RURAL TELEMATICS IN ENGLAND: STRATEGIC ISSUES

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Research Report

School of Agriculture, Food and Rural Development
Centre for Rural Economy

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SCENE SETTING

Chapter 1: INTRODUCING THE REPORT

BACKGROUND

The study from which this report was derived was unconventional. It draws heavily upon the findings of a group of rural representatives from the North of England who worked together to tease out and raise awareness of the strategic issues in the development of telematics in the rural North. The group met regularly during 1996. Some people’s expertise lay in rural economic development; some in community development; others in telematics applications; still others in higher and further education. The sessions relied on the mutual sharing of knowledge and experience. They were also informed by background work carried out at the Centre for Rural Economy including an audit of telematics projects and proposals in the rural North, a survey of teleworkers in the region and a review of rural initiatives outwith the North of England.

The group’s deliberations were written up as a series of issues papers which investigated the possible benefits and impacts of telematics, and the constraints to development in rural areas, which were later published by Northern Informatics (Talbot, 1997).

This report is a development of the earlier publication. Although the initial purpose of the group’s activity was to represent the issues for the rural North, it soon became clear that these were generic rather than specific to the North of England. The author has also refined her thinking through further reading, but more importantly, through having presented the initial findings to various policy fora in the North of England for discussion and comment.

Further details of the process and the group are to be found in Annex 1. As the initial study drew heavily on the experiences of representatives of the rural North, many examples were generated from that area. These will generally be of most interest to those living and working in
the North of England, but may have wider applicability. This material has been included in Annex 2.

THE STRUCTURE OF THE REPORT

This report is premised on the notion that there is a rural dimension to the whole subject of telematics which has not previously been singled out for investigation in detail: telematics has great potential in helping resolve some of the basic problems caused by remoteness; there are constraints to its development particular to rural areas; and some of the consequences of urban or global telematics policies may be detrimental to rural development.

After this introductory section come two sections which explore the potential, the constraints and the consequences from different angles. The first section takes Improving Competitiveness as its focus, and looks at how telematics could effect changes in small businesses, agriculture, and through ‘teleworking’ - three areas important to rural development. This exploration also exposes certain constraints to developing telematics for these businesses, and some uninvited consequences from external telematics initiatives. The next section focuses on Enhancing Services, concentrating on telematics’ contribution to the development of local services and to providing education and training, investigating the constraints and the consequences in a similar way to the previous section.

The report then turns to address two major constraints for rural areas that emphasise the differences between urban and rural telematics opportunities, in the section on Providing Access. The first of these chapters investigates how people living in rural areas could access education, information and communications services via telematics, and discusses how to make local access points publicly available. The second explores the forces driving the development of a more advanced telecommunications infrastructure, and exposes the many ways in which rural areas are missing out.

The final section argues that a strategic approach is needed if the benefits of telematics are to be exploited in full in rural areas. Current
telematics policies and rural policies are not adequately addressing *rural telematics*. Influential organisations need to exert more fully their planning and co-ordinating functions to resolve some of the problems for rural areas. While current thinking about rural development stresses the role of ‘bottom up’ endogenous development, the report argues that many of the constraints outlined need to be addressed on a much larger scale: at the county, region or national level.
CHAPTER 2: INTRODUCING THE RURAL

THE NEED FOR A RURAL FOCUS

Many of the acclaimed benefits of telematics are concerned with its ‘de-localising’ attributes - that where you live or work will cease to be important. Some of its proponents take this line of argument a stage further (for example, Robins and Hepworth, 1988) suggesting the end of the city as we have known it, and benefits for rural areas as long as they remain relatively low cost and flexible economies.

Is there, then, a need for a specifically rural focus to the development of telematics? This report claims that there is, for a number of reasons. Telematics is a powerful tool with the potential to improve the competitiveness of rural regions and enhance services, but this is not necessarily set to happen on its own accord. This is argued at a number of levels.

* There are ways in which telematics could be particularly pertinent in helping to resolve some current problems associated with remote living and working - not necessarily the same as for urban situations.

* There are, and will be, constraints particular to the development of telematics in rural areas.

* Some of the outcomes of the urban and global developments in telematics could well have a negative effect on rural areas.

* Telematics is a tool, or a resource, that can be put to use to help to achieve rural development aims. However, current policies, both telematics and rural, do not centrally address rural telematics issues. Where they do mention it, their rhetorics suggest bland panaceas rather than considered assessments of the benefits, disbenefits and constraints.
CHARACTERISING THE RURAL

Having suggested the need for a rural focus to the development of telematics, this section outlines some of the pertinent characteristics of rural areas. Firstly, it explores the variety that exists between different rural areas. It then addresses the concept of distance - something that telematics is purported to be able to overcome for rural areas. Finally the usage of the term ‘rural’ in this report is outlined.

The Differentiated Countryside

It is important when conceptualising rural areas to think of their many forms (see Marsden et al, 1993). It is useful in the context of this report to explore three main categories: the remoter areas, areas historically dependent on the primary sector, and rural suburbia, but it should be borne in mind that these categories are not necessarily mutually exclusive.

The remoter areas

There are a number of aspects to this 'remoteness': these areas are remote from the region's conurbations and hence from markets and services; these distance problems are compounded by difficulties of climate and terrain and, for some, by the low level of public transport provision; and in addition there is a relative sparsity of population.

Within these remoter areas, there is a range of settlement sizes and types. There are some larger settlements either with a traditional manufacturing base or acting as the service centre for a rural hinterland. These market towns may have a range of local shops and services including a bank, doctor, library, school and pub, providing for most daily needs. For people living and working in these rural centres, remoteness will only be a problem for those needing access to specialist services or urban markets. Over time, remoteness is becoming a more widespread issue as the traditional economic and service functions of these market towns are cut back, increasing the need to travel.
Most rural settlements, though, are on a smaller scale. Some villages have a reasonable level of facilities: a general store/post office, a pub and a village hall, plus a primary school, and perhaps a library and a doctors' surgery. Most of the smaller villages have few if any local facilities: perhaps just a pub or a village hall. Some mobile services may help, but most of the households in these areas must travel on a frequent basis for work, education, and shopping; local businesses have to draw their supplies from outside areas and will need to market and sell their goods at a distance.

Then there are the isolated households: hill farmers, for example, at a distance from the local village, perhaps cut off for parts of the winter. These households need access to the same facilities as other families: schools, shops, off-farm work etc. Likewise, the farm business has similar needs to any other business: access to markets and specialist services.

**Areas historically dependent on the primary sector**

All rural areas have been affected over many years by the decline in primary sector employment. In recent history, this has meant particularly employment in coal-mining, forestry, fishing and agriculture.

For those areas with a mining tradition, the closure of the coal-fields and coal-ports has had a dramatic effect. These areas are not necessarily geographically remote, but their historic legacy as relatively self-sufficient, single industry and socially homogeneous communities has given them an air of isolation. Many of these settlements are now shrunken, but many were thriving towns in their day. They are characterised by very high levels of unemployment (particularly among the men), a relatively low skill base, a lack of local services, and a poor environment. They also exhibit a vicious circle of a lack of localised opportunities, poor educational and training qualifications, and alienation among young people, as well as an ageing population.

The forestry sector's decline in locally-based employment, and the collapse of the fishing industry, have created similar problems. In
contrast, the agriculture sector's decline has been more gradual and long term and spread over much larger geographic areas. This has still been a major factor in the general loss of localised employment in rural areas and has led to rural depopulation.

Rural Suburbia

This category covers those rural areas where a large proportion of the population commute to urban areas or large market towns for work. These areas can be characterised as having a relatively large number of professional people, a high skills base, high car ownership, good public services, and good access to the urban conurbation. By comparison with the remoter rural areas, and those in industrial decline, rural suburbia in general fares well from national, regional or local policies designed to support business or community activity. This is in part because the 'urban' nature of most policy makers' knowledge includes experience of rural 'commuterbelts'. In addition, many residents of rural suburbia have the skills to represent their views and needs in policy fora. However, there will also be underrepresented groups in rural suburbia whose needs should not be overlooked, in particular those who are not mobile, and those who are unable to articulate their needs.

A Rural Idyll?

For many people, then, rural dwelling is not idyllic. Some have little choice about where they live. In environmental terms, those in areas of industrial decline have impoverished surroundings; in economic terms, people unemployed or underemployed in many rural areas have difficulty in finding alternative employment; in social terms, lack of mobility limits many people's options. Another commonly held belief about rural areas is also refuted by these descriptions: rural does not equate to agriculture. This is only one of a number of primary industries present in rural areas, and only employs a small proportion of the rural population.
Distance, Travel and Access

‘Distance’ and ‘remoteness’ are thought by many non-rural policy makers to be the key issues which need to be addressed by telematics. Hence the claim of the then European Commissioner, Martin Bangemann (1994) that the benefits of telematics “for those standing on the geographical periphery of the Union” was “a minimising of distance and remoteness”. However, the real problem here is far more subtle: it is about people’s ability to access markets and services rather than about distance or remoteness per se.

Almost by definition, most rural people and businesses will be accessing markets and services at a distance. For some rural dwellers, though, this poses few problems; for others, the inaccessibility of the services they need causes real difficulties. Factors other than distance therefore must be addressed in rural areas: mobility, poverty, and the sparsity and dispersal of people and businesses.

Mobility is a very important issue for rural dwellers. Car ownership is given very high priority in rural household budgets, as for many of them life would be intolerable without one - or even two - cars (Shucksmith et al, 1996a). If the only car in the family is taken to work five days a week by the breadwinner, this can leave a housebound spouse, difficulties over children’s activities, no transport for young people, and so on (Cloke et al, 1994).

Sections of the society, then, are reliant on help from family or neighbours, or on public transport. The public transport system is needed in particular by the economically disadvantaged, mothers with young children, young people, and the elderly. However, many rural areas are serviced by poor and costly public transport or have no service at all.

Some aspects of economic disadvantage in rural areas are very similar to their urban counterparts, but they may not get the same attention. There are pockets of very high unemployment, particular where a primary industry has collapsed, such as fishing or coal-mining. These pockets often do not signify in an area’s unemployment figures leaving
them without the support normally provided for ‘deprived areas’. The rural sector is also marked by low income and underemployment, particularly among women (Shucksmith et al, 1996b). Such groups often have great difficulty accessing markets and services.

For rural firms, accessing markets may be difficult because of their own size and location. The sector is dominated by tiny businesses whose size and geographic spread distances them from new ideas, mutual support and business and training services.

For many smaller rural settlements, there is a continuing decline in the number of households. In particular, there are difficulties in retaining the young people, who may be forced to move out of the area to gain skills and experience and do not return (Champion, 1994). The knock on effect in these declining communities is an increasing number of older people who may be unable to provide the levels of demand necessary to keep local services viable, but whose circumstances or health increasingly restricts their mobility.

**The Term ‘Rural’**

Much academic time and effort has gone into trying to define what people mean by the term rural - this report is not the place to extend that debate. Rural policy makers' size of settlement criterion is not appropriate either: this report's ‘rural’ focus is intended as a counterweight to the urban dominance of other telematics policies; hence it uses the term ‘rural’ to mean those geographic areas outside cities that are marginalised by other strategies - those that could easily become the 'have nots' of the Information Society.

This means that this report focuses mainly on remoter areas: those remote from services and markets and often, although not always, at a distance from major towns and cities. Rural suburbia receives less attention because many urban-led policies and initiatives will impact favourably upon these areas.
Improving Competitiveness

Rural areas are characterised by a plethora of tiny firms, many of which have no computers and little understanding of how telematics could help their business. Some of these tiny firms are farms; overall they form only a small proportion of these firms, but in remote areas farming can be the dominant business type. Some of the tiny businesses will be home-based, others mobile - both of these categories overlapping with the concept of 'teleworking'. Teleworking is simply a means of doing business, which allows flexibility, in particular, in the location of the workplace, often perceived to mean location in rural areas.

The next three chapters look at how telematics could help improve the competitiveness of businesses in rural areas. First, the opportunities and constraints for small businesses are addressed; next, the focus is on the specific case of the agricultural sector; finally, the notion of teleworking is explored as a means of rural development.
Chapter 3: SMALL BUSINESSES

RURAL SMALL BUSINESSES

Small businesses have been celebrated as a major growth sector in both urban and rural areas. In some ways rural small businesses will be very similar to their urban counterparts; in others there are significant differences which need to be highlighted when thinking about the promotion of telematics. (The following descriptions draw heavily on the RDC report on Small Businesses - North and Smallbone, 1993.)

* In rural regions, small businesses are characterised by tiny businesses. For example, in North Yorkshire, about half the small businesses are non-VAT registered sole traders, and more than 90% of those registered for VAT employ fewer than 25 people (Spa Consulting, 1996).

* Many of these businesses are remote from centres of population. They tend to think initially in terms of local rather than distant markets, but growing firms need to significantly extend their geographic market area at a relatively early stage in their development.

* Rural small firms tend to service consumers rather than industrial markets; they are more oriented to working for/trading with other small companies than their urban counterparts, and are far less dependent on subcontracting. They have to be more active in broadening their customer base than urban small firms.

* Rural small firms experience shortages of skilled and managerial staff. However, less attention is given to staff training in smaller firms than in larger ones.

* One in five of business-founders in remote rural areas moved there in order to set up the business, a key reason being the perceived quality of life and the environment.
Small firms in rural areas (and particularly remote rural areas) are showing stronger employment growth than their urban counterparts.

USE OF TECHNOLOGY

Information about small firms' use of technology suggests that the picture could differ dramatically between accessible rural areas and remote rural areas. In fact, small firms in accessible rural areas have been found to be more innovative, and to rate technology more highly than their urban counterparts. Remote small firms are characterised as relatively slow to take up new technology (North and Smallbone, 1993).

