’ centred approaches must place the users first. In addition to these key operational considerations, it has also been seen that the situations people are trying to escape from may offer a “**benefit trap**” or similar mechanism mitigating against success. The table below provides another view of the range of activities, users and local situations addressed.

Site Location	Applications and Technologies	User Group
ARTEC, London (UK)	-Remote Multimedia Production using mainstream applications + videoconferencing and Internet	Minorities / Marginal groups
Magherafelt, N.Ireland (UK)	- Multimedia Production Training using mainstream applications +videoconferencing	Rural Community / Unemployed / SMEs
Hasselt, Limburg (BE)	- Customer call centre using advanced telecoms infrastructure	Unemployed / Disabled
Newlink, Nottingham (UK)	- Distributed organisation using a range of ‘office’ IT plus videoconferencing + Internet	Unemployed / Disabled
Hoensbroek, Limburg (NL)	- Distributed Web site design, CD-ROM production, data processing using common IT + v.conference and Internet	Unemployed / Disabled
Scariff, East Clare (IR)	- Customer call centre using ICE equipment	Rural Community/ Unemployed
IvD, Sint Michielsgestel (NL)	- Administrative teleworking and training using IT plus video-conferencing and Internet	Deaf people

The general concept underpinning PERIPHERA is not greatly dissimilar from the definition of any small business enterprise. However, its target is non-standard (marginalised groups) and its proposed situation (existing training initiatives) shows demand for tailoring in each implementation. Seven instances have been described previously, and are illustrated in section 2.

To realise the PERIPHERA model for a local implementation, each site has had to map its own user group competence to the needs of the market. This has relied on development of a partnership between the centres, their public authorities, the training organisations, and external support such as sponsors and early customers. In each case we have seen the general approach become realised as an example whereby a “self help” activity has emerged from detailing the processes required to address

user needs, through exploitation of a suitable Telematics access mechanism (and specific technical solutions), where suitable skills are provided in relation to a defined market - and all of these elements are coordinated through a user centred organisation. This latter feature is probably the key to the whole problem of reducing exclusion. Traditional business enterprise is “owner” or “profit” centred. While business must attend to profit issues, it is the address to needs of the citizens involved which is the main distinguishing feature of PERIPHERA sites. They start by asking “what do the potential workers need” rather than “what workers do we need” - the centre of a self help philosophy.

3.3. General Technical Perspective

From the early PERIPHERA pilot trials many critical lessons were learned, particularly in the areas of sharpening focus, extending training and facilitating collaboration between Telematic Application Sites (TAS). However, in almost all sites, many low-level technical issues were identified which required each TAS to refine its choice of tools for the main demonstration phase. While it is understandable that such issues arise when users try to deal with a variety of new applications and technology, it did demonstrate the value of the iterative approach of the project. The technical lessons learned, presented an opportunity for the sites to share this experience and strengthen the processes involved in creating appropriate platforms across the 7 TASs, to support applications for enabling access to employment by marginalised groups.

The project research found that while the 7 sites had different user groups and regional situations their application needs were similar and could be accommodated in a common open T120 generic layered implementation framework of 6 application areas, ranked in the following priority from an interworking/ implementation point of view:

1. Distributed Telematics infrastructure,
2. Telework Telematics Environment,
3. Training,
4. Employment,
5. Specific Applications,
6. Assistive Technology.

As the project was about diversity of practice and technology contextualised to each specific TAS and user community, this layered implementation framework allowed the Partners to work together in the following overlapping Application Clusters:

1. Teleworking Applications,
2. Call Centre Services,
3. Multimedia Remote Authoring,
4. Internet/Web Applications,
5. Training.

To enable users to work effectively in these applications, we concluded that user training needed to cover elements of a common set of modules including:

- Telematics,
- Business,
- Teleworking,

- IT/Internet,
- Videoconferencing,
- Office Applications,
- Team Building,
- Marketing,
- Multimedia/Web Design,
- Project Management,
- Call Centre operation,
- Software and Database applications.

3.4. Requirements for Future Development - the Exploitation Perspective

The experiences in PERIPHERA have shown how these example organisations and user groups have dealt with the barriers and opportunities in their own specific situations. While their success in the demonstrators provides a good basis for dissemination of experience and methods, they recognise that there is a significant need to generalise and clarify a number of issues. This further research, which could form part of the exploitation activity, would ensure that the future of Telework in Europe includes focus on the needs of marginalised groups. The themes emerging from PERIPHERA address the forming of groups of marginalised people into operational units for Telework exploitation, and so do not directly address the single “home-worker” who is often the focus of Telework activities (from Wilson and Swash 1998).

