

Only Connect — Broadband Provision and Social Inclusion

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The term 'digital divide' is now firmly established in the rhetorical canon of both politicians and social commentators. However, its alliterative catchiness may lead to obfuscation rather than illumination unless some effort is made to differentiate the various understandings of the term. At least three can be identified at the outset. First, the term can refer to the divide between those who either own or have easy access to information and communication devices whose technologies operate digitally and those who do not have such access or ownership. Secondly, the term can refer to the divide between those who are knowledgeable, skilled and competent in the application and adaptation of information and communication technologies (ICT) and those who are lacking in the same for whatever reason. Thirdly, the term can refer to the divide between those who are able to communicate efficiently with other people through digital technologies and those who are handicapped in such endeavours through limited connectivity or bandwidth.

Clearly these separable understandings should normally be viewed as mutually contingent or intermodulatory insofar as the digital divide more often than not encompasses all three. Overcoming the digital divide must be about the development of appropriate ICT skills. However, these increasingly require not just access to the technologies in terms of equipment, but also in terms of connectivity so that people can achieve greater levels of creative endeavour and productivity through the *efficient* sharing of information and critical comment.

Unfortunately the provision of broadband, both in the UK and elsewhere, has too often been portrayed in the consumerist primary colours of technical one-upmanship or lifestyle enhancement for individuals rather than rendered in the more subtle and varied shades of regional, area or neighbourhood benefit which ought to characterise any serious debate about how socially inclusive communities can be created and maintained. In short, serious discussion about broadband (i.e. one that is ethically articulate) should not in the first instance start with technical or economic questions about how ICT infrastructures can be developed most effectively, but rather about how relatively (and in some instances gravely) deprived communities and disadvantaged individuals can be given greater power to organise and determine their lives.

In May 2001, Anna Diamantopoulou, EU Commissioner for Employment and Social Affairs, in an address at the European Parliament, adumbrated the particular dangers and challenges which accompany the emergence of 'E-Society':

The harsh reality is that a new a sort of class system is emerging in Europe. Between those who have access to this technology, and the skills to use it. And those that don't. Between the 'digital-haves' and the 'digital-have nots'. This was a key message from a recent Eurobarometer survey. That the spread of the information society has been hampered by gaps. Gaps between countries and regions. Between the sexes. Income gaps. Age gap... More and more women are using the Internet. But we still have a long way to go to match the US, where distribution is equal. This two-tier situation cannot continue. The 'E' in 'E-Society' does not and cannot stand for Exclusion... The new knowledge economy offers a wealth of opportunities to integrate and empower socially vulnerable groups: women, the disabled, older people, the unemployed, people living in remote and marginalised area... Helping overcome the traditional barriers of distance and mobility. Distributing knowledge and training resources in a more creative way. And on a more equal basis. Generating new, more responsive, and more user-friendly, networks, services and assistance. And, of course, giving the excluded a platform to voice their own needs and concerns. In a society and economy driven more and more by information, we cannot allow people to remain excluded. Internet access and digital literacy are becoming a must for finding and retaining a job. Providing socially vulnerable groups with the right tools, skills and ongoing training makes clear economic sense... We need to make sure that we harness the full potential of our greatest asset: people.¹

While it may be relatively easy to dismiss the broad-brush of such language, it would be unwise not to heed the warnings or to dismiss the accompanying desiderata as merely 'idealistic Eurospeak'. Indeed in the eighteen months since Diamantopoulou's address, a growing number of voices in the UK are beginning to raise critical questions about how far the current UK Government is, at least in practice, actually 'signed up' to the idea of E-Inclusion in terms of the roll-out of broadband in the UK. While there is clear evidence that real opportunities were seized in the mid-90's in developing strategies for E-Inclusion, there is a growing feeling abroad that the progress that was achieved in that period is being undermined by several factors governing the provision of broadband in the UK.

Much is sometimes made of the technical difficulties in delivering ADSL broadband to those who live on the periphery of converted exchanges e.g. the need for subscribers to be located no more than 6.0 km from an upgraded exchange (a restriction marginally relaxed recently from an earlier 5.5 km requirement²) or the difficulties in developing and implementing alternative technologies in regions of extreme rurality where the problem of low population densities is often compounded by relatively inhospitable terrains. However, the inertia currently afflicting the roll-out of broadband in UK is not ultimately one of technological adequacy but of ideological commitment.