The rest of this section concentrates on those in need of support: the tiny firms, those in geographically remote areas, and those in areas remote from services, such as those in industrial decline. The statistics above demonstrate the need to differentiate between different types of 'rural' areas to attain meaningful information.

Remote small firms tend to be in the service sector, concentrate on local markets, and trade and work for other small businesses, rather than larger companies and industrial markets. However, there is a perceived need to extend their customer base and geographic areas for success. These factors would suggest a useful role for telematics, but perhaps with a bias towards the marketing opportunities rather than to engineering or EDI/purchasing applications.

Some aspects of marketing can be dealt with efficiently via telematics (electronic 'brochures', and maintaining links with customers, for example). However, personal contact and meetings are still very important, in particular in attracting new customers, so there is still a need to travel, often outside the area to large centres of population.

For a business to gain competitive advantage from the introduction of telematics, it has to be viewed as a tool that will only be helpful if applied appropriately to the specific business needs of the firm (Fuller, 1994). This implies that its introduction must be integrated into the firm's overall strategy, and involve key staff (probably the proprietor)
in the decision making. For success, there has to be an understanding of all the aspects of the business, including its future trajectory, and an understanding of the opportunities and capabilities of the various telematics applications available and being developed.

Most small rural businesses do not attempt this level of business analysis, nor are there indications that many understand how telematics could help their businesses. There are many businesses that do not use a computer. Few small firms are internally networked, nor are many connected to the internet (Spa Consulting, 1996). Many are at a stage of technological advance where a fax or an answering machine might be introduced, not an internet connection.

Much of this is hardly surprising: the secretary is often the most computer literate member of staff, leading to a lack of strategic thinking about the place of IT in the firm; there will be few advantages of internal networks for small firms; the internet's potential as a globalising force will not seem particularly relevant to those focusing on local markets, and/or with few external transactions. There are numerous examples where small firms are not making efficient use of their existing technology - not exploiting the full capabilities of modern telephones, for example, or using a wordprocessing package on their computer to undertake tasks where a database package would be far more efficient.

**SUPPORT, TRAINING AND ADVICE**

Small firms in remote rural areas are likely to lag well behind their competitors if they are not encouraged to apply telematics to their businesses appropriately. As most of their transactions and contacts at present are with other small firms in similar situations, it would be optimistic to suppose that major change will take place in these companies without some outside help, in the form of training and advice.

Small businesses need to be informed about the technological opportunities: via broad awareness raising activities, and demonstrations. For many, a first step would be advice on maximising
the potential of their existing equipment. They then need business advice on how telematics could benefit the individual firm, and on how to use it strategically, to gain competitive advantage, coupled with information on the business implications: the time costs, the staff training, the need for constant updating, the overall costs and risks. Independent advice has to be available on choosing the equipment, the software, the internet provider ... and help will be needed with the installation process and technical problems. Training in the use of the equipment and applications will be needed.

Many small rural firms’ needs are not being met by the present public sector advice services; most of the business advisers are not capable of advice that integrates business aspects with telematic opportunities; formal training opportunities are not taken up by small firms; and many are not prepared to pay the price of a commercial service. If the small businesses in rural areas are not to miss out on telematics opportunities these constraints need to be addressed.

Formal training sessions have not been successful: small firms don’t have the time or money for these, nor do many courses manage to answer the key question ‘what will be the advantage for my firm’. Rural small firms do not have the regular contact with colleagues from other businesses found in more urban areas, which might stimulate discussion about telematics and a need to ‘keep up’ with competitors.

Hence help for small businesses is needed on a more tailor made basis. The business advice services of the TECs and Business Link tend to target larger SMEs, and many smaller rural firms do not realise that this service is available to them. Funding for the business support service of the RDC has been withdrawn; instead, Business Links have been given a budget for a Local Challenge Fund. ADAS and their competitors focus on land-based industries only. This leaves many small rural firms without impartial sources of advice.

Nor is the need for support, advice and training likely to be short lived. The speed and rate of change in the technology and applications means that isolated small rural businesses will continue to have difficulty keeping up to date with the opportunities on offer.
NETWORKS

Rural businesses, with the right impetus, could do much to support and encourage each other in the use of telematics. Leaders in the field could help those who are more cautious, and they could explain how they use telematics to attain their strategic objectives.

In principle, local groups of businesses could form themselves into a closed electronic network for internal communications, and have one internet connection for the network. This would imply a system administrator for the group who would deal with technical issues. Chambers of Commerce would seem suitable co-ordinators for this type of a scheme.

There are also ‘networked computers’ coming onto the market, which would provide the equivalent of terminals to the clients, allowing them to download whatever software they needed from an administrative centre. The benefit would be the support to small businesses over internet access. The drawback would be that these firms would tend to pick up a package for a certain function, rather than incorporating computers strategically into their businesses.

CONCLUDING COMMENTS

There are two important aspects of rural small firms which differentiate them from their urban counterparts. The first is the average firm size: small firms in rural areas are normally tiny, not just small. This leads to difficulties with taking on innovation, with finding the time for training, and for business advisers who can’t possibly give in-depth support to all of them. The second aspect is their remoteness, from markets, from each other and new ideas, and from training.

The development of telematics has the potential to help some of these firms, reducing such constraints as access to markets. However, this development will be hindered if policies and initiatives do not take into account the current position of these businesses: their size, and their remoteness, and the implications of these factors.
While there could be benefits from the development of telematics for these tiny rural firms, it also brings threats: local, secure markets could now be accessed by distant firms; teleshopping could reduce the viability of the village shop.

Policies to benefit *rural* small businesses need to take account of the current position of these firms, the constraints this implies for taking up telematics, and the possible threats it could bring, as well as its potential benefits.
Chapter 4: AGRICULTURE

CHARACTERISTICS OF THE SECTOR

The focus of this chapter is on farmers and their families, and those who service their knowledge based needs: providing information and training. It also includes examples of how associated industries are adapting because of telematics.

The main features of this sector, of relevance to the development of telematics, are as follows:

* Farmers are not a homogenous group. There are those with high incomes and those struggling to stay in business; there are contrasts between lowland and hill farmers; some have very large holdings; some are highly specialised.

* Some farm families are totally dependent on their farming incomes, whereas others have additional and/or alternative income sources - about one in three farms have non-farm income earned by the farmer or spouse (Gasson, 1983).

* In many ways farming is like any other small business: survival depends on good management and ensuring a competitive advantage.

* Over time, farming is employing fewer people; there is a need for diversification - not just on-farm, but also more generally in the rural economy.

* Farmers need regular updates on skills and information to keep their production processes efficient and safe, and to allow them to plan their businesses in a strategic way. They also need day-to-day information on such matters as the weather and markets.

* Agriculture is a highly organised sector, supported by powerful organisations (eg, MAFF, NFU), has well-established advisory...
INFORMATION, ADVICE AND TRAINING

MAFF, the NFU, the advisory services, and agricultural agencies provide a lot of the information, statistics and advice to farmers. MAFF has recently launched its own WWW site, having relied on the Government's communication agency (CCTA) before that. This allows them to improve the information service they offer, for instance by the ability to automatically update the website information as their own data is updated. A collaborative venture between ADAS, the CLA and the NFU has set up the Rural Business Network, a subscription service aimed at the top 25% of farm businesses, offering up to date information on market prices and agricultural/horticultural advice. Another development, Farming-On-Line has been launched commercially, offering users the latest agricultural headlines, market reports and news. It also allows users to post information into the service.

ADAS advisers' working practices have changed with the advent of telematics. They have always been mobile workers, but many are now based at home, and use telematic means to improve the service on offer on the farm. Not only is the business advice enhanced in this way, but it provides farmers with an insight into the capabilities and working of the information superhighway.

Agricultural colleges are still the major source of initial training for farmers and farm workers. Along with ATB Landbase, they also offer programmes to update skills and retrain people. This is seen as an area where telematics would improve the service, by making the training available in a much more flexible manner.

Training could be delivered telematically as lectures to a local outpost of the college; as individual courseware for use at remote centres such as telecentres, or for use at the individual's home; as multimedia presentations that could be delivered at informal 'farmhouse kitchen' events; or as part of an information service's activity. Certain skills will always have to be experienced first hand; but telematics will have a role to play in the delivery of practical skills, especially as more varied multimedia means become available.
NON-FARMING ACTIVITY

It is common for farm households to be engaged in work that is not directly associated with the farm. There is a sizeable cohort of farmers who also work off the farm in a variety of businesses; many spouses work in professional and white collar jobs. Telematics would appear to offer new ways of working (in particular home-based teleworking) for members of farm households currently involved in off-farm activities. Those skilled at doing farm accounts could develop this as a business which could be provided telematically to other farms, and a networked group of farm secretaries could promote their services more widely.

The main non-farming activity undertaken by spouses on the farm is tourism. This, again, would appear to be a sector where telematics would have useful applications, in particular, in terms of marketing the provision of accommodation, and in taking bookings.

JUST ANOTHER RURAL SMALL BUSINESS?

Many of the issues for the agriculture sector, and farming in particular, are the same as for any other small rural business: they are tiny firms, that suffer from remoteness and isolation. But there are some important differences in addressing the development of telematics. By comparisons with other rural businesses, the agriculture sector has some advantages.

* Farmers have direct links to the various service providers: to MAFF, to ADAS, to ATB Landbase, to Agricultural colleges, and through a powerful union (NFU) will be able to influence how those organisations provide their services far more than any other rural sector. They also have the opportunity through such fora to be organised as a group, for instance, to set up a networked computer system dedicated to farmers.

* Agricultural consultancy services such as ADAS are the obvious delivery service for the combined business/IT advice that is needed, and in contrast to many other rural business advisers, the
staff have experience of telematics as well as agricultural business.

While the potential benefits to isolated farmers and their families from telematic development are likely to be even greater than for other rural businesses and communities, the constraints are also likely to be exacerbated. The problem of delivering traditional services to very isolated dwellings has always been acute - telematics, in principle, could alleviate this situation. But some of the constraints of providing access will be exacerbated. This will be in terms of providing advanced telecommunications to isolated dwellings, and providing local access for those who need a supportive environment when using technology to acquire information or training.

CONCLUDING COMMENTS

Farming in many ways is just one type of rural small business, but it also has some specific features that make it warrant special attention. Mainstream telematics policies at present do little to reflect the position of tiny remote businesses - and most farms would fall into this category. These policies give even less attention to the specific case of the agriculture sector. However, this is somewhat counterbalanced by the unique way in which the agricultural sector has a dedicated Ministry, Union, colleges, business support and so on.

While agriculture only employs a small proportion of the rural population, this can rise to above half the households in remote areas. In these areas, then, successful policies for the development of telematics could do much to improve local competitiveness and the quality of life. However, current telematics policies are not focusing on the position of farmers.
Chapter 5: TELEWORKING

TOWARDS A WORKING DEFINITION

There is no precise definition of teleworking. It implies working at a distance from a conventional workplace, facilitated by telecommunications. It has connotations of change and newness: it is not applied to existing businesses that take on telematics applications. There is near consensus that teleworking includes new forms of home-based working; of working remotely from your office; of mobile working; and team working at a distance. New workspaces in new locations brought about by telematics are also included by many, such as a large organisation's back office or call centre, or the various facilities appearing in some rural settlements such as telecentres, telecottages, electronic village halls and televillages.

The term teleworker is even less well-defined. The same implications and connotations apply - distance working, aided by telecommunications, in a new way - but in this case to characterise the individual worker. The situation arises, though, that some firms are classified as teleworking but their workers are not affected by the flexibility or the newness: they still work conventional hours in a conventional workplace. Some people would maintain that those who work for a teleworking company such as a back office or call centre must be teleworkers; others that there is nothing unconventional about their way of working. Those for whom telematics has allowed new and distant working, such as home-workers, are usually defined by outsiders as teleworkers; however, many of these people do not think of themselves as such - it is a description of their means of doing business, rather than of what they do. In most respects, self-employed teleworkers are no different from other self-employed rural workers.

This chapter addresses the issues for three groupings of distance working enabled by the advent of telematics:

* home-based teleworking

* mobile working
geographic reorganisation of businesses.

HOME-BASED TELEWORKING

(Many of the organisational issues discussed in this section are given greater coverage in The Teleworking Handbook (TCA, 1996), The Manual of Remote Working (Curran and Williams, 1997), and Huws's Guide to Teleworking - Huws, undated)

The possibility of working from home has become more viable with the advent of telematics. This can reduce travel with savings in time and cost; increase the productive time and effort of the worker (less work time spent socialising etc., and more choice about when to work); and solve problems at the home/work interface such as childcare.

Working from home is not a new phenomenon, but telematics is creating new opportunities: the fast transfer of data, videoconferencing, obtaining information via the internet and so on. This is expanding the range of tasks that can feasibly be performed remotely.

Teleworking from home has many different guises. Some people will continue to be employed in a traditional manner; others may work for only one business, but on a contract or piecework basis; some will be self employed. Some will work full-time at home; part-time working may be by choice, or may be all the work that is available.

These new ways of working often blur the traditional distinctions between employed and self-employed status, and between full and part-time working. This can leave the worker vulnerable. Responsibilities for taxation, insurance or health and safety may not be clarified. Planning consent may formally be needed. The new ways of working may mean poor working conditions, low pay, and long hours. The terms of employment may intensify a sense of isolation, insecurity and exploitation. In extreme form, home-based teleworking could be recreating an underclass working outside the formal economy.
Many people do not see home-working as being suited to them. Some are motivated to work in an office or factory environment for social reasons, and others see work as a means of getting out of the home or away from their local environment. Other people would not have room at home to create an efficient workspace. Employers are often reticent about allowing flexible working for management reasons - how would supervision be effected? Many perceive that only certain tasks could be effectively performed remotely.