Matching Skills to Customer Needs - Having Something to Market !

The users in PERIPHERA have been somewhat opportunistic, and have exploited new markets where there is a high demand and good prospects for new entrants, such as web site design, multimedia production and customer call centre services (small scale). However in every site this has required rapid extension of training to ensure suitable skill levels, and very often the selection of ‘self starters’ who can learn ‘on the job’ when novelty is required. This suggests an enduring place in the market for such entrepreneurs, but begs the question of how to ensure a place for the larger set of marginalised citizens. There is a need to examine the developing markets more closely so as to form a more solid basis for predicting areas (and skills) for exploitation through Telework.

Access to Work and Shared Work Space - Your Place or Mine !

The majority of users in PERIPHERA have accessed a (prepared) physical location as a shared workspace, and a significant minority have worked ‘remotely’ as part of a virtual team of some kind (e.g. home base web designer, home agent for call centre, etc.). The Telework literature has provided a general address to issues of isolation, inclusion, team formation, etc., but there is less emphasis on the issues for disabled people. The use of BSCW by FASTT has shown that distributed disabled teams can work effectively, but the high cost of ISDN videophones, and other devices for ‘virtual presence’, means that isolation and ‘perceived distance’ from the group is still a problem. FASTT have begun to examine ‘virtual reality’ simulations (such as Ultima Online) as a possible basis for generation of hi-fidelity shared space, and the project as a whole recognises the need to further explore ‘shared space’ as an area for development of better inclusion strategies.

User Driven Operation - A New Business (Support) Model?

In every site the emphasis has been on 'user control' where possible. This has been varied in its implementation since within a well formed existing organisation there is a 'modus operandum', while in a completely new enterprise there is greater scope for a 'cooperative' organisational model. The PERIPHERA concept is aimed to place control, and the means of work, closer to the hands of the users because the emphasis is more on access to work and fulfilment of personal potential than on profit per se (generation of finance is also a key element in reduction of dependence - just not the whole story). This requires a new model of operation moving away from authority-supported strategies for 'occupying' people (especially disabled people), towards a new approach where support is provided 'as needed' while maintaining freedom to move towards independence as and when this is possible. Such an approach, on a large scale, would require flexible support mechanisms which have to be defined as part of the new social landscape.

Maintaining Critical Mass - A Flexible Pool !

A key problem for initiatives like the PERIPHERA centres is the loss of talent. In many cases the successful trainees have gone off to form their own companies, and this is both a success and a problem since no business can easily deal with rapid staff turnover when the replacements have to be trained. The original model, which situates the centre in relation to an established training organisation, is one solution so long as the flow of new trainees provides enough opportunity for replacement of lost skills. Another route is to develop a flexible approach where the telecentre is a 'movable feast' whose scale of operation can fluctuate with the level of personnel available. A more attractive proposition might be the combining, or pooling, of resources between centres, however this has been difficult during the PERIPHERA project since the sites are distributed among Member States, and so there is a natural language barrier. Some exchanges of people and work have occurred where a common language exists (e.g. FASTT, NL and TeleOffice, BE), but it is felt that a more secure position would be achieved if there were many such centres in each Member State, and some kind of 'brokerage' activity addressing the disabled community in particular.

Getting the Technology Right - Is it Ever Right?

In common with all Telework activities, the PERIPHERA group have had to deal with matching the technology to the users' requirements. In the case of the disabled group, the established centres have well-formed views on both assistive technology and the use of 'off the shelf' solutions. However, it is generally felt that there is not yet a shared view of appropriate technology usage by disabled people. The promotion of the 'design for all' approach has gone some way to meeting this need, but it is still driven by developers treating disabled people as distant customers. There is a clear need to form a real consensus among the community of disabled Teleworkers through a suitable forum based within the community of usage. The ISdAC (Information Society disAbilities Challenge) has gone some way to proposing this kind of activity [see <http://www.isdac.org>].

Escaping the Benefit Trap - Teaching Society About Freedom !

In every site in PERIPHERA which includes disabled people there has been a common experience of what is known as the 'benefit trap'. In each Member State, disabled people are provided with benefits (finance, support, services) based on established needs. In most cases, if a disabled person takes up employment, then the benefit is reduced or removed completely. This means that disabled people are often fearful of taking up opportunities for work since failure would mean going back to a much reduced situation (requiring lengthy re-establishment of entitlement). Such traps do not exist for

other sectors of society, and so other citizens can take risks in exploiting their potential knowing that failure takes them back to where they were. There is a burning need to re-examine the provision of support to disabled people, and to build in measures which encourage rather than discourage self-fulfilment through exploitation (exploration) of work opportunities.

