Second Annual Report and Strategic Recommendations

November 2002

FOREWORD BY KEITH TODD
CHAIRMAN, BSG

This is the second annual report of the BSG and my first as non-executive chairman of the group. Since becoming chairman I have challenged all stakeholders to make broadband services central to their agendas 'for change, modernisation and value creation'. This is vital to ensure we achieve our targets and reap the benefits in the challenging time scales that have been set.

There's no doubt that broadband is happening. From a starting point of ubiquitous un-metered narrowband availability, the UK broadband market has developed to a point of imminent radical impact on society and business. Whilst a lot of attention is on the technology, this is actually a user revolution. As the Economist said last year: "Broadband will usher in a behavioural shift not seen since the introduction of electrification 100 years ago". I believe that in the long term, broadband will herald a transformation in how we live, play, work, educate and build and maintain communities.

It is extremely exciting to be part of this transformation. We can feel that this is an important point in history. It is of course a journey. Some markets are already at different stages of that journey, for most of us it is still fairly early on, but the fact is that we are on our way.

We have made real progress since November 2001. We have seen rapid growth in take-up and now have more than one million broadband users. Real progress has also been made in implementing many of the recommendations made last year by the BSG. Nevertheless, there is still some way to go on our national broadband journey.

I believe there are two key priorities for the next 12 months.

> Firstly, to continue to accelerate the adoption of broadband services where they are available making them a 'must have' for individuals, businesses and government organisations alike. The development of a dynamic, competitive, sustainable market is a critical prerequisite for releasing new investment funds for the future.
>
> Secondly, to include the rest of the country in this broadband journey as swiftly as possible by ensuring that we achieve 'widespread' coverage at affordable prices by the end of 2005. This will require a number of significant innovations, intervention and partnerships if we are to succeed. The devolved administrations and RDAs, together with local authorities will have a pivotal role to play in achieving this.

I wish to thank all of the stakeholders who have contributed a huge amount of time, energy and commitment to taking the work of the BSG forward over the last 12 months. Together, I believe we can make a significant impact on the future of Broadband Britain.

Keith Todd

Chairman BSG

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The Broadband Stakeholder Group (BSG)[1] was established to advise the government on the development and implementation of a strategy to enable the UK to meet the government's target to have the most extensive and competitive broadband market in the G7 by 2005.The BSG published a first report in November 2001 with a set of 15 recommendations to meet this objective. There has been substantial work done over the past 12 months by the stakeholders and as a result the year has seen the UK make real progress.

This progress has been made in market conditions that provide an extremely challenging environment for the deployment of broadband services. However, they also reinforce the importance of the task at hand. The widespread adoption of broadband will itself be a major driver for recovery in the ICT and media sectors and for growth in the wider economy as a whole.

The BSG has continued to act as a focal point for stakeholders to address both short and long-term issues related to the deployment and take-up of broadband services and has continued to advise the government on the implementation of the recommendations made in November 2001. This report:

- reports on the implementation of the BSG's strategic recommendations,
- provides an update on the current status of the broadband market in the UK, benchmarked against other leading countries;
- focuses on the two key priorities for the next 12 months and makes recommendations

  Firstly, to continue to accelerate the adoption of broadband services where they are available making them a 'must have' for individuals, businesses and government organisations alike, because the development of a dynamic, competitive, sustainable market is critical for releasing new investment funds for the future.

  Secondly, how to include the rest of the country in this broadband journey by ensuring that we achieve widespread coverage at affordable prices by the end of 2005. This will require a number of significant innovations, intervention and partnerships if we are to succeed including the devolved administrations and RDAs, together with local authorities taking a leading role in achieving this.

Our definition of broadband services remains the same

The BSG uses a dynamic definition of broadband that is technology neutral and focused on the 'always on' and interactive characteristics of broadband, which enable the delivery of new forms of content, services and applications to the end user.

Always on access, at work, at home or on the move provided by a range of fixed line, wireless and satellite technologies to progressively higher bandwidths capable of supporting genuinely new and innovative interactive content, applications and services and the delivery of enhanced public services.

[1] Details of BSG membership, BSG executive and working groups are available at www.broadbanduk.org. This report has been drafted by the secretariat and the chairman, based on inputs prepared by the BSG working groups and approved by the executive committee.

The economic and social case is compelling

Many economists continue to predict significant macroeconomic benefits from the proliferation of broadband networks and pervasive broadband access, which has long been the missing link in the IT revolution. These predictions have driven a number of governments around the world to act and to prioritise broadband deployment as a matter of government policy. The BSG continues to believe that broadband has real potential to accelerate the five key drivers of economic growth: enterprise; innovation; competition; investment and skills[2].

Our vision and principles remain the same

The BSG's vision for 2010 is founded in the belief that broadband services will be a key enabler for the UK's transition to a knowledge-based economy. This broadband journey will be market driven but government will need to proactively intervene where the market will not deliver either permanently or in the time scales required by the political agenda. The broadband strategy should remain technology neutral but it is the technology suppliers' responsibility to innovate and achieve competitively priced offerings to stimulate and satisfy market demand. Most importantly all stakeholders must make broadband services central to their agenda for 'change and wealth creation'.