In this context, it is perhaps interesting to examine the rôle of the Office of Telecommunications (Ofcom) in determining the specific modes and, hence, rates of broadband roll-out in the UK. Leaving aside the question of its regulatory function and effectiveness in other areas of telecommunications, it can be cogently argued, both theoretically and empirically, that Ofcom has seriously misunderstood or misinterpreted its rôle in the area of broadband provision. Instead of serving the interests of the whole UK community best by ensuring that all regions and areas have reasonable access to high-speed internet connectivity, it has developed instead a strategy in which the fundamental needs of communities are essentially subservient to a wide spectrum of commercial 'tests' which emerge from the prism of free market ideology.

Let us be more specific: it is not a matter of coincidence that the word 'community' or the phrases 'social inclusion' or 'social exclusion' (or, indeed, their cognates) do not appear anywhere in the December 2001 publication *Delivering a competitive broadband market – Ofcom's regulatory strategy for broadband*. In the Introduction, Ofcom sets out its rôle in these terms:

There are a number of different players involved in creating the UK's broadband market. These are the industry – to provide both the infrastructure and technology needed to deliver broadband services, as well as the content of these services. Ofcom – to ensure a coherent regulatory framework that allows competition in the delivery of broadband services at all levels of the supply chain. The Government – who have a number of initiatives to stimulate the take up of broadband amongst consumers, the public and small business sectors. And most important of all, the consumer – who will make their own choices over the services they want to receive and how they want to receive it. A competitive broadband market gives consumers a greater choice of how they receive broadband services, what they receive and the price they pay for them³...Ofcom's primary focus is to meet the needs of consumers through promoting competition at all levels of the value chain. Ofcom's objectives can be translated to the broadband arena through: a) effective and sustainable competition in the provision of broadband access and services (evidenced by no operators having significant market power in broadband markets); b) swift and firm corrective action in the event of anti-competitive practices; c) a high level of consumer awareness of the nature of broadband services and choices available; and d) a regulatory framework which is conducive to further investment in broadband and roll-out to remote areas of the country.⁴

Later in the same publication Ofcom observes:

If a broadband delivery 'gap' were [my italics] identified, Ofcom would aim to assist the Government as necessary in identifying and applying any measures to meet the reasonable needs of consumers outside areas addressable through commercial means. In so doing, Ofcom would aim to ensure that any measures are technologically neutral and, as far as possible, have no detrimental effect on the development of competition in general.⁵

The free market approach here is glaringly obvious with its direct and naïve appeal to consumers ‘abstracted’ from the communities in which they actually live and work with no reference whatsoever to the history and, more importantly, the current social and economic realities affecting those communities. What appears paramount instead is the active promotion of “effective and sustainable competition” between providers; in short the regulatory goal must always be directed in the first instance not to addressing supply distortions between different communities, which clearly have the potential to introduce or exacerbate social or economic inequalities, but in simply providing a level playing field at all times between competing suppliers and, where applicable, between competing technologies as well.

According to Haring, Rohlfis & Shooshan, whose report *Propelling the Broadband Bandwagon* was commissioned for United Kingdom Office of Telecommunications and Office of the E-Envoy, broadband is more “demand-constrained” than “supply-constrained”. What is interesting is the way this triumvirate of principals of Strategic Policy Research, a US-based research foundation, equate connectivity with commodity. In short the paradigms they adopt in their paper, not least in their distinction between “bandwagon” and “non-bandwagon” technologies, are provided almost exclusively by the various modalities by which domestic electronic products are sold to and adopted by consumers. While cable and satellite TV and mobile telephony (excluding SMS text messaging) are cited as non-bandwagon technologies, broadband is seen as a bandwagon technology whose market precursors and/or competitors are such products as TV broadcasting/HDTV, VCR-videocassettes, home PCs and CD-players.⁶