While some communication with colleagues and clients can be carried out via the phone, fax or networked computers, there is still a need for home-based workers to travel, to collect or deliver work assignments, for training or briefing sessions, to meet with existing or potential clients, to liaise with managers and other staff, etc. Although some home-based workers relish the isolation, many would not want to lose all elements of human contact from their work. Face to face interchanges may be crucial in winning and maintaining contracts. Equally, although some firms extensively use home-based teleworkers with whom they are routinely in contact electronically or via the telephone, many still value occasional direct meetings for training, supervision, or to reinforce the loyalty of their employees.

Home-based teleworking can involve working with others. Sometimes this means a group of workers locating themselves together, but telematics can also facilitate more flexible forms of shared working. Networks of individual home-based workers exist whose joint activities may range from informal support, through joint marketing ventures, to jointly owned projects. In some cases the workers are all employed by the same company; some take the form of co-operatives; others have a system of contracting between themselves; occasionally one worker employs other home-based workers.

Some individuals may work at a distance from their office, but not at home. This might involve the use of local shared office space, of a telecentre, or perhaps an individual office, again reducing the problem of isolation.
Partial home-based teleworking is another model that reduces a number of commonly anticipated problems. The worker is an employee, and works partly from home and partly from the office. This resolves problems of isolation, and meets the need of workers to attend meetings with colleagues and clients. It also reassures the organisation that management and supervision can be maintained. A minor component of the work of a significant number of the professional/managerial workers is carried out from home in this way.

Home-based teleworking can be serviced by standard connections and equipment, dependent on the nature of the work - a pc and a telephone and perhaps a fax machine. For some workers, there may be local access to more specialised equipment (a scanner or an internet connection, for example) perhaps via a telecentre, library or a private firm. Some businesses will need high-tech equipment and connections in the home, for videolinks or for data and graphics transfer, for example. In rural areas this can cause problems: ISDN, the minimum standard required for more advanced applications, is not available to all rural premises at present (see Chapter 9 on Telecommunications).

MOBILE WORKING

Mobile working is not new, but advances in technology have already made dramatic changes to working practices. Historically, travelling sales staff and advisers would be out of reach of the office once 'on the road', and would have frequent need to visit the office to make arrangements and collect or deposit information. Mobile phones, coupled with the advent of the portable computer, have dramatically changed this situation, keeping them in constant contact with the office and with clients. Increasingly computers with modems attached to mobile phones are allowing instant collection and delivery of information. This reduces the mobile worker's need to visit the office, and has allowed many more to become home-based rather than office-based mobile workers.
SPATIAL REORGANISATION OF BUSINESS

Telematics has also increased the opportunities for geographic reorganisation of businesses. The most often quoted examples in terms of teleworking are where firms have decentralised aspects of their business, or have moved their whole operation to a less central location. However, it is also important to recognise that for a number of sectors it has also enabled dramatic concentration and centralisation, with local services now being delivered electronically or by phone - for example, banking.

The rationale behind the reorganisation will be business efficiency: what is the most effective way of delivering the same (or improved) goods or services. Telematics means that in technological terms firms no longer need to be so locationally specific: services in particular can be provided from anywhere in the world. This offers new opportunities to rural areas. Relocating businesses or parts of a business to a remoter area will probably mean cheaper accommodation, lower wages, and, some would argue, a more motivated and dedicated workforce.

Typically the traditional services that have moved out to less central areas include general office services, accountancy and publishing. Some firms have set up back offices which employ their office staff in locations remote from the main site (but not necessarily in rural areas). Rural sites are perceived to be suited to new 'call centre' activity, ie, where customer support, information and sales are provided over the telephone.

Rural areas that attract these footloose activities solely on the basis of cost-saving are leaving themselves very vulnerable. As geographic boundaries become ever less important, such mobile operations will be looking for ever cheaper options, and rural Britain will be unable to compete with many parts of the English speaking world simply on the basis of labour costs. That does not rule this out as an option; rather it makes the case for quality rather than cheapness as the selling point of rural areas.
GEOGRAPHIC SPREAD OF TELEWORKING

According to Huws et al (1996) there is a differential uptake of home-based teleworking between the prosperous rural areas of south and central England, and what they term peripheral rural areas. They suggest that home-based teleworking for a single employer, often associated with short periods of highly intensive and relatively low paid work, is more prevalent in the peripheral areas. Freelance teleworkers are likely to live within easy reach of their clients, and hence to choose the prosperous rural rather than the peripheral rural areas. Partial home-based teleworking is associated with professional and management staff who are concentrated around London and south central England.

Mobile workers are likely to base themselves near to the largest concentrations of clients. For most this would mean urban and densely populated areas, except for those with a specifically rural clientele, such as agricultural consultants and advisers.

The same report indicates that relocated back office functions will usually be found in former industrial urban areas, but might be attracted to rural areas if "the activity is relatively small-scale; it involves ... sensitive customer contact; the area is easily accessible; generous development grants are available; or advanced telecommunications networks are in place" (Huws et al, 1996).

ECONOMIC IMPACTS

Accurate figures for home-based teleworking in Britain are not available, but counting all those from the 1991 census working from home in non-manual occupations, Huws et al (1996) arrive at an upper figure of 2.5% of the population. Only a minority of these will be located in rural areas.

Home-based teleworking will not directly create many jobs, and for the unskilled or unemployed in rural areas it offers no solution. What it mainly provides is a shift in working practices for those already in work. Where this involves commuters becoming, in part, home-based workers, the local effects may be beneficial. If people spend more time
in the rural settlements, this may well create an increased demand for local goods and services.

Those teleworkers who work from home in rural areas, are mainly working for a single employer, or as freelance teleworkers or partially home-based teleworkers. The latter two groups, both higher earners than the former, tend to be attracted to, or already live in, the prosperous rural regions. The much lower numbers and lower incomes of teleworkers in peripheral rural areas mean that they will have much less local economic impact.

The footloose industries are thought unlikely, on the whole, to choose rural areas, but when they do so, they will have an important local economic impact. The concern here is that it could be shortlived.

In general, teleworking is likely to have a limited impact on the rural economy, and especially on the economy of remoter and more peripheral areas. However, certain groups and individuals in society could benefit greatly from homebased teleworking, particularly people with skills who are tied to the home through a lack of personal mobility or because of family care responsibilities.

CONCLUDING COMMENTS

Current rhetoric surrounding teleworking is often associated with rural living, suggesting both a means of rural development, and an idyllic, environmentally friendly lifestyle.

However, studies have now shown that the aggregate economic benefits of teleworking in peripheral and remote areas are small. These might be enhanced by initiatives to attract higher income, freelance teleworkers, but these people are likely to demand more advanced telecommunications services, which are not necessarily available at present in remoter areas.

There is also much fallacy surrounding the idyllic and environmentally-friendly lifestyle that is promoted. For many people teleworking is the modern day version of traditional home-working, bringing with it low
pay, insecurity, poor working conditions and so on. Furthermore, while teleworking may reduce the need for people to travel at peak times to traditional conurbations, it will not have a significant impact on the overall demand for travel.

On the whole, this chapter argues that teleworking is of much less importance to economic development in rural areas than most previous policies and reports have suggested. At the same time, it does not deny that at an individual level, teleworking could be very important to remote dwellers who lack personal mobility.
ENHANCING SERVICES

The level and quality of services currently delivered by the public, private and voluntary sectors to rural communities is a matter of concern. Local shops struggle to remain viable, and public services such as libraries, schools and bus services have been withdrawn from many villages. Some rural development organisations and local communities have found creative ways of maintaining threatened services: will telematics be another means at their disposal? It certainly offers the potential to improve service delivery, but are there also constraints to its use in this way? Will the results be entirely beneficial for rural areas? And are the responsible organisations appropriately structured for the issues that need to be addressed?

The first chapter in this section looks at the broad range of services needed within a local community, how these are currently provided, and how telematics could play a role in their delivery. The second chapter focuses specifically on the provision of education and training to rural residents, looking at the provision of basic computer literacy, at ways that telematics could improve the service provided by local schools and community education programmes, and at the role of distance learning.
Chapter 6: LOCAL SERVICES

CURRENT RURAL SERVICE PROVISION

Rural areas do not have the level of local service provision of urban areas. Some services are simply not available locally and travelling is unavoidable to access them; for other services the choice is limited locally, and specialised or better quality advice, information or care are only available at a distance. Some rural areas are visited by mobile services at present, but their scope and availability are limited.

These constraints have led some localities to develop innovative means of increasing service provision. Some communities develop DIY means of ensuring that services are accessible to local households, for example, through car sharing and community transport schemes. Increasingly village appraisal teams are identifying local needs and putting forward their own local solutions to the problems of service provision. Some innovative schemes involve the joint provision of services that would not be viable individually - the school bus or post van taking fare-paying passengers; the pub acting as a sub-Post Office, for example.

Historically, discussions of local services would have emphasised the sector of the provider - public or private, or occasionally voluntary, sector. During recent years prominence has been given to the shift in provision from the public sector to both the private and the voluntary sector, and more credence has been given to the role played by local communities in providing services for themselves. Innovative schemes at the local level have also involved a cross-sectoral approach.

SERVICE DELIVERY BY TELEMATICS: THE POTENTIAL

Telematics has the technical capacity to improve local service delivery in a number of different ways. In some cases it has the potential to create ways of transferring the delivery of services direct to homes or businesses; in others it can support and improve existing local delivery; in others the need for face to face contact is paramount - telematics may sometimes have a role to play here, too. Technically, it also has the
ability to transcend sectoral boundaries, and to provide highly integrated services at the local level.

**Delivering Services to the Individual**

Some services, traditionally involving travel, can now be provided directly to a person’s home or business premises via telematics. A search for information would traditionally involve a trip to the library, to the Citizen’s Advice Bureau, to the Job Centre, to the Local Authority and so on. Textual and graphical information can now be deposited on a website by the information provider; an individual is able to access this via the internet from a computer in the home or business.

For example, the library service is developing means of delivering information telematically. It will be some time before all books are made available in this way, but libraries are beginning to make other information sources more accessible. A number of local authorities are also looking at ways of making their information and advice more accessible, and many have now developed websites that give information about their services, and also about their area. Some are investigating the possibility of using the technology to consult much more widely over public matters such as planning, and thereby involve people more extensively in decision making processes.

Adult education and training traditionally involves travel to a college for a course. For some remote dwellers, or those without transport, this has effectively excluded them from this service. The technology provides a substantial breakthrough in the provision of interactive distance learning from home - described in more detail in the next chapter.

Those living in rural areas have to travel to do shopping, perhaps a short distance to the local shop for routine goods, and longer distances for greater choice, or special needs. Teleshopping, advertised as the shape of things to come, with some supermarkets already offering this service to those living in densely populated areas, could technically resolve this ‘problem’ for rural dwellers. Likewise, banking services, are fast becoming available to the home.
In these cases, telematics could be used to substantially change the way in which we, as users or customers, go about accessing services that traditionally have meant a need to travel.

**Improving Services within the Locality**

Telematics can also be used to improve the services available within a locality. This might mean an improvement to an existing service, or the introduction of a service previously not provided locally. Some of these services will have been traditionally provided by the public or private sectors, or as a more local, community or voluntary initiative.

Telematics could be used to improve the efficiency of the local Post Office by dealing electronically with transactions. It also makes possible the introduction of a ‘hole in the wall’ cash point, sometimes in a settlement that had not been able to sustain a branch bank. The local shop could use telematics to improve its service, by allowing customers to browse, telematically, the goods available from the wholesaler, and then arranging a ‘just in time’ delivery service.

The local branch library could increase its ‘stock’ of resources available, by holding some information electronically. Many are already doing this with CD-ROM, and there are a number of initiatives under way to link the libraries to the internet. Technically it would be possible for people to use local authority information points to make their housing benefit application, or to look at a local planning application, for example. Educational institutions are able to improve their school and college-based services by the use of telematics - discussed in more detail in the next chapter.

Most of the above examples would mean some changes for the client or customer - they would still visit the local service provider, but might need to use technology for some of their transactions. Other services may be improved through telematics, without involving any change for the user. For example, a person may still visit the doctor’s surgery with an ailment, but the GP would be able to access the hospital electronically for specialist diagnosis. Or the technology may be used to improve the
logistics of running a service such as public transport, without the user having any notion of telematics being involved.

Where services are currently provided by the local community on a voluntary or self-help basis, telematics can also help to make improvements. It can be used in much the same way as the examples above to improve the local community’s information provision, its transactions, or the logistics of service delivery. It also has the power to provide an efficient means of communicating between a group of dispersed people - if each of them has access to a computer. For example, someone within a self-help community transport network could broadcast via the internet their intention of using their car, and expect a prompt response from anyone wishing to have a lift.

**Face to Face Service Delivery**

For some services, people would like face to face contact. This is particularly the case for some aspects of information and advice services, and for accessing education and training. However, it is possible to use telematics to create a videolink between individuals, which might go some way towards meeting the need for face to face contact. For example, someone approaching the CAB, might be given an appointment with an adviser in a local, private booth, via a videolink. Or a student might have videolink contact with their tutor, and the capacity to work together on the same problem on the screen.

It is also hard to envisage that all local services will be affected by telematics: for example, that people will stop frequenting the local pub, or using the hairdresser in favour of a more ‘virtual’ experience.

**Integrated Services**

Telematics transcends many notions of public/private/voluntary sector boundaries or of individual institutions providing a discrete service to one client group - a Tourist Information Centre providing tourist information to tourists, for example. This is particularly pertinent to the delivery of information, education and training, and communications services. Telematics allows access from a computer, in
a home, business, or public place, to all these services, and has the power to create a seamless web of information. A person erroneously contacting the local authority about an issue that should have been directed to the DSS, for example, could be automatically diverted to the DSS’s information site.