Good progress has been made on last year's recommendations

In November 2001, the BSG published 15 main recommendations for developing the broadband infrastructure in the UK. Four of these recommendations were split into sub-recommendations, making a total of 29 sub-recommendations submitted by the BSG to government.

The recommendations included a number of issues to be addressed both in the short and long-term. It was not expected that all of these recommendations would have been implemented in first 12 months, but that progress should have been made in each area.

Status	Number	Specific Recommendation in category
Sub-recommendations submitted	**29**	
Sub-recommendations accepted	**28**	Rec. 1 rejected
Being Fully Addressed by Government/ Industry Action	**10**	Recs: 2, 3, 5.1, 5.4, 8.1, 9, 11, 13, 15.2, 15.5,
Being Partially Addressed by Government/ Industry Action	**14**	Recs: 4, 5.2, 5.3, 7, 10, 12, 14.1, 14.2, 15.1, 15.3, 15.6, 15.7, 15.8, 15.9
Red Flag – Insufficient progress being made by Government/ Industry	**0**	
Closed	**4**	Recs: 6, 8.2, 14.3, 15.4

Actions have been taken on all of the BSG recommendations. Significant progress has been made on approximately half of them with four issues being addressed sufficiently to allow them to be closed and a further ten should be fully implemented through on-going initiatives. Fourteen of the recommendations are not yet sufficiently advanced to be classed as being fully addressed, although progress is being made. At this stage the BSG does not have any 'red flag' issues. Overall considerable progress has been made although sustained effort will be required over the next 12 months (by all stakeholders) to fully implement the full BSG recommendations by the end

[2] See BSG Report and Strategic Recommendations November 2001 (www.broadbanduk.org)

of 2003 (The BSG believes that all of the recommendations will need to be implemented by that date in order to have an impact on the UK's position on international rankings for extensiveness and competitiveness by 2005)

The BSG is encouraged by the way in which the Office of the e-Envoy and DTI have worked with other departments, agencies and administrations to take these recommendations forward, which has highlighted the importance of having clarity of priorities and a joined up approach to implementation.

With the DTI having recently taken over the lead role on UK broadband policy, BSG believes there is a need to re-state roles and responsibilities, and in particular, the BSG would like to see a full time programme manager, with appropriate support, identified within the DTI, with overall responsibility for coordinating the implementation of the UK broadband Strategy.

The current status of Broadband in the UK

After a slow start, the UK broadband market is now developing rapidly:

- Terrestrial broadband services are now available to 67% of the UK's 24 million households, although coverage remains concentrated around areas of high population density.
- Broadband services are available to 95% of the population in urban areas, 58% in suburban areas, however availability is significantly lower in non-urban areas.
- The UK has just over 1 million broadband subscribers (4% of all UK households). Take-up increased by 300% since November 2001 and growth is continuing to accelerate.
- 6.2% of households with access to broadband have now taken up a broadband service.
- 7.8% of households with a PC have a broadband service (53% of households have a pc[3])
- Following a 51% reduction in BT's wholesale ADSL prices, the UK now has some of the lowest prices for broadband access in Europe, with continued downward pressure on retail prices.
- There is facilities based competition across 40% of the UK market. ntl is the largest broadband retailer, followed by Telewest and BT Openworld.
- Over 100 ISPs are now retailing BT's ADSL products. BT Openworld has a 50% market share of all ADSL lines.

[3] Source, Oftel

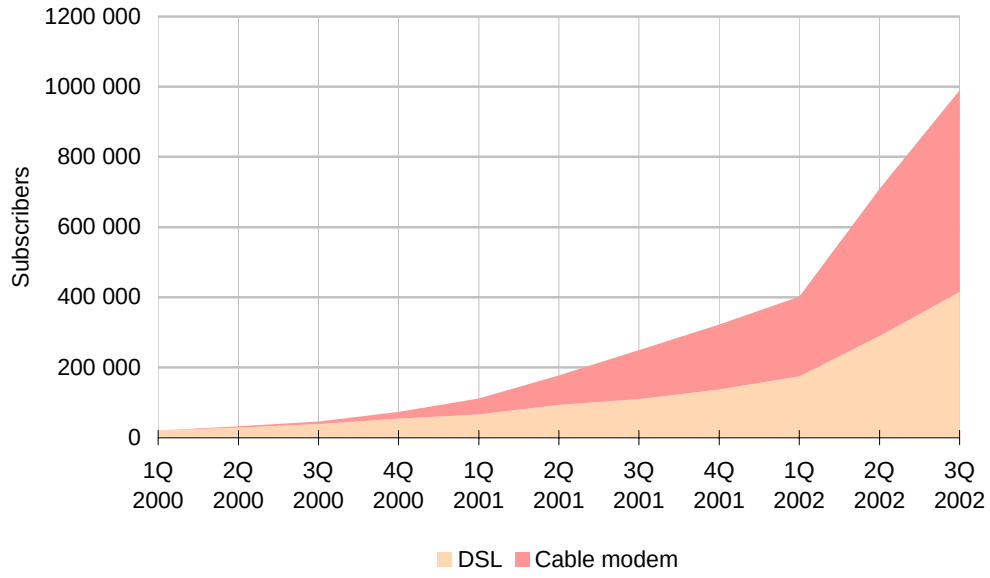


Figure 1: Broadband Subscribers to October 2002 [Source: Analysys]

The developing Competitive market

The UK market is characterised by a mix of infrastructure competition and retail competition. ntl has the largest market share of retail broadband subscribers, followed by Telewest and BT.