Four factors are cited by Haring, Rohlfis & Shoostan as determining the “the pace of new technologies in bandwagon markets”, namely: (i) “Demand must reach *critical mass*, or the product cannot succeed” (ii) “Once critical mass is achieved, demand for bandwagon products is subject to *positive feedback*. That is, growth in demand tends to stimulate further growth” (iii) “A valuable *standalone application*—that is, an application that has substantial value, even when the user set is small—greatly helps (but does not guarantee) achievement of critical mass”; and (iv) “With complementary bandwagon effects, expectations may play a significant role. In particular, purchase of the platform product is often based, in part, on the consumer’s expectations regarding the availability of the complementary products in the future”.⁷ While it would be difficult to resist the relative significance of these factors, it is not completely clear whether or not broadband can be regarded exactly in the same terms as TV broadcasting/HDTV, VCR-videocassettes, home PCs and CD-players which require new rather than merely upgraded ‘peripheral hardware’. Talk about “a valuable standalone

application” is also irrelevant in this context. So too in many respects (at least in this particular context) is the extended *excursus* that Haring, Rohlf and Shoostan make in their paper regarding intellectual property and copyright issues as they relate to the uploading and downloading of media content via the internet.

As in Oftel’s *Delivering a competitive broadband market – Oftel’s regulatory strategy for broadband*, Haring, Rohlf and Shoostan studiously eschew any talk about communities (accept in connection with Napster!) let alone issues specifically relating to social inclusion/exclusion. Instead they see broadband as not only best provided by market forces but actually as its true engine and absolute value:

Adam Smith’s theory of economic growth emphasized the “division of labor” (what we would now refer to as “productive specialization”), and he famously argued that growth through the division of labor was limited by “the extent of the market.” He thus favored the extension of markets overseas and the expansion of trade as operational means of extending market boundaries and, thereby, the scope available for further division of labor. Within Smith’s framework, the reason the great improvements in maritime navigation and the subsequent development of the steam engine and rail transportation were important was that they *increased the size* of economically relevant markets and thereby fostered greater productive specialization...In the first Industrial Revolution, improvements in transportation played a key role in expanding the effective breadth of economic markets and thus affording greater scope (and incentives) for enterprise competition, economizing behavior and productive specialization. In the Information Age, it is improvements in the availability of decision-relevant information and the ability to communicate that are driving advances in economic productivity via the same means. Expanding access to information is what is removing/expanding market boundaries and thereby improving the efficiency with which markets operate.⁸

More tellingly, the specific problems of rural communities are addressed, as in Oftel’s published regulatory strategy, only tangentially by Haring, Rohlf and Shoostan, government intervention being considered as a concession rather than as a necessity. Of the latter they somewhat grudgingly opine:

There *may* [my italics] exist a role for governmental subsidy of broadband network deployments in rural and other areas, where private investment cannot be economically justified but public investment may nevertheless be deemed to be economical.⁹

However, it is precisely in rural communities that the limitations of a pure market approach to broadband become most acutely apparent. In December 2002, the Countryside Agency published a series of research notes based on the ASPECT Final Synthesis Report, itself drawing upon on a two-year long European study, which focused “on how ICTs can help ameliorate social exclusion particularly in rural areas”. According to the Agency:

The report suggests that rural areas currently suffer from a deficit in advanced telecommunications infrastructure as a result of a lack of investment by telecommunications companies, based on a perceived lack of demand in rural areas. There is a need, therefore, to tackle both sides of the supply and demand equation. The report suggests that the public sector will need to intervene to ensure supply. Either through working in partnership with the telecommunications companies or local/regional authorities establishing their own networks. In either case public investment will be required. The report suggests that there is currently an asymmetry in knowledge of ICTs between the private and public sectors and that mechanisms need to be put in place to narrow that gap. It also suggests that intervention will be required to stimulate demand. It considers a number of demand stimulation measures in the areas of economic development, public service delivery and community development, drawing on 'good practice' examples from the study.¹⁰