It also makes the notion of access to information, education and communication services more viable at the settlement level. The technology means that one point of public access can provide all these services. Traditional service provision would involve many separate institutions (libraries, CAB, Job Centres, Tourist Information Centres etc), none of which could be justified individually in a small community.

SERVICE DELIVERY BY TELEMATICS: THE REALITIES

However, improvements in the technology alone are not enough, and at present, most of the users and providers of rural services are not in a position to exploit its full potential. In some instances, telematics may be an inappropriate tool; in others there are barriers to its introduction which need to be overcome before it can fully assist rural development. There are also cases where the 'improvement' brought about through telematics may also have a negative impact on a rural area.

Some telematics breakthroughs may be inappropriate or only have limited application. The idea of accessing information from home is not revolutionary: most homes have telephones. However, few people use the telephone to access more than routine information - the train timetable, for example - preferring to visit in person the library, the local council and so on. Distance learning from home is not a new concept either, but only a small number of people choose to learn in this way, preferring to travel to attend a course.

It may be that the improved technology will alter this behaviour pattern, but it may also be that people visit service providers for other, sometimes ill-defined, reasons. Certainly at present, users of the library service can expect help with an information search, and college students
are kept motivated by their tutors and their peers. The present telematics applications do little to address these types of service.

Likewise, the notion of teleshopping may not take off to the extent foretold: many people find shopping an enjoyable, social experience, and for rural dwellers, a trip to non-local shops may be incorporated with a visit to friends, to the dentist, to a main library and so on. It could also be that teleshopping will not be suitable for rural people. Will deliveries to rural areas and to remote dwellings be regular and prompt enough, and what will it cost?

Currently, ownership of computers with internet access by households is limited. Over time, this is likely to grow, but both the cost and fear of technology are likely to leave some societal groups without access to a linked computer at home. In particular, the elderly, and those with few educational achievements will be excluded if services are delivered directly to homes and businesses.

In rural areas, many people have little knowledge or awareness of the potential of the technology. They do not see the advantage of having an internet connection, or the services that could be on offer in this way. For those in remoter areas, the applications available may also be constrained by the limited nature of the telecommunications infrastructure - some applications such as videoconferencing are not available on a basic phone line (see Chapter 9 on Telecommunications).

Hence telematics needs to be used to improve public services as well as individual services. Access to these public services needs to include an element of awareness raising as well as access to services. The limited nature of present local service provision in rural areas, however, make it difficult to envisage how this can be achieved in a straightforward way. Take, for example, the library service, an important information provider. While the service aims to use telematics to improve its services, many smaller libraries do not yet have access to the internet; rural branches are often open for only a few hours a week; some villages only have a mobile service; others have no service at all.
It is hence not possible to rely on improvements in traditional services in rural areas to introduce people to the potential of telematics. What is needed is to aid the innovative cross-sectoral schemes introduced more recently in some localities to provide services through telematics. This will mean radical changes for the traditional service providers, to ensure that all information, education and communications services can be provided from one local and convenient access point to all those needing to access these services (see chapter 8, Local Access Points).

The introduction of telematics may also have some negative effects on rural services, as well as benefits. If teleshopping takes off, the viability of the local 'village' shop may be threatened - a service still needed by those who shop in an ad hoc way, or who can't afford the delivery charges. However, telematics also offers opportunities to the local shop for service improvements, and it may be that the shop can start to provide new services such as a cashpoint, or information via their public internet connection.

The future for branch banks in larger villages or small towns looks bleak. Clients wishing or needing direct contact with their 'bank manager' may have to travel far further in future. And these types of changes also raise issues about the overall viability of small towns - what will be the impact if all the branches of banks, building societies, insurance agencies and travel agents are closed down?

CONCLUDING COMMENTS

Addressing local service needs in rural areas has become increasingly difficult. Traditional services are already much more sparse than in urban areas. Telematics hence has the potential to make a real impact on community life in rural areas. It seems inappropriate to focus on service provision to the home: the applications are likely to be limited, and the service used predominantly by affluent, well-educated people.

However, it is difficult to see, within present organisational structures, how investment in public services for many remoter areas could be made viable. Critical to enabling the development of telematically delivered services to most rural areas is a much more integrated
approach to local service provision - organisational, sectoral, functional and geographic boundaries need to be crossed. This is a crucial issue for rural communities that is not well addressed in telematics policies: how, particularly, public organisations can be restructured to resolve these boundary issues.
Chapter 7: EDUCATION AND TRAINING

BASIC COMPUTER LITERACY

Many schools and colleges of further education are aware of their role in preparing pupils and students for the coming information society. They provide training in IT and telematics, and some are now connected to the internet, allowing experience of the opportunities it affords. However, there are also numerous examples of institutions that give pupils very little grounding in IT or telematics.

The difficulties of providing a good education in IT and telematics are particularly pronounced in rural areas. Here small budgets and small school sizes are the norm, such that the acquisition of computers would be a major investment, and there may be no member of staff confident in the use of the technology.

Some rural institutions strive not only to overcome these odds, but to be of broader service to their localities. For example, colleges in rural areas and some schools offer local residents part-time 'continuing' education in IT skills through short courses and 'evening' classes. These are particularly useful as an introduction to IT, and for women wanting to return to work, although higher level courses are often offered as well. A number of colleges have also provided distance learning courses to their rural hinterlands; and some have actively explored innovative means of overcoming access problems, such as the use of IT buses.

DISTANCE LEARNING VIA TELEMATICS

Recently, telematics has been recognised as a means for delivering education at a distance, and a number of institutions are beginning to see its advantages. It can help to overcome problems of scale for rural schools: linking to other schools may make small classes more vibrant, or offer more choice to students. Classes can be linked for lessons, for demonstrations, or for mutual learning sessions - particularly useful for small sixth form groups in rural schools.
Outside the formal school system, telematics also helps deliver courses at a distance from the providing institution. This is obviously not a new concept - rural outposts, correspondence courses and the Open University are all well-known examples of distance learning. Telematics offers a different means of delivery with the possibility of immediate interaction between the tutor and the student. A telecommunications link, however, is not enough - trained staff are needed, the running costs need to be addressed, and so on.

One application is the use of videolinks to make lectures, seminars or tutorials available to a much larger catchment. A lecture given at one location can be 'broadcast' live to other learning centres, with the capacity for students from any of the sites to ask questions of the lecturer. The use of this technology opens up many opportunities for rural areas, but presupposes that both transmitting and receiving centres have ISDN, or more advanced telecommunications, that the students at remote sites will have access to background information and reading for the course, and that all centres will have technical backup.

Videolinks for seminars and tutorials and/or between groups of students can also enhance the learning process for those studying through distance learning. Here the group's homes or workplaces would be electronically linked to both their tutor, and each other. At present, this application has a number of limitations. Students working from home are normally connected via basic telecommunications and so miss out on the experience of a high-quality live videolink, and the cost of remaining on-line for the duration of seminars or tutorials can be prohibitive. Feedback from an Open University 'virtual' summer school organised in this way, also suggested that students value highly the social aspects of meeting with each other: an experience that was not reproduced electronically.

Interactive packages are also being used to deliver education and training via telematics to individual learners with difficulties in attending college. Here the package is downloaded from the college in lesson-size components to the student, who has the opportunity to contact the tutor telematically about problems. Some are delivered to college outposts, telecentres, community centres etc, where a local
support worker can help with access problems. Others are delivered directly to the student's home, or to local businesses.

For individualised learning to work effectively, students need to be highly motivated, and be provided either with a local access point for their training, or with the required equipment and connections in their home or workplace. The provider needs to make arrangements for local support workers in the training centres, or at a minimum for technical staff to set up the equipment and deal with technical problems. Staff from schools and colleges have to work in new and more flexible ways. To date, there are very few packages for subjects other than computer literacy, even though a wide variety of courses could be taught in this way.

Providing distance learning via telematics has potential to improve access to training and education in rural areas. However, there are a number of constraints to its widespread development. One of these is the institutional changes that will be needed to support student working in this way: changes in the employment terms of staff, but also the employment of more technically capable staff; and a more decentralised way of working.

The other main constraint is the funding of such schemes. The setting up costs of new, effective videolinks, either between college premises and public outpost, or linking students’ homes and workplaces are high, although these will reduce over time as the technology needed becomes more widespread, and grants are available at present for ‘experimental’ and ‘pilot’ projects. There is also an issue about whether the client or the college is responsible for the equipment and link. The running costs of providing education in this way will certainly be different from those associated with more traditional provision. There will be reductions for students in the cost of travel, and perhaps for the institution in the provision of central facilities. These might be offset by an increase in the cost of technical maintenance, and the provision of 24 hour support to students, 365 days of the year.
INFORMATION AND COMMUNICATION

As well as formal teaching sessions, students need further reading and information, and benefit from communicating with each other and with experts. Telematics can support information provision and communication, both of which can be difficult for students in remote areas.

Tutors can simply and cheaply provide background reading, information and further exercises for students on WWW pages, that can be accessed at any time, and from any computer connected to the internet. School and college sites can be linked so that information and expertise can be shared between the group of institutions, or an institution can use an internet link so that students can access any information deposited on the World Wide Web.

EMAIL (and videoconferencing) provides a communications tool for tutors and students. This can either provide a person to person link, or a group can be linked together through a private 'chat' network. It is possible in this way for students to liaise with each other, with their tutor, or with a specialist in another institution. Some schools in different countries have used such links to promote cultural exchange and foreign language use amongst their students.

There are many organisations competing to link schools to the internet at present, although the rhetoric does not always make clear the level of support that is implied, or the costs involved. The smaller schools and colleges typical of rural areas would certainly benefit from networking, making more specialist information and expertise available, and allowing effective communication with students elsewhere. However, they will also find doing this disproportionately costly (even if only charged for the on-line phone costs), and they may have difficulty in obtaining and justifying the more advanced lines that will be needed for effective videolinks and data transfer.
CONCLUDING COMMENTS

Potentially distance learning is of far greater benefit to rural pupils, businesses and communities than to their urban counterparts who already have easier access to educational and training facilities, and to a great choice of learning activities. However, rural schools (and colleges where they exist in rural areas) are often not sufficiently well equipped or resourced to develop telematic means of delivering education. Another constraint is that advanced telecommunications development is not reaching these areas. Without this, many of the distance learning applications may be limited.

Rural dwellers also have a disadvantage in acquiring basic computer literacy. While plenty of continuing education courses are available, the constraints of travel, transport and timetabling can often make such provision inaccessible.
PROVIDING ACCESS

Earlier chapters have demonstrated that telematics applications could benefit local people and businesses but that most of these do not have the relevant equipment or expertise, and that many are unaware of the benefits telematics could bring. Hence local points are needed, where supported access to information, education and communications via the internet could be provided, and where people could be introduced to the opportunities afforded by telematics. This is the focus of the first chapter in this section.

Another recurrent issue in this report is the prerequisite to the development of telematics of good telecommunications, and concerns that rural areas are lagging in terms of infrastructure development. The second chapter in this section outlines the current position and likely future scenarios, explains the role of regulation, makes clear what is possible with the existing infrastructure, and proposes means of alleviating the present shortcomings, and of encouraging investment in infrastructure development.
Chapter 8: LOCAL ACCESS POINTS

A WORKING DEFINITION

Local Access Point is used as a generic term to cover the various types of schemes proposing to offer public access to the information superhighway. The 'localness' of these developments means that there is a wide variety of possible outlets, but they can be usefully grouped as follows:

* Those where the need for computing/telematics applications has been the main motivation in developing organisationally independent facilities, such as in telecentres or telecottages.

* Those where the provision of public access to telematics is a secondary activity to mainstream public sector functions.

* Those where local premises are being made available by the voluntary sector.

* Those where private sector outlets see commercial opportunity in providing access to the superhighway as a sideline to their main business.

THE NEEDS OF LOCAL PEOPLE

The telematics applications likely to be needed by most local people at a local access point are access to the internet in order to communicate with others, to search for information, or to receive training. These services could be provided via a standard telephone line, although they would be enhanced with a higher speed connection (eg, ISDN). It is highly unlikely that there would be current demand for any more sophisticated services - a firm needing more advanced applications would want immediate and direct access, not via a local access point.

Many people do not, as yet, perceive a need for internet access, so part of the role of a local access point is to raise awareness of the possibilities afforded by telematics, and to introduce people to the
medium in a supportive environment. Another reason why many people conversant with the technology might still choose to use a staffed public access point is that information searches and training activities often need a degree of support - people currently use libraries and colleges in this way.

An access point needs to be somewhere people can get to easily, which is open at the times they might want to use it. It should house good quality equipment and connections, and if possible have an ISDN line. Staff are needed to manage and market the access point, to provide technical backup, and to demonstrate and support the use of the various applications.

There is then a need for carefully orchestrated 'outreach' work in order to explain how the internet could help meet the information, communication and training needs of local people and groups. Basic demonstrations and hands on sessions which demystify the process and show the usefulness of the applications are needed, as is a highly supportive environment for 'technophobes'. These activities imply a requirement for teams of local development workers.

Currently there is a constraint on the supply side: the information available via the internet is patchy, such that the usefulness of telematic delivery will not be apparent to everyone; likewise the range of subjects available by distance learning via telematics is very limited. The development of local access points will need to be matched by the development of the information and training material that is demanded.