A key development over that last quarter has been an increased focus on marketing by broadband service providers. A number of the major operators have either completed major marketing campaigns during the last quarter or have announced plans for marketing activities. These activities will raise awareness of broadband and its benefits and will help to drive future subscriber growth.

Progress on coverage

There has been a seven point increase in broadband coverage over the last 12 months. 67% of the UK population now has access to a mass-market broadband solution – that is, one that is targeted at residential or small business customers. Ubiquitous satellite services are also available, although they continue to be priced at a premium to terrestrial solutions. Broadband availability is highest in urban and suburban areas (where 75% of the UK population live), where economies of density make the deployment of broadband relatively cost effective. However, broadband availability falls significantly in market towns, rural villages and remote areas (home to 25% of the UK population).

Priorities for 2003

1. MAKING BROADBAND A 'MUST HAVE' SERVICE

This is the first priority because it is critically important that take-up continues to accelerate in order to stimulate further investment in rolling out new networks and infrastructure, as well as investment in the development of the content, applications and services that new subscribers will

be looking for. To do this it is will be necessary to overcome a number of barriers to broadband adoption, including issues related to: Awareness; Availability; Cost / value; Content; Convenience and Usability and Confidence

Most broadband early adopters tend to have been heavy narrowband internet users and normally upgraded to broadband from a flat rate narrowband package. They usually explain the benefits of broadband in terms that only other regular dial-up narrowband users would understand: ……increased speed…..always on……fixed cost

Broadband is demonstrably faster than narrowband both in terms of getting online and downloading websites, documents and software etc. Such speeds of access can enable people to use the internet more effectively and to gain more pleasure from (and encounter less frustration with) using the internet. It can also open up new possibilities, for example watching video clips online. Understanding and communicating these 'new possibilities' that make up the wider broadband value proposition is a key challenge for the next phase of broadband adoption.

Understanding the wider broadband value proposition

However, recent research on usage patterns and behaviours is starting to discern more complex and subtle behavioural changes enabled by broadband connectivity. In particular, it is becoming apparent that the broadband characteristics of high speed and always on allow broadband users to behave quite differently to narrowband users. In terms of online behaviour, broadband users spend significantly more time on-line and on average use ten times more bandwidth than narrowband users. They also access the internet much more frequently than narrowband users, often 'dipping-in' for several very short sessions during the day as well as longer sessions in the evening.

2. EXTENDING BROADBAND COVERAGE AND INCREASING COMPETITION

It is critically important to include the rest of the country in this broadband journey by ensuring that we achieve much wider coverage at affordable prices by the end of 2005. This will require a number of significant innovations, intervention and partnerships if we are to succeed including the devolved administrations and RDAs, together with local authorities taking a leading role in achieving this.

Significant barriers persist to the extension of mass-market broadband coverage. In the BSG's view, continued, concerted action is required to further extend the percentage of the population with access to broadband services. This is essential for both regional economic development and social inclusion. Further action is therefore required to enable market driven solutions for the wider provision of broadband access. In some areas of the UK public sector funding may also be required to ensure coverage and regional authorities will have a pivotal role to play in harnessing private sector investment, regional funding and public sector demand.

Whilst the BSG's role is primarily to advise the government on meeting its broadband targets for 2005, there is also a need to plan beyond the current generation of broadband technologies and consider upgrade paths and migration strategies for the introduction of the next generations of broadband that will provide higher bandwidth, improved quality of service and facilitate true broadband interconnection and interoperability.

However it is important to recognise that demand uncertainty remains one of the biggest barriers to extending coverage. Further infrastructure investment is dependent upon increased take-up of broadband services where they are currently available

The BSG believes that wireless broadband technologies have the potential to make the biggest impact on extending coverage and enhancing facilities based competition by 2005. Joint investment action through public and private partnerships on a regional or local community basis could also play a role in extending coverage and stimulating demand. Beyond 2005, both wireless and third party provision of civil infrastructure could help to enable further long-term investment required for the next generations of broadband

Conclusion

After a slow start, substantial progress has been made on broadband since 2001. The UK market is now moving rapidly despite the extremely challenging market conditions faced by the ICT and Media sectors. Although we are not yet in a leadership position, the BSG's recommendations are being acted upon and with sustained effort and commitment from all stakeholders over the next twelve months, the UK could be much better placed by the end of 2003 to meet the government's objectives to be a broadband leader in 2005.

SUMMARY OF BSG RECOMMENDATIONS NOVEMBER 2002[4]

Rec 1: DTI to appoint a dedicated programme manager with overall responsibility for coordinating the implementation of the broadband Strategy across government (p 16).