The current situation in mid-Wales provides a useful example if not actually an object lesson in how the general unavailability of broadband in rural regions is beginning to undermine the innovative and trailblazing initiatives which took place in the mid-1990's, initiatives which indeed were seen as something of a beacon for other parts in the UK in the early days of Blair's premiership¹¹. Certainly the participation in 1996 of Powys County Council (the largest unitary authority in Wales) along with the Development Board for Rural Wales and the University of Wales, Aberystwyth in the EC-wide TIERRAS project (Telematics Applications Programme) augured well in terms of the relevant regional authorities' commitment "to supporting telematics services as part of their overall social and economic development strategies".¹² Not surprisingly the context and constraints facing all four participants in TIERRAS (namely authorities representing the regions of Midi-Pyrenées, Emilia-Romagna and Illes Balears as well as rural Wales) led to a variety of pioneering initiatives. In the case of rural Wales "an emphasis was put on plans to expand the network (linking three rural counties) and the number and quality of access points".¹³

In 2001 Telecentres Powys (perhaps the most successful enterprise in Wales to come out of the TIERRAS project) was able to boast that Powys had 30 public ICT facilities with 120 volunteers to service the network¹⁴. In addition Telecentres Powys "had created 8 jobs, assisted over 330 community businesses and 290 community groups and trained over 500 people in previous 18 months"¹⁵. Moreover its aims were significant and overarching, namely:

- To address the issues of social inclusion in an era of increasing technology.
- To address issues of access to technology in remote areas for the purposes of training and awareness of technology.
- To provide access to technology for rural businesses and community groups.
- To provide technical and strategic support to community ICT facilities in rural Powys.
- To access funding on behalf of community organisations.

- To be a catalyst in the development of economic activity in the field of ICT in Rural Powys.
- To act as the "ICT glue" in a wide [range of] community initiatives.¹⁶

However, in the Final Evaluation Report of the TIERRAS project (1998) a warning note is sounded about the sustainability of the project despite the way in which the latter “gained enormously from extensive partnerships”.¹⁷ In particular “the absence of a clear lead strategic partner often threatened the momentum of telematics related initiatives”¹⁸. Such scepticism about the future is summarised in these terms: “it remains to be seen whether the R&D work under TIERRAS and the infrastructure investments under the ERDF [European Rural Development Fund] will have sufficient programmatic momentum to ensure sustainable innovative applications in areas such as education, business support, labour market information and so on [original text corrected]”¹⁹.

The reference to “infrastructure investments” is the critical one because it is precisely in this particular area that momentum has been lost in recent years, especially in second half of the last quinquennium. Currently only one non-coastal population centre in mid-Wales, Newtown, is actually able to benefit from ADSL broadband. In the third week of September 2003 the situation was as follows²⁰:

Exchange Name:	Brecon
Last Update:	Tuesday, September 23, 2003
Trigger Point:	350
Registrations:	174 (49%)
Predicted Trigger Date:	February, 2004

Exchange Name:	Llandrindod Wells
Last Update:	Wednesday, September 24, 2003
Trigger Point:	350
Registrations:	148 (42%)
Predicted Trigger Date:	May, 2004

Exchange Name:	Hay-on-Wye
Last Update:	Wednesday, September 24, 2003
Trigger Point:	Not Set
Registrations:	96

Exchange Name:	Presteigne
Last Update:	Friday, September 19,

	2003
Trigger Point:	Not Set
Registrations:	53

Exchange Name:	Knighton
Last Update:	Wednesday, September 24, 2003
Trigger Point:	Not Set
Registrations:	49

Exchange Name:	Builth Wells
Last Update:	Thursday, September 18, 2003
Trigger Point:	Not Set
Registrations:	48

None of these population centres can be described as areas of extreme rurality though obviously they represent and service surrounding areas which may be accurately described in such terms. As can be seen from the above table, only two of the communities identified are seriously on the way to getting broadband; the remainder have as yet been assigned 'trigger points'. Perhaps there is more irony here than tragedy. Brecon may host a vibrant arts scene including an International Jazz Festival, Llandrindod Wells may be 'the venue of choice' for all-Wales local government groups and voluntary organisations, Hay-on-Wye may boast the greatest number of bookshops in the world and a global festival which, in Bill Clinton's colourful phrase, is nothing less than "the Woodstock of the mind", Presteigne may accommodate a first rate Festival of Music and the Arts described by critic Roderic Dunnett of *The Independent* as having "the pulse on contemporary music", Builth Wells may offer a permanent home for the Royal Welsh Show and Knighton and Rhayader promote the respective splendours of Offa's Dyke and the Elan Valley, yet because all their permanent populations are relatively small and their industrial and commercial activities dispersed and limited when set against the wider backcloth of agriculture and tourism, none of them are enjoying, as yet, the benefits of high speed internet connectivity. Indeed some may have to wait for a very long time, if not perhaps indefinitely as some extreme pessimists have suggested.