**LOCAL ACCESS POINT PROVISION**

**Telecentres**

Telecentres, telecottages, televillages and electronic village halls are all names used to describe a range of facilities associated with computer provision in rural areas. What makes them distinctive from other ways of providing local access is their organisational independence and that they are set up and run with computer access as their primary purpose. Some were initiated and initially funded predominantly by the public
sector, typically the RDC and local authorities. Some were the brainchild of local enthusiasts who then looked to the public, private and voluntary sector for funding, but who often provided much of the staffing on a voluntary basis. Some were developed by local partnerships of organisations who contributed some of the funding, but who would also look outside the area for additional funds. And some were driven by commercial concerns.

A range of activities are undertaken in any one of these facilities, and it is perhaps the economies of scale, the synergies and cross subsidisations that are the basis of the 'telecentre' concept. On the whole, a telecentre will offer some or all of the following: use of office and computing equipment, office services, training in computer literacy, distance learning (delivered telematically), access to the internet for information and communication, meeting rooms.

Britain is one of the leading countries in terms of the telecentre concept. There are examples of successes and failures, there are some that are now well past the development stages, and others that are new. Some have well-developed business plans, employ a number of staff and have a range of equipment on offer; others are very small and exist on a voluntary basis. But because they are all locally conceived, aim to meet local need, and provide different combinations of services it is difficult simply to reproduce the successful examples in other areas.

**Public Sector By-Products**

Colleges and schools are developing internet links for their students; Post Offices are to be linked electronically in order to reduce fraud; local authorities are developing their services through the one-stop-shop notion. Where the technology is to be introduced locally for these sorts of reasons, it is possible to extend usage to the general public.

Colleges and community high schools would seem obvious candidates as local access points, and many are moving in this direction, offering in particular, training in computing and the use of the internet, with some developing distance learning capabilities. However, few of these possible access points would be located in the remoter parts of Britain.
A number of schemes to link all schools (including primary schools) to the internet are being proposed and introduced. This raises the possibility of making such facilities more generally available, although not all rural areas will be covered - just over half the parishes in England have no school (RDC, 1995).

For libraries, a natural development would be to make more information available via the internet. While this is the aspiration of many librarians, additional funding from within the library service is not forthcoming. Proposals are being developed for major funding packages such as a bid to the Millennium Fund. It is unlikely that the smaller branch libraries of rural areas will see much telematics development in the next few years without this type of outside funding. Again, the use of libraries for local access will provide very limited coverage in rural areas - only 1% of parishes with populations of less than 1000 have a library; and even for parishes with 1000 - 3000 residents, it is only about 1 in 6. Smaller branch libraries are only open for a few hours a week.

Post Offices have been proposed as local access points to the internet, as have local outlets of the Councils and Business Link offices. As these develop telematics capabilities for their own use, they, too might be candidates for public access to the internet.

Local Premises

Many villages that lack a school, library or Post Office, will still have a local meeting point, usually run on a voluntary basis. These will include Church Halls, Village Halls, Community Centres, Scout/Guide Huts and so on. The management of these premises have in some instances offered their underutilised facilities as the location for a local access point.

Commercial Provision

Examples frequently crop up of small businesses with no direct connection to computing, communications or information provision
setting up a publicly available internet connection as a sideline, such as in cafes, pubs, bookshops, video shops and general village stores.

RATIONALISATION

Comparisons Between Providers

Telecentres have the advantage over other types of provider that servicing the telematics needs of local people is their main purpose. This should mean that they are appropriately situated, housed and equipped. However, such dedicated, free-standing facilities demand substantial funding. Long term viability and stability is an issue for many telecentres in rural areas.

By contrast, where telematics access ‘piggy-backs’ off mainstream public sector services, such as schools or libraries, this provides a much more stable structure and network on which to build, and may not need the same level of funding. Possible locations will be pre-determined and are bound to have a limited coverage of rural settlements. Considerable alterations to the organisations’ ways of working would be needed to give access outside standard hours, and to provide, manage and fund the relevant support functions.

Local premises in the form of village halls and the like have the advantage that they are located also in remoter communities, and that usually space could be made available, but beyond that they would be starting from scratch.

Small local businesses are providing access points in an ad hoc way. The availability is highly dependent on an enthusiastic proprietor with some technical know-how. It is likely to meet the local demand for information from the internet for those who understand the services on offer, but not the broader needs for training, support or awareness raising activities.
Geographic Rationalisation

Resource constraints make it difficult for many localities to sustain stand alone, fully serviced access points. It will be necessary to co-ordinate and rationalise schemes in order to reach many rural areas.

The size and distribution of rural settlements should guide provision if access to the internet and the opportunities it opens up are to be widely available throughout rural areas. Terminals need to be provided in most settlements (just as public telephones currently are). But most people will also need encouragement, advice or training if they are to make effective use of whatever technical facilities are available. Of course, not all such support services could be provided locally. While initial awareness raising and familiarisation could be delivered peripatetically, more sophisticated support and training would likely be concentrated in larger settlements. Most rural people would have to travel to access that support, but they are used to doing so for other services on which they already depend, often combining this with trips for other purposes such as work, shopping or leisure.

In this way, we could develop a hierarchy of provision, which would make use of those facilities already available locally. The halls or pubs in small settlements could be used for outreach work, using the premises, but also tapping into established local groups (the WI or a church group, for example) to raise awareness. The village with a shop or Post Office might provide a basic information point, but with little support. Moving up the hierarchy, the school in a larger village and/or the branch library might be expected to provide a mediated service, offering initial training and videolinks in addition to a basic information point. The market town could provide sophisticated links, and more advanced training to groups via colleges or telecentres.

The main resource needed in the small settlement, would be the visiting outreach worker equipped with portable computers, who could begin to explain to local people about the internet's capabilities. The basic information point in a small village could be equipped with a computer and a modem; the large village would need some dedicated support staff, more equipment and an ISDN line; and the market town's access
point would need specialist staff, advanced equipment and telecommunications.

**Integrated Services**

Integrating these local access points into a common organisational structure could help ensure economies of scale and the quality of services at all levels. Specialist staff, based in the large centre, would have supervisory responsibilities for all the access points in their area. In this way, technical support, which would be needed but not cost effective for each small access point, could be made available. A videolink could provide advice and support to a small centre from a well-staffed centre such as a central library.

However, at present, discrete services are delivered by a specialist provider, often to a specific client group, as suggested in the illustration below.

<table>
<thead>
<tr>
<th>Discrete Service</th>
<th>Specialist Provider</th>
<th>Client Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tourist Information</td>
<td>Tourist Board School</td>
<td>Tourists</td>
</tr>
<tr>
<td>Education</td>
<td>Council</td>
<td>Pupils</td>
</tr>
<tr>
<td>Council Information</td>
<td>Job Centre</td>
<td>‘Rate’-payers</td>
</tr>
<tr>
<td>Job Opportunities</td>
<td>Library</td>
<td>Unemployed</td>
</tr>
<tr>
<td>Reference Information</td>
<td>TECs, Business Links</td>
<td>Students</td>
</tr>
<tr>
<td>Vocational Training</td>
<td>MAFF/NFU</td>
<td>Businesses</td>
</tr>
<tr>
<td>Farming Information</td>
<td></td>
<td>Farmers</td>
</tr>
</tbody>
</table>

In some regions, rural organisations are beginning to meet regularly as partnerships - especially in those in receiving regional European structural funds. On the whole though, these partnerships are about co-ordinating across the existing boundaries, not collective actions. For someone working at the local level, this still leaves a whole plethora of organisations that would have to be involved in the establishment of a public access point.
Local co-ordination of the 'project' then becomes a time-consuming issue. All the various service providers have to be involved, and all have to be satisfied that they are investing wisely and that their targets are being met. A continuous process of satisfying all these investors, and searching out new funding sources begins. This seems to be a recurrent problem for the telecentres; as new forms of local delivery take off, the issue will become more widespread. The difficulties in delivering in these integrated ways are due to the shortcomings of the public sector, but have been resolved in the past by the local co-ordination activities provided by telecentres.

The trouble is that this produces a series of one-off solutions. What is needed now is not a scatter of isolated, dedicated facilities, but a dedicated service for an area to co-ordinate all the providers.

A SHORT TERM ISSUE?

At present, then, local access points will be needed in rural areas because people are not aware of the capabilities of telematics, because they need support in accessing the internet, because they cannot afford the investment in equipment themselves, and/or because support is needed to access information and training.

Over time people will become more aware and confident about the power of computers and the mysteries of the internet. This will be due in part to the experience offered at local access points, as well as through the influence of friends, neighbours and colleagues, and the increasing possibilities afforded by TV. All the indications are that the costs of equipment and of telecommunications will continue to fall, making it possible for most businesses and homes to be connected. But this does not obviate the need for some of the functions of local access points, such as providing more advanced equipment and connections than could many homes, mediating access to information, advice and training, and offering a support service to 'technophobes'. It is also worth remembering that despite the well established and accepted technology of the telephone, there are still homes not connected, and public phones are well-used. Public access points may hence be necessary for years to come, perhaps also having a permanent
demonstration role for each successive generation of communications technology.

CONCLUDING COMMENTS

Providing local public access in rural areas has to be approached in a very different way from urban areas where there are many suitable premises such as central libraries, colleges and council offices, and where there is a concentration of demand. For rural areas, some provision needs to be local, and for remoter areas this has to be approached from both the ‘bottom-up’ and the ‘top-down’. The resources available in a given locality need to be identified (facilities, service providers, people offering their time, existing contact networks, and so on) that could contribute to the provision of local public access. From the ‘top-down’, these resources need to be exploited as part of a much larger hierarchy of linked provision.

This raises enormous issues for public bodies that have historically provided services on a sectoral basis. It will involve one service (eg, libraries) providing different services (eg, education) to the public, while linking with other facilities, owned by another part of the public sector, or by the private or voluntary sectors. Specialist staff will then work to service all the centres of the various organisations in the network.
Chapter 9: TELECOMMUNICATIONS

INFRASTRUCTURE IN RURAL AREAS

The RDC's report 'Telecommunications development in rural England' (1996) gives a fuller description of many of the issues raised in this section.

Telephone Lines

Basic telephone lines do not reach all dwellings in Britain; telephone penetration in the north of England is 82% of households; nationally, it is about 90%. These lines are capable of running some telematics applications, albeit slowly.

In order to run many telematics applications efficiently, there is a need for more advanced telecommunications. The most readily available means of doing this is to upgrade the telephone service to ISDN (a standard that can be delivered using traditional phone lines, creating a half-way house to the advanced telecommunications described below). The provision of a digital exchange is a prerequisite for ISDN services using existing lines, but the lines must also be of good quality, and there is a maximum range between the exchange and the recipient. Overhead lines still predominate in rural areas, and the poor state of some of these lines could make ISDN an impossibility. With a maximum line length for ISDN of 4-5 km, communities may be connected to digital exchanges but still unable to access ISDN services.

In most remoter parts of Britain, BT is the only provider of fixed services, and there is no local competition to improve service provision. The present connection charge and rental on an ISDN line are found to be prohibitive by many individual and community users.

Mobile Phones

Mobile phone companies are able to offer both a basic and ISDN services to their customers. However, for many upland areas reception is poor, and in some areas, unobtainable. The geography of these areas
implies that numerous radio base units and masts would be needed to give total coverage. The mobile phone companies have now completed their obligations under their licences, so market forces will determine future development: is there enough demand in these remote areas, or will the cost of radio technology fall sufficiently to make it viable?

**Advanced Telecommunications**

Advanced telecommunications (more advanced than ISDN) can be delivered to the customer at present in three ways: fibre optic cable; radio; and via satellites.

In terms of computer networking, the most common medium is the fibre optic cable. The laying of pipes which house the cable is by far the most costly part of introducing this infrastructure - a cost which is likely to be prohibitive over the longer distances needed to reach rural areas. Certainly pipe laying to each individual rural property would not be commercially viable.

It is possible for telecommunications cables to use existing pipes, and to share pipes. A current opportunity for this type of pipe sharing is those being laid for cable TV. However, because of the costs involved, cable TV (and hence the pipes) are unlikely to reach many remoter areas. As the main cost is in the pipe laying, the kind of reduction in cost over time normally associated with technical developments is not anticipated.

The use of fixed radio services for rural areas is probably more viable, although as yet less tested, than cable. The DTI have let some experimental licences for the delivery of telecommunications in this way. It is most likely that radio will be used for local delivery of telecommunications to rural areas, with the main 'spine' being via fibre optics from the cities and conurbations. But just as with mobile phones, the infrastructure of masts will be costly, and environmental concerns may constrain development.

The possibility of satellite delivery of telecommunications to individual houses via TV has been well-publicised. A 'WebTV' will be needed to access the internet in this way, which will initially be expensive, and
probably targeted at the market segment who are most likely to own a PC and modem already. Still only in the pilot phase, there are many consumer issues to be addressed. Less well-publicised is the fact that some firms are already using satellite to deliver data (VSat technology is the most commonly used), which they claim is a more flexible and cost-effective solution than traditional telecommunications systems. Although most VSat systems simply transmit data, a growing number are also carrying multimedia services with video, text, speech and pictures.

Satellite delivery certainly appears to get around the problems associated with pipe laying and with radiomasts for rural areas. However, many more satellites will have to be launched if this is to become a widespread means of delivering advanced telecommunications. The attraction of the WebTV must be that it has the potential to make the superhighway accessible in a very user friendly way, and without the boffin image of computer use. It is likely to be some time, though, before the impact of widespread satellite delivery can be assessed.

It could be, then, that the most appropriate technology eventually for remoter rural areas for the delivery of advanced telecommunications is the one least tested at present: the use of satellite. At the same time, there are still real problems for some areas with the delivery of current services: good quality basic lines, ISDN and mobile phones.