Making broadband a 'must have' service

Rec 2: The BSG should continue to focus on researching and articulating the wider benefits of broadband (p 43).

Rec 3: Industry stakeholders must continue the aggressive promotion of broadband services to accelerate take-up (p 43).

Rec 4: Government must continue to assist in the promotion of broadband services (p 44).

Rec 5: BSG in conjunction with the DTI to continue its work to identify practical international solutions to rights management issues (p 47).

Rec 6: Oftel together with the BSG to address issues related to broadband interconnect and interoperability (p 48).

Rec 7: Oftel together with the BSG to keep broadband Quality of Service issues under review (pg 49).

Rec. 8: The BSG will publish a report on the opportunities and barriers to the use of broadband in education (in conjunction with the DFES) by February 2003 (p 51).

Rec 9: Obstacles to curriculum online should be unblocked as quickly as possible (p 51).

Extending broadband coverage and increasing competition

Rec 10: Regional and local government should encourage and promote local demand registration schemes to provide a reliable indication of growing demand (p 56).

Rec 11: Government must facilitate the deployment of wireless broadband alternatives to DSL/ Cable and develop a strategic plan for wireless broadband (p 58).

Rec 12: Government should facilitate infrastructure sharing to reduce capital requirements for new service provision and develop practical steps to enable the provision of civil infrastructure by third parties (p 61).

Rec 13: Government should reduce regulatory uncertainty for operators and investors by ensuring that both sector specific and non-sector specific regulation supports broadband objectives (p 65).

Rec 14: Government should actively encourage and enable pragmatic public sector demand aggregation (p 69).

Rec 15: The new UK Broadband Task Force should work with the RDAs, devolved administrations and local authorities to develop effective public private partnerships to extend coverage (particularly for red areas) (pg 70).

[4] Some of these recommendations are a continuation of the recommendations made by the BSG last year.

CHAPTER 1: INTRODUCTION

1.1 Background

The Broadband Stakeholder Group (BSG) was established in April 2001 to advise the government on the development and implementation of a strategy to enable the UK to meet the government's target to have the most extensive and competitive broadband market in the G7 by 2005. The BSG published its first report in November 2001 with a set of 15 recommendations to meet this objective. Fourteen of these were accepted and integrated into the government's UK Online broadband Strategy[5].

Globally, the ICT and media sectors continue to face considerable turbulence in the wake of the 'dot com' crash of 2000. As Michael Powell, Chairman of the FCC commented recently "over capacity, hyper-competition in some markets, a retrenchment of capital, continuing credit-rating downgrades, continued cuts in work force and capital expenditure and bankruptcies sadly characterize the day"[6]. These market conditions provide an extremely challenging environment for the deployment of broadband services, however, they also reinforce the importance of the task at hand. The widespread adoption of broadband will itself be a major driver for recovery in the ICT and media sectors and for growth in the wider economy as a whole.

The BSG has therefore continued to act as a focal point for stakeholders to address both short and long-term issues related to the deployment and take-up of broadband services over the last 12 months, and has continued to advise government on the implementation of the recommendations made in November 2001. This report provides:

- an update on the current status of the broadband market in the UK, benchmarked against other leading countries;
- identifies on-going barriers to broadband deployment;
- reports on the implementation of the BSG's strategic recommendations, and
- highlights further opportunities and a number of additional recommendations for the UK's broadband strategy.

This report has been prepared on the basis of contributions from the BSG Working Groups under the coordination of the BSG Executive, Chaired by Keith Todd.

1.2 What is Broadband?

Broadband refers to a range of enabling technologies that offer high-speed connectivity, and allow users, be they individuals, businesses or organisations to do the things that matter to them differently – more conveniently, more entertainingly and more effectively. Broadband connectivity is not new – large organisations have been using very high capacity leased lines for many years, however, developments in technology now mean that similar services can be offered to residential and small business users – offering the prospect of pervasive high speed connectivity, which has long been the missing link in the ICT revolution.

As the range of broadband technologies continues to develop and demand for bandwidth increases operators will bring new generations of broadband services to market offering improved quality and increased speed (both upstream and downstream). Continuing innovation in compression technologies will also increase the range of applications that can be delivered at

[5] UK Online Broadband Strategy, December 2001.

[6] Michael Powell, Chairman, US Federal Communications Commission (FCC). Remarks at the Goldman Sachs Communicopia XI Conference, NYC October 2, 2002

lower bandwidths, making a static definition of broadband inappropriate. The BSG has therefore adopted a dynamic definition of broadband that is technology neutral and focused on the 'always on' and interactive characteristics of broadband, which enable the delivery of new forms of content, services and applications to the end user.

BSG Broadband Definition:

'Always on access, at work, at home or on the move provided by a range of fixed line, wireless and satellite technologies to progressively higher bandwidths capable of supporting genuinely new and innovative interactive content, applications and services and the delivery of enhanced public services.'

For the purposes of this report mass market broadband is defined as a broadband solution priced to target residential users and small businesses. The intention being to include services such as DSL, cable modem, Fixed Wireless Access and some satellite services whilst excluding expensive leased lines and other services used by larger businesses and organisations [whilst ubiquitous satellite services are available, they continue to be priced at a premium to terrestrial solutions].