In summary, the PERIPHERA experience has proven that many groups of people can (and do) benefit from work opportunities through Telework. The establishment of 'user driven' organisations for Telework can allow marginalised groups to re-enter European socio-economic life by exploiting new work opportunities where their skills can find a market. However, the broader adoption of this kind of initiative requires a Europe-wide address to the issues described, especially those of matching skills to market needs, development of better strategies of shared work space, models of 'user led' business enterprise, pooling of resources and brokerage, disabled perspectives on 'suitable' technologies, and most importantly, reduction of the benefit trap which dissuades many competent but disabled people from entering fully into the economic and social life of Europe.

4. Conclusions and future plans

The overall project output is the proven PERIPHERA Process and Shared Experience: of “self help” Telematics Applications Sites (TAS) and a pan-European group using telematics for training and setting up teleservices that enable new ways of working, access, training and employment of people from marginalised groups.

Exploitation of the results of PERIPHERA will involve:

- Sustaining the continued development and successful operation of all of the existing PERIPHERA TASs as 7 distinct and contextualised instances of an implementation of the PERIPHERA Process and Shared Experience, based on a mix of public funding and commercial contracts.
- The PERIPHERA Partners, on an individual organisational basis, implementing the Process and Shared Experience in further organisations and communities, as has occurred with ISdAC.
- The PERIPHERA Consortium will further develop the PERIPHERA process into “designed-for-all” e-commerce and networked co-operative working of a PERIPHERA “Digital Community” of people with special needs, as part of the Fifth Framework and other pan-European initiatives.
- Creating a critical mass for an impact that will influence policy makers, particularly in the zero deficit limited social budgets of the Euro era, targeting the reduction of social exclusion, which is as important as competitiveness and environmental sustainability, the other 2 policy pillars of the EU.

The following table identifies the various elements of the “PERIPHERA Process & Shared Experience” project output and the various Deliverables where they are primarily described:

“PERIPHERA Process & Shared Experience” Elements	Source
Iterative, evolving, bottom-up & sharing <u>Process</u>	TA
Telematics Applications Site (<u>TAS</u>) & <u>Manager</u>	TA
Local <u>User Groups</u> & Determination of <u>local User Needs</u>	D5-1
Evolving TAS <u>Business/Organisation</u> Structure	D10
Teleservices’ <u>Technical</u> Solutions	D5-2
Appropriate <u>User Training</u>	D7
<u>Evaluation</u> Methodologies	D9
Public funding & private <u>revenue</u> approaches	D12
PERIPHERA <u>Case Studies shared experience</u>	D12/D10

ISdAC

A unique output of the PERIPHERA project is undoubtedly the many actions of the Information Society disAbilities Challenge (ISdAC). Although not all sites in PERIPHERA addressed disability issues, the large number of people with disability taking part in the project made possible a number of distinct achievements. It should be made clear these were the achievements of the Disabled group themselves.

The ISdAC group issued the challenge which was responded to by many influential people, as well as a large number of people with disability (PwD).

They then went on to create a unique Web environment where PwD could discuss common issues and begin to organise as a force for social inclusion in Europe.

The ISdAC participants have now formed ISdAC as an International Association, and have been responsible for activities such as making world-wide web casts of conferences (such as the TIDE conference in Helsinki), and have formed a work group collaborating with the RISI initiative to ensure disability issues are not lost in regional social inclusion debates.

The ISdAC group, like the sites formed in PERIPHERA, now has a life of its own and will continue to stimulate and organise the constituency of PwD in Europe. It will be active in FP5 and the IST specific programme, and will continue to encourage serious consideration of the social inclusion of PwD in all aspects of European life.

5. Contact details

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Project details	ISdAC details
Web Site: http://www.periphera.org	http://www.isdac.org
Time Scale of Project: 1.1.96 - 31.12.98	1.1.98 - 31.12.98 (setup)
Overall Cost: 3,351,186 EURO	300,000 EURO (inc. in project)
CEC Contribution: 1,866,506 EURO	150,000 EURO (inc. in project)

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 University of Nottingham (GB)
 Network Personnel (UK)
 MAC Ltd (IE)
 FASTT (NL)
 Instituut voor Doven - IvD (NL)
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You can obtain more information on the projects of the TELEMATICS APPLICATIONS Programme from:

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