There are in fact a whole range of complications and confusions here. For example registrations for ADSL broadband almost certainly do not accurately reflect the intrinsic level of interest in high-speed internet connectivity but rather the general level of awareness about its potential benefits and its likely availability. BT's enthusiasm for local campaigns (usually spearheaded by a small number of 'enthusiasts') to stimulate demand through registrations

of interest is at best inefficient and at worst a means of thwarting excessive demand in order to limit commercial risk or unfair competitive advantage. Clearly many more people are interested in broadband across the UK (and are willing to pay for it at the commonly advertised ADSL rates) than those who formally take steps to register an interest. Anecdotal evidence suggests that such interest may indeed be substantially greater in rural rather than urban/suburban areas because of the perceived benefits. However campaigns for promoting the registration of interest are less easily mounted and sustained in areas with small and dispersed populations. In addition such campaigns are also not helped by the apparent lack of transparency with which BT determines the setting of 'trigger points' (i.e. number of registrations of interest within an exchange area) which can justify commercially the upgrading of local exchanges. In the third week of September 2003, a dozen exchanges in the UK had not been assigned a trigger point even though 250+ people had registered an interest and in one instance the number actually exceeded 500²¹.

Substantial parts of mid-Wales, however, actually lie beyond the reach of conventional ADSL or cable technologies. Two alternatives are satellite and wireless. However, each of them requires substantial capital investment. In 2002 the Welsh Development Agency introduced a Satellite Broadband Subsidy Scheme, as part of the Broadband Wales programme, for SMEs located in areas where no alternative connection to broadband was available. However the level of assistance for successful applications is limited to 50% of total cost (not exceeding £1,500) for one year only. In the case of wireless, current developments in mid Wales build on the Llwybr*Pathway initiative in 1997 to establish a Multi Agency Rural Area Network (MARAN). In December 1999 Powys, Carmarthen and Ceredigion County Councils, as partners of the Llwybr*Pathway, forged a five-year partnership with MLL Telecom Ltd to develop a managed wireless network with a view to overcoming the problems traditionally associated with developing cost-effective bandwidth to rural areas. However, despite goodwill and enthusiasm there has been in many respects a significant disjunction between the vision behind MARAN and its practical, ongoing implementations. Neither the commercial interests of telcos and associated companies nor the wider and inevitably constrained budgetary concerns of local authorities are specifically designed to serve local communities, let alone small enterprises or individuals, impartially or indeed particularly well. According to Mark Shucksmith:

Rural areas and people subject to restructuring need strong support from national government and the EU, as well as from regional agencies and the private sector. But formal, 'top-down' programmes alone are insufficient: policies must be formulated, implemented and managed to facilitate local people to use their own creativity and talents. Too often, external agendas, formal requirements for

partnership working, competitive bidding regimes, short-term funding and existing power structures limit the effectiveness of regeneration initiatives.²²

More specifically those with the greatest technical knowledge about developing ITC infrastructure for the wider region are not necessarily at, or perhaps even near, the driving wheel of those directorates tasked with stimulating economic and community regeneration. In addition senior executive officers often lack confidence in this area either through inexperience or relative indifference to the technical issues involved. Finally fundamental policy decisions are often not scrutinised with sufficient rigour by council members because they, too, frequently lack genuine and sustained experience in what is often relatively novel territory.