1.3 The economic significance of broadband

Because the deployment of mass-market broadband services is a relatively recent development there are no comprehensive studies on their actual impact on economic growth. Nevertheless many economists continue to predict significant macroeconomic benefits from the proliferation of broadband networks and ubiquitous broadband access, which has long been the missing link in the ICT revolution. These predictions have driven a number of governments around the world to act and to prioritise broadband deployment as a matter of government policy. South Korea put broadband at the heart of its strategy for transformation towards a knowledge-based economy, and as the world leader in broadband it is now starting to derive real economic and social benefits, from its success including the rapid development of e-commerce, e-learning, e-government and e-growth[7].

The BSG continues to believe that broadband has real potential to accelerate the five key drivers of economic growth: enterprise; innovation; competition; investment and skills[8]. A view supported by a recent US Department of Commerce report[9] predicting that the specific regional economic development benefits resulting from greater broadband deployment and use would include:

- Job creation and retention
- Reduced traffic congestion
- More successful industrial growth, recruitment and retention
- Improved education systems
- More productive research and development
- Increased start up and entrepreneurial activities
- Urban core revitalization
- Improved government efficiencies and service delivery

Whilst there is contention about the level and impact of these benefits, few economists doubt that broadband will have a positive impact. As globalisation continues, countries and regions will compete with each other on the quality and pervasiveness of their high speed communications

[7] Source: Investigating Broadband Technology Deployment in South Korea, Brunel/ DTI July 2002
[8] See BSG Report and Strategic Recommendations November 2001
[9] Understanding Broadband Demand, Office of Technology Policy, US Department of Commerce, September 2002

networks. The BSG believes that the successful rollout and take-up of broadband is of central importance to the health and future prosperity of the United Kingdom.

1.4 BSG vision, principles and conditions precedent

The BSG's vision for 2010 is founded in the belief that universal broadband access will be a key enabler for the UK's transition to a knowledge-based economy. The existence of a pervasive high quality communications infrastructure will be critical for the achievement of the government's objectives for skills, competitiveness, e-commerce, e-government, lifelong learning and the delivery of enhanced public services. Broadband can and will deliver significant benefits for consumers and citizens and access to high speed communications will become embedded into peoples' daily lives, regardless of age, race, gender, location or wealth. As a leading connected economy, the UK will be able to maintain its international competitiveness and exploit global markets in technology, services, creative media, software and e-commerce.

In November 2001, the BSG agreed the following 10 key principles as a basis for its work:

1. Broadband services should be made available to as many UK citizens as possible
2. The broadband strategy must demonstrate the UK's long-term commitment to building Broadband Britain
3. Government must be a major user and beneficiary of broadband
4 There is no single solution to increasing the roll-out, take-up and use of broadband services. We need a range of complementary initiatives
5 These solutions must be technology neutral (including Digital TV) and support long term sustainable business models throughout the value chain
6. Supply and demand issues will need to be addressed simultaneously
7. Easing the flow of capital and spreading the investment risk more widely must be key objectives[10]
8. The strategy should make maximum use of the UK's strengths, including existing resources and infrastructure
9. We need a regulatory framework that supports the objectives for broadband
10. The national strategy should provide a framework for complementary regional initiatives and actions

In addition, the BSG has agreed the following conditions precedent:

- That there is an compelling economic and social case for the deployment and adoption of broadband based services
- That we recognise the need to create an investment friendly environment to compete globally for scarce international capital resources
- That the broadband journey will be market driven but that government will need to proactively intervene where the market will not deliver either permanently or in the time scales required by the political agenda.
- That the broadband strategy should remain technology neutral but it is the technology suppliers' responsibility to innovate and achieve competitively priced offerings to stimulate and satisfy market demand.
- All stakeholders make broadband services central to their agenda

[10] Whilst capital costs have fallen for the economy as whole, the risk-weighted price of funds to the telecoms industry remains much higher than other utility type investments.

1.5 BSG Strategic Recommendations November 2001

The BSG presented a framework of 15 Strategic Recommendations to government in November 2001. These recommendations were based on our analysis of the existing market and the UK's relative strengths and weaknesses. The recommendations were aimed at accelerating market and public sector driven deployment and use, including demand, supply and regulatory measures.

These were summarised thematically as follows:

	Accelerating market driven deployment and use	Enabling public sector driven deployment and use
Supply	• **Extend Infrastructure** • **Develop Content and Applications**	• **Aggregate Public Sector Demand** • **Facilitate Access**
Demand	• **Raise Awareness** • **Provide Demand Incentives**	• **Exploit Public Service Benefits**
Regulatory	• **Ensure Supportive Regulatory Structure**	

1.6 The Government Response to the November 2001 BSG Recommendations

The government responded to the BSG report in its UK Online Broadband Strategy, published on 3 December 2001. Accepting that there was no 'magic bullet' which could deliver a step change in broadband roll-out and use, the government supported the need for a holistic approach to stimulating the broadband virtuous circle in which demand and supply grow in parallel, each reinforcing each other, with market players as the main drivers and Government working to support and accelerate the pace of change.