**REGULATION**

The telecommunications industry is subject to certain regulatory measures. The government’s rationale for regulating markets is to protect the public or to overcome market failure. Regulation, in principle, could be an important tool in protecting rural areas against the vagaries of the telecommunications market, which not only produces monopolistic providers, but in some circumstances, no provider at all. However, in practice, the implementation of the regulation is often not maximising the benefits to rural areas.

Under its remit, OFTEL, the official watchdog of the fixed telecommunications industry, is not responsible for ensuring the
geographic spread of services. However, its responsibilities to oversee the Universal Service Obligation does give it the power to ensure adequate provision in rural areas (OFTEL, 1995a and 1995b). OFTEL's present definition of the requirement to provide a 'basic telecommunications service' is the provision of voice telephony services associated with a 'digital' line. These should be made available at 'affordable prices'; however, an additional connection charge for remote customers may still be levied. If such charges were curbed, this would assist those in remote areas wishing to have a phone. Rural areas would also be the main beneficiaries if OFTEL redefined its universal service obligation to include ISDN. The OFTEL 'Taskforce' report (1997) recommends this level of service for all schools (including rural ones).

Another means of regulating the telecommunications (and TV) industry is to issue licenses competitively, based on geographic coverage as well as price. For example, the licenses awarded for the provision of mobile phones specified a coverage of 90% of the population; licences for cable TV provision (an obvious conduit for advanced telecommunications to all premises) are let by the ITC with a specified area coverage. In each case, rural areas are the least attractive areas for investment. In the case of mobile phones, the companies have now achieved the 90% coverage, leaving many upland areas without adequate reception. The cable TV licences that have been let in more rural areas are for less than 100% coverage, implying that remoter areas will not be cabled.

The regulations as they stand treat 'market failure' as monopolistic behaviour, and do not regulate for situations where no potential provider exists, as is sometimes the case in rural areas (eg, for cable TV). But a regulatory approach which addresses this situation is not without precedent: the way rural bus service contracts were let after deregulation, for example. Cable TV licenses could be let competitively on the basis of total coverage, implying a cross subsidy between urban and rural areas. Alternatively, the remoter areas could be let separately, with competitive bidding for the lowest subsidy.

Sometimes rural telematics schemes will need to interface with the regulation of telecommunications. This is most likely to be the case
when ambitious schemes are being developed for infrastructure provision. Organisations leading these developments need to be aware of the regulation governing such activities - who may own a network, who can provide it, to whom, and so on. These are complex matters, demanding specialist knowledge.

**STATUTORY LAND USE PLANNING**

The development of the telecommunications infrastructure is also governed by the land use planning system. The Government's general policy on telecommunications is to facilitate the growth of new and existing systems and PPG8, Telecommunications (DOE 1992) makes it clear that planning authorities should "respond positively" and "not question the need" for telecommunications developments.

The development control powers vested in the planning authority are limited by the fact that the majority of telecommunications developments are subject to General Permitted Development Orders which allow operators merely to notify the authority of intended developments rather than to apply for planning permission. Pipe laying for telecommunications only requires that the planning authority be notified. Radio masts up to 15m also only require notification, although planning authorities may question the specific location and design of a mast, require notification of all intended development, and take steps to encourage mast sharing. (National Parks are not subject to the GPDOs; hence full planning permission must be obtained for all masts.)

However, the Land Use Planning System does have a role in the strategic development of the infrastructure: PPG8 states that Structure Plans should take account of the strategic requirements of telecommunications networks, and that Local Plans should set out criteria-based policies for the location of developments.

In practice, though, it appears that most planning authorities are reactive in their approach. Apart from their plan-making roles, local authorities have also been issued with a Code of Best Practice by DOE which sets out protocols and principles. Within this, they are urged to be proactive in working with the industry to establish registers of masts,
and to discuss future requirements. It is also a licence requirement that when an operator gives notice of installing apparatus, this should be accompanied by information about future intentions. In other words, planning authorities should be in a position to guide the development of telecommunications infrastructure. Their reticence in this may well be because of their weak development control powers, the technical nature of the subject, and its relative novelty.

Until recently, telecommunications issues did not figure in rural planning debates. Telecommunications infrastructure issues are now being raised, brought about by the recent increase in proposals for masts for mobile phones, the Council for the Protection for Rural England’s, and other pressure groups’, action in raising planning and amenity objections (CPRE, 1996), and the on-going reviews of Regional Planning Guidance with their 20 year horizons. Concern is growing about the visual impact of masts in rural areas, and permissions have been withheld on environmental grounds. A number of planning authorities are exploring more fully the options and powers at their disposal, for instance, developing co-ordinated strategies for telecommunications development and working with the industry to find ways of minimising the impact of masts.

MARKETING RURAL NEED AND DEMAND

Under a market system, telecommunications providers will assess the demand from customers before investing in new infrastructure. All the indications are that the demand for advanced telecommunications in rural areas is weak at present, as well as being incipiently diffuse. Of the rural teleworkers CRE surveyed in 1996, only half had enquired about having ISDN; and none had actually had it installed (only one of them after having been informed that it was unavailable). Providers also claim that rural businesses and residents are not fully utilising the services available to them via a standard telephone line, and that investment in more advanced infrastructure would therefore be premature.

Some rural individuals have demands that they are not articulating. A third of the teleworkers in the CRE survey outlined regular or
persistent problems with their standard telephone lines. Also, because others in the vicinity have established that ISDN lines are not available, some people are not bothering to enquire about the service, and are thus failing to express their own potential interest.

Individual demand in rural areas will always be less attractive to telecommunication providers than that in more densely populated areas. Hence there is a need to orchestrate the demand to create packages attractive to investors. This might be addressed through bringing local businesses, community groups, and public sector providers together to form a buying consortium. There is also the possibility of public authorities or other large regional organisations with purchasing power, ensuring the coverage of some rural areas when specifying how their own needs are to be met. Local authorities in particular, with their various schools, outposts and depots, could help achieve additional extensive coverage of their territories if they planned their internal telecommunications development creatively.

There is a need to dispel the complacency of some policy makers about the level of telecommunication provision in rural areas (see, for example, DOE/MAFF, 1995). Not everyone has a phone, a good quality basic service, or reliable mobile phone coverage. Despite the introduction of digital exchanges, ISDN availability is patchy and difficult to gauge in rural areas. The regulations surrounding cable TV do nothing to benefit rural areas.

Rural areas will become further distanced from services and markets if the technology is not in place at the same time as in urban areas. Once urban areas are in a position to use telematics, knowledge-based service providers will begin to use this route to provide information and communications services, to the detriment of traditional service provision. Urban businesses will be able to take advantage of distant markets before their rural counterparts.

It is difficult for rural agencies to gain information about the existing and potential networks of all possible providers. For the non-specialist, a lack of understanding of all the possibilities may be the problem; however, some providers are also withholding the information on
commercial grounds. The possibility of tapping into existing networks, such as those owned by the utilities, is often suggested for rural areas. However, little is known about the exact locations of these networks, or the feasibility of using them.

CONCLUDING COMMENTS

There are real constraints under a market-based system in attracting advanced telecommunications to remoter rural areas.

The situation is not entirely hopeless, however. Firstly, not all telematics applications need advanced telecommunications. Secondly, the market can be tweaked. The small and scattered demand for more advanced telecommunications could be packaged to make it more attractive to suppliers; the regulations could be changed to give more encouragement to rural telecommunications investment; and with better understanding of the constraints, the public sector could do more to support the roll-out of the network. The third area of hope is that new but as yet untested technologies will provide better rural coverage.
STRATEGIC APPROACHES

Although the rhetoric of the 1990s in Britain has been one of market liberalisation, public institutions, in particular, still have a significant strategic role through their powers to devise and implement policies, to fund initiatives, to regulate markets, and to plan and co-ordinate activities.

There is no current rural telematics policy; however, there are telematics policies that refer to the rural dimension, and rural policies that refer to telematics. This section will argue that these policies do little more than celebrate what they see as the potential benefits of telematics for rural and remote areas - benefits often perceived from an urbanist viewpoint - and do not address the problems and constraints that may confront those involved in introducing telematics for rural development. There is hence a need for those organisations promoting rural development to act strategically to ensure that rural telematics issues are taken up.

A current rhetoric about rural development stresses the 'bottom up', endogenous approach. For rural telematics to be fully exploited, there is a need for local initiatives, but these have to be developed in the context of appropriate institutional and policy support at regional and national (and perhaps European) levels. It would be inappropriate for telecommunications constraints to be addressed only on a settlement by settlement basis.

The first chapter in this section provides a critique of current policies that affect telematics development, making the case that the rural dimension is not well represented in telematics debates, and that telematics is not well-conceived in rural documents. The second highlights the desirability of organisations working together, in particular, those within a region, and those with rural remits, but finds that the boundaries imposed by public bodies act as a constraint to development at the local level.
Chapter 10: CURRENT POLICIES

BACKGROUND

While a rural telematics policy does not yet exist, there are a number of telematics policies impacting upon Britain, and rural policies which include reference to the use of telematics. A major influence on telematics policy in Britain is European policy as developed by the High Level Group on the Information Society, known as the Bangemann Report (1994) and the related work of the European Information Society Forum (1995 and 1996). Rural policy at the national level in Britain was given increased prominence by the publication of the ‘Rural White Papers’ for England, Scotland and Wales (DOE/MAFF, 1995; Scottish Office, 1995; Welsh Office, 1996) - the first time in half a century that the rural has been the focus of attention.

EUROPEAN TELEMATICS POLICY

Neither the Bangemann Report, nor the later Information Society Forum reports devote much space specifically to rural issues, except for passing references to “geographically peripheral areas”. However, a number of themes within these reports have rural connotations: in particular, those to do with reducing people’s need to travel, and those to do with the building, and reinforcing, of a sense of community.

According to Bangemann, telematics will provide people with “new opportunities to express their cultural traditions and identities and for those standing on the geographical periphery of the Union, a minimising of distance and remoteness” (p5). While allowing these outward expressions of diversity, telematics will also help to include people in their communities and society. Here, the inference is that people will be enabled to live where they choose (including in communities in remote areas) by engaging in space- and time-reducing IT.

Hence Bangemann gives some prominence to the concept of teleworking and the associated environmental benefits because “commuters no longer need to travel long distances to work”. He claims that “more flexible working arrangements will be particularly beneficial for all those tied
to the home” (p25). These people, at present excluded from social and economic life either by reasons of home life or remoteness, will also be enabled by distance learning. The technology will facilitate the re-integration of home, work, education and leisure.

Through telematics, the EU will develop as a more equal society by providing “fresh opportunities to build a more equal and balanced society and to foster individual accomplishment ... to improve the quality of life of Europe’s citizens, the efficiency of our social and economic organisations” (p6) and by “responding to social needs and raising the efficiency and cost-effectiveness of public services” (p24). Bangemann is equally positive about the benefits that telematics will bring to small businesses.

Although rural telematics is not given specific coverage, there is reference to the rural, especially in terms of telematics’ ‘distance reducing’ powers, its ability to enable communities, and build a more equal society. This is given substance in such activities as teleworking, distance learning, and opportunities for small businesses. How does this resonate with this analysis of rural telematics issues?

A first main difference is that Bangemann only addresses the positive potential of telematics. His report does not balance the potential with elaborations of the constraints that might be encountered, nor does it investigate the possibility of negative impacts from the technology. This could be because his report is essentially a piece of evangelism, or it could be because the constraints and negative impacts are related almost exclusively to rural areas, and these are not specifically addressed by Bangemann.

Analysis of the role of rural telematics concludes that people will continue to travel to socialise, to hold meetings, to shop, to take the children to school and so on, and that telematics will generally supplement these activities rather than replacing them - a more qualified assessment of telematics’ ability to resolve travel and distance problems than Bangemann’s.
Bangemann emphasises the ways in which telematics will help to overcome people’s exclusion from society. In contrast, the rural telematics work is premised on the notion that rural people may become the ‘have nots’ of the Information Age - that they will not have the wherewithal to access the technology, which will exclude them from the benefits that it will bring to the rest of society.

Lack of access to advanced telecommunications is likely to be one of the main factors through which rural areas may become excluded in the future - the dominant market philosophy of the telecommunications industry makes remoter and more sparsely populated areas unattractive investment zones. Yet arguments for the liberalisation of the telecommunications market are a prominent theme in the Bangemann report.

Teleworking is advocated by Bangemann both in its own right, and as part of the development of new integrated domains of home and work. The more recent report from the Information Society Forum (1996) echoes much of Bangemann’s enthusiasm, but raises a few doubts as well - teleworking could undermine labour laws and collective bargaining. Rural telematics analysis produces counterarguments. Teleworking is simply a form of flexible working, and not a new concept. It can be applied in only a limited number of circumstances. Working terms and conditions for the home-based ‘teleworkers’ may be poor, and may force some workers out of the formal economy.

Bangemann highlights the novel opportunities for distance learning. However, rural telematics analysis stresses that distance learning in itself is not new - telematics just provides a modern means of delivery. Few people in rural areas take up the existing opportunities to learn at a distance, so will telematics make much difference? If rural areas do not have effective videolinks, which can go a long way to creating effective, interactive, face to face support to learning, much of the benefit of telematic delivery may be lost.

Bangemann also stresses the benefits to small businesses, but not the constraints that rural firms would have to overcome, or the negative outcomes: while small rural firms will be able to reach new, distant and
global markets, distant and global firms will be able to access those local markets previously monopolised by local firms. It is also interesting to note how Bangemann’s report, wittingly or unwittingly, almost totally excludes rural small businesses from its recommended actions: Telematics Services for SMEs targets those with more than 50 employees, which would represent an exceptionally large business for a rural area.