The 'invisibility' of poverty in rural areas has often been commented upon. However while this may still be true 'phenomenologically', it is nevertheless becoming somewhat easier to assess its scale and depth empirically. '*Rural Deprivation in Powys*²³ and Powys County Council's complementary '*Poverty in Paradise – a Profile of Powys*²⁴, for example, examined a wide range of relevant data and were able to demonstrate that both average wages and incomes in the County were very low relative to the rest of the UK which, in turn, directly reflected the high rates of seasonal and part-time employment as well as self-employment. In addition they also investigated "the higher costs of living in Powys following from its geography, settlement patterns and sparsity of population"²⁵, "the vulnerability to poverty of certain groups"²⁶ and "some of the circumstances associated with poverty in Powys such as ill-health and poor housing"²⁷. To such a catalogue of deprivation and disadvantage must now be added as a matter of considerable concern and urgency the widespread unavailability of broadband in the region.

According to a Local Futures Group report for IBM in 2002:

Rural areas present particular challenges to public sector policymakers in the UK at the moment. The triple blows of BSE, foot and mouth and the downturn in tourism has exacerbated other, more long term decline in primary industries and heightened the need to create a more diversified and high value economy in the countryside. Given the problems of thin demand and dispersed markets – broadband solutions will almost certainly have to be publicly led, at least in part and in many areas of the UK, wireless initiatives such as those pioneered in Powys, mid-Wales, will form part of the picture. Given the centrality of public sector institution in the economic life of the countryside, it is to be hoped that mobile information and communications - from transport information and flood alerts to the state of footpaths - forms part of the e-governance agenda of more and more local authorities in the near future. This will of course have to be matched by high quality infrastructures of skill and business support and by a commitment to both experimentation and evaluation of ICT initiatives. But the parlous sate of many of our rural areas and the need for a step

change in their economic performance suggest that the time for radical experiments is now.²⁸

However, it may be asserted with a reasonable measure of confidence that the future of broadband in rural areas does not ultimately depend on radical experiments *per se*, but in the political will to find sufficient levels of investment to establish basic levels ICT infrastructure developed through a variety of partnerships and emergent technologies across the UK. One suspects that such a political will only be galvanised when issues of social exclusion/inclusion are systematically viewed from the perspective of telematics as much as from more traditional ones. Indeed the future mapping of social exclusion/inclusion needs to become in this respect far more sophisticated. At the moment the current Welsh Index of Multiple Deprivation is based on six measurable but weighted 'domains of deprivation', namely: *Income 25%, Employment 25%, Health 15%, Education 15%, Housing 10% and Geographic Access to Services 10%*. Two further domains have been proposed for inclusion in the Index – *Crime and Physical Environment* – but so far these have not been incorporated apparently due to 'insufficiency of data'. Future reviews of theoretical reliability and validity of the Index need to address again the omission of *Crime and Physical Environment* but a third domain also needs to be added which might be headed as '*Telematics/Connectivity*'.

Those who are insistent that the roll-out of broadband must ultimately be governed by commercial interests consistent with a fundamentally 'free market' approach (notwithstanding all the encouraging and encouraged rhetoric about partnerships and innovative schemes) need to demonstrate how in practice such a philosophy can actually address root problems of social exclusion, not least those that manifest themselves peculiarly in rural areas. The burden of proof, in this respect, lies with BT, Oftel and ultimately with national government itself. At the moment there is growing body of evidence to suggest that current 'policy' is actually compounding the existing factors of social exclusion in low wage/income economies. Why should rural communities which already suffer from pitiful road and rail 'connectivity' and poor access to health, educational and criminal justice resources²⁹ also be deprived from a major resource in terms of developing a lively knowledge economy to supplement agriculture and tourism, both of which are themselves undergoing substantial change and restructuring? The rate of roll-out of broadband is critical here. SMEs (including farms) and self-employed professionals (architects, lawyers, doctors, teachers etc.) are beginning to discover that they simply do not have the degree of connectivity to work or compete effectively with other parts of the UK let alone elsewhere in the world. In short this is not about the near-instant display of content-

rich web pages or downloading rap videos 'in a trice'. At stake, rather, are people's continuing livelihoods and the way in which local communities can stay alive, even 'against the odds'. Indeed it might be reasonably argued that the slow and erratic roll-out of broadband in the UK has probably already introduced historic distortions in the UK economy between different regions and areas. These are likely to intensify unless there is a major reassessment and shift in 'policy'.