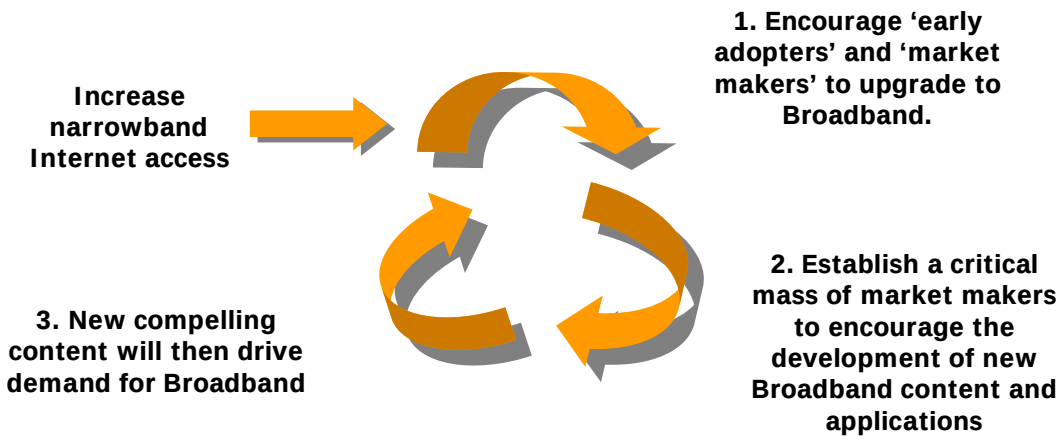


Figure 1: Building the Broadband virtuous circle

In the UK Online response the government accepted the need to:

- continue to ensure that the regulatory framework for the broadband market promotes competition;
- take action to stimulate demand for broadband; and
- take action to stimulate investment in the supply of broadband.

Supporting the strategic approach adopted by the BSG the government accepted 14 of the 15 BSG recommendations.

The government rejected the recommendation for the provision of supply side fiscal incentives to encourage the deployment of broadband infrastructure, arguing that: "the use of the tax system to support particular types of investment should be limited to cases where there is clear evidence of market failure, sufficient to justify the costs of intervention, and the tax system is judged the most effective instrument for achieving policy goals. The government does not believe that the criteria apply in this case." However, regionally based grant funding has been used in a number of cases to support regional infrastructure initiatives where market failure was been deemed to have occurred.

1.7 Summary Of Status Of November 2001 Recommendations

In November 2001, the BSG published 15 main recommendations for developing the broadband infrastructure in the UK. Four of these recommendations were split into sub-recommendations, making a total of 29 sub-recommendations submitted by the BSG to government. In its response to the BSG November 2001 report, the government rejected one recommendation and provided a response to all the other recommendations, which fully, or partially accepted the views expressed by the BSG. The BSG's November 2001 Recommendations included a number of issues to be addressed in the short and long-term. **It was not expected that all of the BSG recommendations would have been implemented in full 12 months on, but that progress should have been made in each area.**

During the course of 2002, the BSG has monitored the actions of the government, to ensure that this full or partial acceptance was translated into action. This tracking process has allowed the BSG to document the completion of the government's actions and create a status for the sub-recommendations according to the following criteria:

1. **Closed**. The BSG closes a recommendation when the actions taken by the government both implement the substance and spirit of its response to the BSG report and have progressed to the point where they do not need to be monitored by the BSG Working Groups.
2. **Being Fully Addressed**. A recommendation is being "fully addressed" when the actions taken by the government implement the substance and spirit of its response to the BSG report, but still require monitoring by the BSG Working Groups, in order to ensure that they are implemented in an acceptable and timely manner.
3. **Being Partially Addressed**. A recommendation is being "partially addressed" when the actions taken by the government are either not yet sufficiently advanced or do not fully implement the BSG recommendation. In such cases, the BSG Working Groups continue to actively lobby the government for further action.
4. **Red Flag**. Insufficient progress being made by Government/ Industry with negative consequences for the achievement of the government's broadband objectives.

At the time of writing, the following table represents a summary of the status of the sub-recommendations.

Status	Number	Specific Recommendation in category
Sub-recommendations submitted	**29**	
Sub-recommendations accepted	**28**	Rec. 1 rejected
Being Fully Addressed by Government/ Industry Action	**10**	Recs: 2, 3, 5.1, 5.4, 8.1, 9, 11, 13, 15.2, 15.5,
Being Partially Addressed by Government/ Industry Action	**14**	Recs: 4, 5.2, 5.3, 7, 10, 12, 14.1, 14.2, 15.1, 15.3, 15.6, 15.7, 15.8, 15.9
Red Flag - Insufficient progress being made by Government/ Industry	**0**	
Closed	**4**	Recs: 6, 8.2, 14.3, 15.4

A summary of the status of the BSG recommendations is included in the following pages.