This brief analysis shows how current European telematics policy is not representing the concerns and issues raised about the development of rural telematics. The next section assesses the extent to which these are given prominence in current rural policy in England.

**THE ‘RURAL WHITE PAPER’**

The Rural White Papers for England, Scotland and Wales, published in 1995/96 were statements of Government rural policies and visions. Explicit references to Information Technology and Telecommunications form only minor components of the White Papers, but when mention is made of rural telematics, the tone is optimistic. The White Papers also make policy commitments to reversing the decline in local services, through ‘novel’ and ‘flexible’ means - and it is evident that they see telematics playing a key role in this.

The English rural white paper takes a positive line with the statement "Distance learning, home shopping and direct banking have obvious benefits for rural areas" (DOE/MAFF, 1995, p61) and again when it states that "The microchip has made a real difference to all our lives but not least to the concept of remoteness. The computer, the fax, the email and the explosion in telecommunications may have their most radical effect in the countryside" (p59). This ‘explosion’ is due to the liberalisation of the telecommunications industry. This means that “the majority of rural areas” have access to ISDN, and that the benefits from fibre optic cables “will come through as the network grows” (p59). The Welsh and Scottish rural white papers are similarly positive about the development of telematics in rural areas.
These documents, like Bangemann, stress the benefits that telematics can bring, but fail to problematise the constraints and the possible negative effects. For example, the English White Paper gives only passing recognition to the limitations of rural infrastructure, and does not focus on the problems for those who cannot have ISDN services, or the likelihood that cabling will never reach some rural areas.

In terms of the “obvious benefits” for rural areas from distance learning, home shopping and direct banking, the English Rural White Paper is too optimistic that this will happen ‘naturally’, and without pitfalls. It does not refer to constraints for rural areas - the impossibility of providing good quality videolinks in some areas or the improbability of a supermarket delivering to a remote dwelling at an affordable price, for example. Nor are negative impacts envisaged, such as the demise of the local shop because of teleshopping, or the withdrawal of commercial services from market towns because of direct services.

CONCLUDING COMMENTS

Current policies do not effectively address the issues of rural telematics development, some marginalising, ignoring or misunderstanding rural issues within broader telematics policies, and others, in rural policies, celebrating, rather than problematising, the opportunities afforded by telematics.

If rural areas are to fully benefit from telematics, there is a need either for revision to the existing policies or for a new policy that focuses on rural telematics development. The lack of relevant policy necessitates close working between rural development organisations to maximise such opportunities as there are, and to lobby for the inclusion of a rural dimension in telematics policy and regulation.
Chapter 11: WORKING TOGETHER TO EFFECT CHANGE

MARKET AND POLICY FAILURE

Telematics development is mainly subject to market forces. In terms of rural telecommunications development, a major drawback is the failure of the market to attract providers of advanced and mobile telecommunications to remoter areas, and the monopolistic nature of BT’s provision of fixed services in rural areas. These markets are regulated at the national level, with the Department of Trade and Industry (DTI), the Office of Telecommunications (OFTEL) and the Independent Television Commission (ITC) being important in determining how these issues are addressed.

For the effective development of rural telematics, this report has argued that there is a need not only for adequate private provision but also for local public access points, and for awareness raising and training activities. This provision will not necessarily be attractive to commercial companies. Organisations with responsibility for the provision of information, education and training, and communications must develop policies and funding mechanisms if these services are to be delivered to rural areas via telematics.

There are a number of initiatives aimed at providing these services, developed by EU, central government, local government, the TECs and so on. From a rural perspective, many of these are problematic, especially where the initiative is narrowly targeted as it is unlikely to be viable in a rural area. Some rural organisations do manage to forge links across bureaucratic or sectoral boundaries. However, their resources are comparatively small, and on their own, these strategic interventions will make little impact on the constraints to full exploitation of telematics in rural areas.

WORKING TOGETHER WITHIN A REGION

Regions, in the context of this report, have no exact geographic or administrative definition. They are geographic areas covering a number of local authorities, where institutions are willing to work in
partnership to support rural development. They may be determined by a geography in common, by designated areas such as Objective 5(b), and/or by existing groupings of organisations. These regional partnerships will include rural organisations and those with broader remits such as local authorities. Public sector organisations will be important players, but the partnerships should be open to voluntary and charitable organisations, the utilities and private businesses.

The first main advantage of such groupings is that together these organisations can wield buying power for telematics associated developments. In terms of telecommunications development, a consortium of organisations in a remote area is far more likely to attract a provider of advanced or mobile services than individual demands. Some of the organisations in the consortium might also have existing infrastructure that can be used as part of the development of a network.

Another important way of working together is to integrate telematics delivery at the local level. In order for the full benefits of telematics to be realised in rural areas, the barriers between sectors, functions, and organisations, mainly created by the public sector, will have to be overcome. This report has argued the need for local public access points which would need to build upon existing facilities and support networks: the schools, the libraries, the telecentres, the village halls, the local shops and so on. Many organisations will have to work together as a linked hierarchy, providing services to other organisations in the network. This new way of working demands new organisational forms.

Many of these organisations have individual policies, plans and funding criteria that aim to support the development of telematics in rural areas. Unless these are amended to reflect more accurately the integrated approaches that can meet local rural need, innovative rural projects will be hampered by the need to keep a plethora of ‘clients’ with disparate criteria, monitoring and reporting procedures happy. This time consuming activity will perforce be at the expense of the full exploitation of telematics for rural development purposes.
A RURAL VOICE

A rural voice can be provided by national rural fora, by regional partnerships and by local rural groupings. Rural need still has to be promoted; the role of telematics in addressing the problems has to made as clear as possible.

In terms of the telecommunications market, these partnerships can bring pressure to bear on the national regulators about the ineffectiveness of their approaches for rural development. The shortcomings of EU and national telematics policies and funding mechanisms for rural areas would also be more effectively addressed by a consortium than an individual organisation.

CONCLUDING COMMENTS

For rural areas, co-operation has long been one means of successfully providing, or maintaining, local services. The advent of telematics offers further opportunities to improve rural living and working; however, rural areas must find creative ways of packaging their demands to attract the supply of goods and services, and public providers will have to work with each other to deliver local services in a viable way.

There is also a need for a ‘rural voice’ that raises issues about telematics. Regulation, policies and funding for telematics show little understanding of rural constraints and impacts. If these issues are not given a higher profile, rural areas will miss out on many of the benefits that telematics could bring.
CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

This report set out to demonstrate that there was a specifically rural dimension to the development of telematics, that the ways in which it might benefit rural areas most could be different from urban areas, that there would be particular constraints to the development of telematics, and that there would be some unintended consequences in rural areas. Finally it suggested that current policies and practices are not effectively addressing rural telematics.

The report finds many examples of recurrent problems of rural development where telematics could be particularly useful. It has the potential to improve the delivery of distance learning for those where colleges and classes are inaccessible. People with mobility difficulties could be given a much more effective link with the outside world. It could help people access information more readily when the local library or council office is at a distance, and has limited opening hours. Applications for benefits could be made locally by rural people. A new style of public transport system in rural areas could be possible, that was more flexible and more responsive, and so on.

The report also outlines constraints to unlocking that potential. Some are specific to rural areas; others are similar to constraints in urban areas, but exacerbated by rurality. There are three main areas of constraints.

* Many people in rural areas are not aware of the benefits, and have little training in the use of the technology. This is also a problem in urban areas, but rurality means that it is a more pressing constraint - businesses are very small and not at the forefront of change; it is difficult for them to attend training courses; small, rural schools are unlikely to provide pupils with such a good grounding in new technologies as their urban counterparts, and so on.
* There are few public places in rural areas where access to computers and to the internet are provided. For example, whereas many central libraries now either provide, or are planning to provide, access to information via computers, small rural branch libraries have no such facilities, and only a very small proportion of parishes now have a branch library.

* Rural areas are disadvantaged when it comes to the provision of telecommunications. This applies to ISDN, mobile phones, and the more advanced infrastructure that will underpin the future development of telematics.

There may be some negative unintended outcomes in rural areas from more mainstream telematics developments. Local markets may be accessed by global firms, or teleshopping may threaten the viability of village shops. Traditional services (reference books in libraries, for example) may be reduced once urban centres access such services via telematics.

Current telematics policies make little or no reference to a rural dimension, and their positive rhetorics underplay, in particular, the constraints to, and negative impacts of, telematics development in rural areas. Rural policies similarly echo only the positive messages about telematics. Current means of regulating the telecommunications market do little to encourage investment in rural areas.

The current bounded practices of public sector organisations also limit the effectiveness of their own initiatives. In order to be viable, local projects in rural areas have to meet the needs of a range of clients, and give access to services from numerous providers.

For telematics to be fully exploited as part of rural development, the possibilities for rural areas, the constraints to development, the negative impacts, and the lack of integration between public organisations need to be explored in depth. Policies and initiatives reflecting the real opportunities in rural areas can then be developed.
RECOMMENDATIONS

This report is critical of current policies, funding mechanisms and regulations in terms of their rural impact and effectiveness. The following ‘recommendations’ are derived from the text of this report, and offer guidance to those responsible for designing, or reviewing, such policies.

Improving Competitiveness

* Appropriate changes in working practices of existing businesses will normally do more to improve the rural economy than teleworking initiatives or attracting footloose industries. Appropriate changes mean that the proprietor/decision maker understands how specific telematics applications could be applied to his/her business in order to achieve a business objective, such as entering new markets. This might well mean the more effective use of existing equipment, rather than investment in new technology.

* Advice, training and demonstration sessions are needed, but should be geared to meet the needs of small (and very small) businesses. These should be provided at times and frequencies suitable to these businesses and in appropriate local locations. They should demonstrate how telematics applications could be used to address specific problems or objectives of individual firms, and provide support for equipment choice, installation and failure.

* Encouragement needs to be given to building support networks of rural firms. Better linkages between firms would speed up the ripple effect from the introduction of new technology in one firm to another, provide mutual support over problems with applications, allow them to orchestrate their demands for improved telecommunications and to share work.
* Business advisers are needed who can advise firms on ways to improve the business, with telematics as one of the resources that might be considered, alongside more traditional ones.

* If teleworking is to be pursued for economic development (rather than social) gain, the greatest opportunities arise from 'professional' employees working flexibly between home and the office, and from freelance professionals.

**Enhancing Services**

* Telematics can improve services manifestly (information via a computer, for example) or discreetly (eg, improving the logistics behind delivery chains). Both are important.

* Public service provision to many rural communities is already poor; unimaginative schemes that simply use telematics to deliver the same quality or type of service are unlikely to succeed. Telematics allows new opportunities to address both the viability and quality of local services.

* Boundaries can be crossed. Unless there is a good reason for imposing limits (confidentiality, security, etc) initiatives should begin to cross geographic boundaries, to cross sectors (education and libraries, for example), client groups (eg, pupils and the public), and activities (eg, education and communications).

* Factual information needs to be produced in an accessible format; means of improving existing information and advice services to rural communities need to be developed - using both traditional and telematic routes; means should also be developed to allow better communication and information flows within and between communities and interest groups.

* An important aspect of telematics for rural schools will be in its ability to extend pupil's choice, and the range of experiences offered. In particular, it allows a specialist teacher in one school to teach remote groups, it allows access to remote specialist
information, and extends the peer groups of pupils taught in small groups. Rural schools and colleges have an important role to play in preparing people to access some services via telematics. Good basic training in IT and telematics for students may need support, especially in smaller schools for the training of staff and funding of equipment.

* Distance learning can be enhanced through telematics, allowing interactive lectures and tutorials to remote sites, interactive individual teaching, or group sessions. The main benefit must be in making the distance learning truly interactive; other improvements in technology such as video, and CD-ROM would generally be more appropriate than telematics if regular interaction between teacher and pupil was not envisaged.

* Demonstration/experimental projects are needed that explore the ways in which village facilities (eg, the shop) could expand and improve its services by using telematics.

**Providing Access**

**To Infrastructure**

* An aim must be to solve the 'traditional' problems as well as future ones: homes with no telephone, or with a poor quality basic service, for instance, and encourage schemes that aim to improve usage of current equipment: the telephone, the fax, existing computers, etc.

* Like-minded organisations in a region must come together to create more effective demand for new or improved services (including ISDN, mobile phones). Organisations with advanced infrastructure in place should be encouraged to discuss the possibility of building others into their networks.

* The rural dimensions of market failure need to be addressed by regulation: not only in terms of monopolistic supply, but also where no provider exists.
To Awareness and Understanding

* The importance of telematics in solving real problems/reducing time needs to be demonstrated, while demystifying the process: small firms showing others how they use telematics; front line staff in public organisations communicating and retrieving information via telematics, etc.

* Local awareness raising events/taster sessions, arranged through existing groups of interests need to be organised, where possible taking a real task (the analysis of the village appraisal questionnaire results, for example) and demonstrating how computers and telematics could simplify the task.

* Formal training sessions are needed to demonstrate how to use the various applications, the situations when telematics might be useful, and how to choose between the various providers.

To Points of Access

* Access provided in a public place will be predominantly for individual/community use rather than business use.

* Telematics will not reduce the amount of help people need in accessing information or training. If anything, it will initially add to the support needed. A public access point will hence need to be staffed, but some of this could be effected remotely. It should provide an integrated information service (to public services, to tourist information, to library services etc) rather than being dedicated to one information source. It should also provide access to training/educational services.

* In more populated areas, the current providers of information, education and training services would seem ideal locations for local access points - the libraries, colleges, telecentres, schools. But to ensure a good geographic coverage, other local facilities such as church halls, Post Offices, rural community council offices would need to be linked to the network of access points. Local access points should be linked one to another, allowing for
the sharing of staff and expertise. Guiding principles in terms of location should be a lack of duplication in the vicinity; a policy of linking to existing access points to share expertise and resources (eg, joint employment of technical staff); cross-sectoral involvement in the scheme.