Only when individuals and groups can communicate effectively with each other can they properly exploit their own creativity and talents and develop at the same time, whether consciously or not, more hospitable and sustainable forms of *polis*. In the third millennium digital literacy cannot be merely an optional extra for those who wish to participate fully in civil society, nor can the imperative for governments to ensure high-speed connectivity for all their tax-paying citizens be shirked; the normal passport to genuine empowerment and democratic action lies, as many already know, not just in the efficient exchange of information but also informed and critically tested opinion. 'Only connect' – but sometimes it seems as if it is politicians and policy makers rather than the electorate who are searching for the plugs and sockets!

Notes

¹ AOL Conference on Social Inclusion in the E-Society, European Parliament, 29 May 2001

² According to a news bulletin by BT in September 2003, this development will increase "the proportion of people who can receive broadband in enabled areas from approximately 94 per cent to 97 per cent".

³ *Op. cit.*, 1.2

⁴ *Ibid.*, 2.1

⁵ *Ibid.*, 3.23

⁶ John Haring, Jeffrey H. Rohlfis & Harry M. Shoostan, *Propelling the Broadband Bandwagon*, Strategic Policy Research, April 2002

⁷ *Ibid.*, p. 62f

⁸ *Ibid.*, p. 109, n 182

⁹ *Ibid.*, Executive Summary, p. 2

¹⁰ 'Information Communication Technology (ICT) and Rural Inclusion', Research Notes, CRN 52, Countryside Agency, December 2002

¹¹ In December 1999 five local authorities – Powys County Council, Suffolk County Council, Three Rivers District Council, Bristol City Council, and Hampshire County Council – were invited to meet the Prime Minister at the opening of the refurbished Local Government House (formerly Transport House) in London to demonstrate how new technology could improve service delivery and involve citizens more effectively in decision-making.

¹² TIERRAS Deliverable 6.2 – Final Evaluation Report, p. 4

¹³ *Ibid.*, p. 8

¹⁴ Powys County Council website *Empowering people through information technology – Telecentres Powys* (uploaded/updated June 2001)

¹⁵ *Ibid.*

¹⁶ *Ibid.*

¹⁷ *Op. cit.*, p. 9

¹⁸ *Ibid.*

¹⁹ *Ibid.*

²⁰ data provided by BT via ADSLGuide (www.adslguide.org.uk)

²¹ G. Wearden, *ZDNet UK*, September 23, 2003

²² 'Social Exclusion and Change in Rural Britain' (Powys Conference 'Poverty and Social Exclusion: A Rural Issue', 5 Oct 2001), p. 11

²³ *Rural Deprivation in Powys*, School for Policy Studies, University of Bristol, December 1997

²⁴ *Poverty in paradise: a profile of Powys*, Powys County Council, 1997

²⁵ *Ibid.*

²⁶ *Ibid.*

²⁷ *Ibid.*

²⁸ *Op. cit.*, extract in *Sector Report: Broadband Britain* (netimperative, October 2002), p. 18

²⁹ According to the 2001 Powys Draft Objective 2 and Transitional Local Action Plan, "Because Powys shares much of its eastern boundary with Shropshire and Herefordshire, there is a perception that the county is reasonably close to major markets for goods and services. This is illusory. Powys has no motorways, no mainline rail services and no scheduled air services. Much of the road network is below modern standards in terms of widths and/or alignments. Regular public transport services are few and far between...In the north west, the county extends almost to the west coast of Wales, near Machynlleth, from where a journey to London typically takes between 4¼ and 5¼ hours by train, depending on departure time. By way of comparison, it takes 3 hours by train from Newcastle upon Tyne to London and 4 - 4½ hours from Edinburgh to London...Because of the county's rurality and sparsity of settlement, accessibility to basic services is generally difficult and involves lengthy journeys, usually without public transport. There is no General Hospital and 40 mile journeys by ambulance are commonplace. There is no Higher Education establishment in Powys. Over half of the adult population lives more than 5 miles from a Job Centre. The "accessibility" indicator in the Welsh Index of Multiple Deprivation (2000) showed that 85% of wards in Powys rank in the lower 50% of all wards in Wales when it comes to access to basic services and that 50% of Powys wards are amongst the worst off (ie in the lowest 15% of all wards in Wales)".