Good progress has been made

Actions have been taken on all of the BSG recommendations. Significant progress has been made on approximately half of them with four issues being addressed sufficiently to allow them to be closed and a further ten should be fully implemented through on-going initiatives. Fourteen of the recommendations are not yet sufficiently advanced to be classed as being fully addressed, although progress is being made. At this stage the BSG does not have any 'red flag' issues. Overall considerable progress has been made although sustained effort will be required over the next 12 months (by all stakeholders) to fully implement the full BSG recommendations by the end of 2003 (The BSG believes that all of the recommendations will need to be implemented by that date in order to have an impact on the UK's position on international rankings for extensiveness and competitiveness by 2005)

The BSG is encouraged by the way in which the Office of the e-Envoy and DTI have worked with other departments, agencies and administrations to take these recommendations forward, which has highlighted the importance of having clarity of priorities and a joined up approach to implementation. However, with the DTI having recently taken over the lead role on broadband policy, BSG believes there is a need to re-state roles and responsibilities, and in particular, the BSG would like to see a dedicated programme manager identified within the DTI, with overall responsibility for coordinating the implementation of the UK Broadband Strategy.

Recommendation 1:

DTI to appoint a dedicated programme manager with overall responsibility for coordinating the implementation of the broadband strategy across government

Summary Of Status Of November 2001 Recommendations

Rec.	Description	Impact	Timeframe	Status	Action
1	Supply side infrastructure support to reduce the cost of capital.			Rejected.	The recommendation for supply-side fiscal incentives was not accepted, although regionally based grant funding has been used to support regional infrastructure initiatives. BSG keeping the case for targeted supply side incentives under review and believes that regionally focussed support should be encouraged.
2	Infrastructure sharing to reduce the need for capital.	Medium	Long-term	Being Fully Addressed.	Recent Oftel and BSG reports concluded that sharing of existing civil infrastructure (ducts, poles, masts, buildings) is possible. Considerable progress has been made in wireless (sharing mast sites etc) particularly for 3G. However sharing existing fixed infrastructure (ducts, buildings etc) may not contribute significantly to extending coverage. Further work is required to develop contract template for duct sharing agreements and codes of practice for engineering work in shared facilities. BSG developing recommendations for third party provision of new civil infrastructure as an alternative to reduce financial barriers to the provision/ upgrade of networks.
3	Ensuring competition in the local loop.	Low	Short-term	Being Fully Addressed.	Periodic status reports on local loop unbundling being published by Oftel. A benchmarking report is in preparation, for December release, with BSG input. Full scope of BSG recommendation being addressed.
4	Developing broadband interconnectivity.	Medium	Long-term	Being Partially Addressed.	This is a wide-ranging issue. Reasonable progress made so far, however considerable further industry consultation will be required. Oftel has established a broadband Focus Group and discussions with the BSG are ongoing. The BSG has established a working relationship with the Digital TV Group and its work on Internet access via the television.
5.1	Content initiative development.	Medium	Short-term	Being Fully Addressed.	Innovation and Growth Team created by DTI. Business support mechanisms for digital content to start April 2003. Report on "Broadband Contents Pilots" from OC&C strategy consultants, delivered and being considered by DTI. Announcement of government response pending.
5.2	Broadband beacon projects.	Medium	Short-term	Being Partially Addressed.	Initial progress has been made including the launch of NESTA Futurelab and the announcement of industrial placement scheme. However, implementation of further projects as proposed in the OC&C study will be required to meet this recommendation.
5.3	Government procurement of content and applications.	High	Medium/ long-term	Being Partially Addressed.	Covered to a certain extent by responses to recommendation 12. Government has indicated commitment to procuring content. However, the official response to the OC&C Strategy Report and further progress with Curriculum online and Culture online will be critical to the full implementation of this recommendation.
5.4	Supportive trading environment/tax regime.	Medium	Short-term	Being Fully Addressed.	R&D Tax credits extended to cover content development. DTI working with IR and DCF to disseminate information and promote awareness.
6	Tackling skills needs of the broadband content, applications and service sector.	Low/ medium	Long-term	Closed.	Joint DCF/DTI study of barriers to development of content creation; pilot programme from Spring 2003. Skills study published by Skillset and the Publishing NTO. This issue is now being addressed and closed by BSG.
7	Quality of service measures.	Low	Medium-term	Being Partially Addressed.	Oftel agreed that QoS is important to consumers and is monitoring the situation. Practical problems exist with setting minimum standards for end-to-end performance. BSG Regulatory WG continuing to monitor and review this issue with Oftel