**Integrated Approaches**

* Public bodies have to devise better means of overcoming organisational divisions in order to enable telematics developments in rural areas.

* Rural organisations should act collectively to bring *rural* telematics issues to the attention of those devising policies, initiatives and regulations.
REFERENCES


Huws, U (undated) *A Manager's Guide to Teleworking*, Employment Department Group.


Annex 1: METHODS AND PROCESSES

Introduction

The findings reported here were mainly generated from the group processes described below, and the knowledge of the group members and their organisations. This was supplemented by published texts, and policy documents and reports provided by organisations in the North of England, by visits to some projects in the region and by written case histories for others, by a preliminary audit of the projects and proposals in the region, and a survey by CRE of local rural teleworkers.

The Northern Informatics Rural Sector Group

Early in 1995, NiAA (as Northern Informatics was originally called) invited Philip Lowe of the Centre for Rural Economy at the University of Newcastle to lead a rural sector group under its auspices. This invitation was to Philip as a leading rural specialist and Director of the Centre for Rural Economy, not as a telematics specialist. The Centre, at that time, had no focus or track record in researching rural telematics. Having taken on the responsibility, CRE then had the task of developing a group.

During 1995, the Centre for Rural Economy (CRE) team of Philip Lowe and Hilary Talbot worked to form a group of people from the rural sector who represented the full range of rural interests, and who were involved in some way in introducing telematics. Existing rural contacts of CRE, and some of NiAA's telematics contacts were used to gain an understanding of the main actors in the region in terms of rural telematics, and examples of good practice. A two stage event, with support from ESF, the TECs in the region, RDC, NiAA and the University of Newcastle, was organised for December 1995 - a tour and demonstration of a number of current telematics applications in the rural North, and a seminar on rural telematics which gave participants the chance to improve their knowledge of the potential of telematics and to help design the agenda for the rural sector group of NiAA. The tour was attended by 30 people from the region; the seminar attracted about 50 participants.
The two events stimulated much thought and discussion about telematics for the rural North, within which a recurrent theme was that the region was a long way from being part of an Information Society: there was little awareness of the opportunities, limited understanding of the implications, and suggestions that parts of the telecommunications infrastructure would not be capable of delivering the services needed. The meeting was dubious that a positive future for the rural North would be assured if the market alone was left to provide, or if the large organisations and industrial interests in the North had the sole voice. It was hence agreed that 'a strategy' was needed for telematics in the rural North, and CRE was asked to create a smaller working group which represented key actors and interests in the rural region, with the task of devising a rural telematics strategy.

CRE managed to secure ERDF funds to support the study and training activities that underpinned the development of the 'strategy' document, with match funding provided by the University of Newcastle.

The Rural Telematics Strategy Working Group

The Rural Telematics Strategy Working Group gained its legitimacy from two quarters: firstly NiAA, which effectively launched and endorsed a rural group, but gave it no direction, and secondly the broader rural constituency which set a broad agenda for activity, and agreed the principles of membership and process for the group.

CRE was asked to bring together an effective working group which would include representatives for the main sectors and the geographic coverage of the rural North, and key telematics activists in the rural region. CRE asked for volunteers from the broader constituency, and also targeted certain organisations to ensure the desired coverage.

The working group brought together representatives from the following organisations:

Community Council of Northumberland
Cumbria County Council
Durham County Council  
Durham Dales Telecentre  
Durham TEC  
Farmer - an influential person with a strong interest in technology  
Kirkley Hall College - an agricultural college  
MAFF  
North Yorkshire County Council  
Northumberland Library Service  
Rural Development Commission  
TNL, a computer-related small business  
University of Newcastle

The group held a series of six meetings between January and July 1996. The first meeting was a broad brainstorming discussion of the main issues that needed to be investigated in more detail, which led to an agenda of topics for the subsequent meetings. Each topic was assigned to the member of the group deemed to have the most expertise: this person then stimulated a group discussion at a meeting with a presentation on the topic. Material from these meetings was combined by Hilary Talbot with the results of CRE's preliminary audit of applications in the rural North, and of its small survey of teleworkers in the region, to create, in consultation with the group, eight 'issues' papers and a short summary of the key strategic issues.

These draft papers formed the basis for discussion at a one day event to which a much wider rural constituency was invited: about 80 people attended the event at the end of October 1996. Following an initial presentation of the main points in the eight issues papers, participants split into three groups: on improving competitiveness; enhancing services; and providing access. Delegates had been given the issues papers relevant to their themes as pre-reading, and were asked to develop a one-page summary of the key points that needed to be addressed in order that telematics could fulfil its potential in meeting their group's target. They were later asked to rewrite the draft summary in the light of their own comments, and those of members of other groups. This feedback, together with individual feedback, was then incorporated into the final forms of the documentation, and agreed by the working group at the end of 1996. The working group
subsequently developed an implementation section to the strategy, which relied heavily on exhorting other organisations to alter their policies, plans or funding criteria in the light of the issues raised, to work towards more integrated solutions, and to provide a coherent voice for rural telematics issues.

**Dissemination**

The rural North report (Talbot, 1997) raised strategic issues for the development of telematics in the region. Its findings have been presented to, and discussed by, many fora in the North of England. A mailing list of 4,000 names was drawn up for the circulation of the report.
Annex 2: NORTH OF ENGLAND EXAMPLES

Introduction

This annex contains examples from the North of England that illustrate how telematics and telecommunications are being developed in rural areas. This is not an exhaustive list of projects, and certainly more will have come into existence since these examples were used by the study group in 1996. The examples are arranged under the main chapter headings of the report.

Small Businesses

There are no studies that have focused specifically on how small businesses in the rural North are adopting telematics. Northumbria Tourist Board carried out a survey of the tourist industry. Some recent surveys are beginning to address the information gap: the RDC/Spa Consulting study of North Yorkshire; and the TNL research for the TECs in the North which includes a rural component.

Current evidence suggests that it is correct to characterise most small businesses in the remote rural North as technological laggards: there are many without computers; the Tourist Board study found firms that didn't use answerphones or faxes to help in the running of accommodation businesses. Experience of networked computers is unlikely in areas like North Yorkshire, where about half the businesses are not large enough to register for VAT.

A small study of distance marketing of speciality foods in the rural North via 'mail order' found plenty of scope for IT or telematics applications, and examples of underutilisation of current equipment. Only one of the eight firms surveyed used telematics; three had no computer or fax; one was using a word processing package for 1000 addresses, and complaining that they had no way of knowing who was still a 'live' customer. However, there are also small firms in the rural North competent in the use of telematics, which insist on the importance of face to face transactions, and examples where London offices for marketing purposes are proposed.
There are some examples in the North where the issues of business advice are being addressed. It is not clear how far there is a rural component, but the PAGE project, sponsored by a consortium of public and private firms with ERDF support, offers businesses in County Durham membership of a scheme giving support and training in the use of the internet as a successful business tool at a highly subsidised rate. North Yorkshire TEC is addressing the business advice issue with the introduction of rural IT advisers.

**Agriculture**

Very little information exists about farmers' use of IT and telematics and no studies have been carried out focusing specifically on the North of England. However, those working with farmers in the rural North would estimate computer ownership to be well below the 40% figure from the NFU. Distance is an important concern for upland farmers - they find accessing information and training in a traditional manner difficult. A regional example of telematics being put to good use is Kirkley Hall's Upskill course which can be delivered telematically at the Bellingham Telecottage.

The Wooler auction mart is an interesting example of a commercial application of telematics. Large institutional buyers, such as supermarkets, are able to bid into an electronic auction for their finished beef and lamb without leaving their desks, or the animals leaving the field. The auction mart still also runs a large successful live auction which is used by farmers. There has been a substantial expansion of overall business since the introduction of the electronic system, at the expense of smaller marts.

**Teleworking**

CRE undertook a small study of homebased teleworkers in the rural North and found that about half of them were working part-time by choice. All of them owned computers, and most had a modem and a fax machine. By contrast their phone lines were low-tech: they were all still connected with standard phone lines, about a third of which had
problems of breaks in transfer or interference. There was interest in ISDN lines, but at the right price: half the respondents (30 in total) had enquired about ISDN; one was told that this service was unavailable; for the rest, the price had played a key part in the decision not to invest.

There are examples of large employers in the North of England who allow staff to work from home, some of whom are likely to live in rural areas. The example of the Child Benefit Centre at Washington conforms most closely to the model of part office, part home-working. In Cumbria, social services have a number of staff who use their homes as the base from which to do their visits rather than the office. The field staff of a number of regulatory agencies such as the Environment Agency and ADAS are increasingly carrying out mobile working from their homes.

To date, the rural North has attracted few 'back offices' and 'call centres'. The choice of Barnard Castle by Telergos shows that it can be a viable proposition. This is a thriving private sector company, offering office services to distant large organisations.

Local Communities

The library service in the North has got together to develop the Regional Information Service (RIS). Based on a World Wide Web site, this service offers information about the region to anyone interested, and a means of accessing general information for residents of the region. It uses the technology to link existing information and data sources in an ordered and structured way, aiming to superimpose organisation on the anarchic development of the WWW and make information retrieval far more user friendly. The WWW site is available to anyone with an internet connection. However, in terms of local access points many libraries are not yet equipped with an internet connection, and the smaller, remoter libraries are likely to remain unconnected for some time.

The local authorities in the region are not particularly prominent on the WWW. Only Tynedale and Wansbeck District Councils are listed under the UK councils with WWW sites, and Tynedale's is effectively a
tourism brochure at present. Wansbeck's stands alone in addressing the information needs of its residents with its Citycard. By comparison with many other sites, it holds a range of information useful to both residents and visitors, but in a non-interactive state: there isn't the possibility of filling out your housing benefit form on the screen, or asking for a bit of additional advice, for example.

Various organisations are developing public access points to the internet. The Cumbria Credit project aims to develop about 80 outlets (mainly primary schools); the Stanley project will link schools and community centres to local information sites and the internet. Telecentres and telecottages are to be found in the rural North, providing training and information points. Some commercial enterprises see this as a market opportunity: a bookshop in Alnwick, for example, now provides public access to the internet.

Local outlets in the North, including some telecentres and commercial enterprises, make office equipment available on a pay as you go basis to community groups and local people; others provide an office service to the customer.

**Providing Education and Training**

A NiAA survey of schools in the North found that the internet was being used by about 60% of secondary schools - above the national average. The survey did not distinguish between urban and rural, or school size, and as such should be treated with caution when thinking about the rural North.

Basic computer literacy skills are being provided on a part-time basis in a traditional manner through Community and Adult Education schemes from many schools and a few colleges (there is only a limited number of colleges) in the rural North. There are also a few examples of IT buses which can be taken to rural areas where there is a perceived demand for training.

Telematics is beginning to be used to deliver distance learning. Three colleges in the region are piloting a scheme which videolinks lectures
between the three sites. Northumberland College, as the most rural in
based, is interested in exploiting its ability to reach remoter locations,
one of the technical issues have been resolved in locations with
highly specialised support.

Interactive packages for individual study are being developed, but
almost exclusively for computer literacy at present. An example of a
provider is Derwentside College, which has local access points for
students at various locations in Stanley, at the Durham Dales Centre, and
at the Wearhead Centre. These centres give students support in
accessing the equipment and packages, although formal course tutoring
is provided interactively from the college. They also have students who
work from home, and one or two businesses which have registered their
employees. They are investigating the possibility of a videolink between
the Durham Dales Centre and the College tutors.

The Northern Colleges Network has provided a private network for the
25 colleges involved, plus a connection to the internet. This has the
capability for the sharing of information, tutoring etc. Some have
extended this capability to connect in local businesses (eg East Durham
Community College).

**Local Access Points**

There are a number of examples of telecentres in the rural North,
which demonstrate the individual nature and development of these
facilities. The North Tyne Telecottage at Bellingham, offering mainly
training and use of office equipment is closely associated with the
community education activities of the school in which it is housed. The
Durham Dales Centre mainly offers business services and training as its
telecentre activities within the broader activities of the Centre which
include a tourist information centre, a tearoom, and workspace. The
Middleton in Teesdale Telecentre was established by A M Computer
Services to provide business services, training and as a local community
resource centre.

The largest scheme in the rural North where school premises are used
to provide public access to the information superhighway is the
Cumbria CREDITS scheme. Some 88 Community Development Centres (CDCs) offering IT skills training are being established, mainly in primary schools. The scheme was initiated by the Cumbria CREDITS Partnership, a public/private/voluntary sector partnership, and is part-funded by Single Regeneration Budget (SRB) money. Some CDCs are now well-established; a further cohort, which include rural centres started in April 1997.

Telecommunications

The Durham On-Line project has recently undertaken a study mapping the telecommunications infrastructure (actual and potential) available in the county. This is important information in a rural region that has known through anecdotes that there were mobile phone dead areas, and that ISDN lines were not available to all potential customers. The rural region also has a network of potential conduits for fibre optic cable through the utilities’ and universities’ networks, but little hard information has been collected about the exact locations of the infrastructure, and the feasibility of using it. If cable is an important telecommunications medium for rural areas in the future, the rural North will need to harness all available capacity. The cable TV franchises in the region let so far do not offer 100% coverage, and it will almost certainly be the rural areas that are left unconnected.

At present, a NiAA initiative is aiming to bring together all the telecommunications purchasing power of the local authorities in the North to make a very attractive package for a supplier. If this can be brought off, the consortium should be in a good position to dictate terms; for instance, that all the geographic region must covered. Whether or not this initiative is ultimately successful, it establishes the large organisations in the region as important players in attracting advanced telecommunications to the rural North.