8.1	Raising awareness and promoting the benefits of broadband.	High	Short-term	Being Fully Addressed.	Industry has primary responsibility to promote broadband. Major (multi-million pound) broadband promotion campaigns have been launched by the industry. BSG collating case studies (published on the Telcomsadvice website) and undertaking primary consumer research, and will work more closely with the CBI. UK Online for Business launched online broadband primer for SMEs and published case studies. "Best broadband implementation" category in e-commerce awards. Regional broadband unit will also have a major role to play in local promotion. BSG continuing to review and advise on key messages etc.
8.2	Encourage SMEs to take-up e-commerce solutions.	High	Short-term	Closed.	The "UK Online For Business" programme, working with >400 partners, highlights the benefits of e-commerce to businesses. 1700 SME entries to this year's e-commerce awards. Tax incentives allowing companies to claim 100% first year capital allowances in place until March 2003. Booklet publicising broadband has been launched.
9	Demand side fiscal incentives.	Low	Short-term	Being Fully Addressed.	Existing fiscal incentives for ICT have been extended to broadband. BSG has expressed concern about awareness and the number of people actually taking advantage of these incentives. IR working to raise and promote the take-up of these existing ICT tax relief programmes. BSG monitoring.
10	Public sector demand aggregation.	High	Medium/ long-term	Being Partially Addressed.	(Linked to Recs 12 and 13) Initial work by OGC completed. OECD Paper on public sector broadband procurement and aggregation led by UK. OGC framework agreements being set up. Regional Broadband Unit will have major role in promoting aggregation. Broadband brokerage established by EEDA. National Grid for Learning establishing aggregation schemes primarily within education sector. Government approach consistent with eEurope 2005. Overall good groundwork achieved although considerable obstacles remain and BSG awaits evidence of the successful implementation of aggregation schemes (particularly at local/ regional level).
11	Facilitating access to broadband facilities.	Low	Medium-term	Being Fully Addressed.	3933 UK Online Centres established by end of September, 2002. Target for 6000 to be running by end of year. BSG awaiting clarification on the number of Centres that actually are broadband enabled. The South West RDA is piloting a teleworking initiative, called Outreach, based on UK Online Centres.
12	Maximising efficiency and productivity gains in public services.	High	Long-term	Being Partially Addressed.	Some early progress. Curriculum Online in development. Culture Online financing allocated for 2002-2004, targeting 20 to 30 projects. National Electronic Library for Health (NeLH) development continuing to schedule. Although there are more similar examples of progress, there remains a long way to go to achieve the full potential of efficiency and productivity gains in the public sector.
13	Facilitating access to broadband public services.	High	Long-term	Being Fully Addressed.	Regional Broadband Unit announced - to be operational November 2002. This will comprise dedicated regional broadband advisors, based in the Regional Development Agencies co-ordinated by the DTI; procurement experts in the OGC to provide hands on support and advice for smarter public sector buying of broadband; new framework agreements between the OGC and suppliers, bypassing the need for public sector organisations to negotiate terms and conditions for each purchase.
14.1	OFCOM – the future broadband regulator.	High	Long-term	Being Partially Addressed.	Full implementation of Parliamentary Joint Scrutiny Committee recommendations on OFCOM's duties in the Communications Bill would address this. Bill expected in the Queen's speech. BSG continuing to monitor/ advise
14.2	Setting and appropriate regulatory framework.	High	Long-term	Being Partially Addressed.	Full implementation of Parliamentary Joint Scrutiny Committee recommendations on Communications Bill would address this. Bill expected in the Queen's speech. BSG continuing to monitor/ advise.
14.3	Ensuring consistent application of EU rules.	Low	Long-term	Closed.	Will be implemented through the Communications Bill (or related Statutory Instruments). Bill expected in the Queen's speech. BSG continuing to monitor/ advise
15.1	Planning issues – radio infrastructure.	High	Short-term	Being Partially Addressed.	The BSG remains concerned about the divergence between the planning policy in the devolved regions, and its implications for the deployment of wireless technologies.

15.2	Planning issues – satellite infrastructure.	Medium	Short-term	Being Fully Addressed.	Planning considerations for residential satellite/ wireless terminals are currently subject of ODPM consultation following BSG Recommendation. BSG responding to consultation.
15.3	Levies on street work.	High	Medium-term	Being Partially Addressed.	The BSG views the potential extension of lane rental schemes as adding significant costs for infrastructure rollout. A longer-term view should be taken, understanding the positive impact of teleworking, which is facilitated by broadband. Government and industry should work together to develop alternative solutions to the issues associated with streetworks.
15.4	Satellite licensing requirements.	Medium	Short-term	Closed.	A New Network Licence is being introduced by the RA, with an online site clearance system to follow. Being addressed and closed by BSG.
15.5	Building regulations to mandate cable ducting.	Medium	Long-term	Being Fully Addressed	Draft regulations in preparation, technical guidance and regulatory impact assessment may result in new Building Regulations during 2003. BSG Monitoring.
15.6	MPT1570.	Low	Short-term	Being Partially Addressed.	Industry-led efforts to develop a pan-European enforcement standard related to radio emissions from DSL equipment should be supported. However, any attempt to make this a compliance standard must be strongly resisted by the UK government.
15.7	Internet regulation.	High	Long-term	Being Partially Addressed.	Draft Communications Bill did not provide a sustainable solution to the issue of content regulation in a world of converged communications. Revisions expected in the Communications Bill. BSG continuing to monitor/ advise.
15.8	Data retention and data protection.	High	Medium-term	Being Partially Addressed.	Statutory instrument in respect of online communications interception withdrawn. However, revised proposals are expected shortly. BSG Monitoring.
15.9	Cross border data protection issues.	Low	Long-Term	Being Partially Addressed.	To be introduced through statutory instrument. A full cross-reference is required, in line with the other aspects of the Telecoms package. This remains a contentious issue and discussions are on-going at EU level.

2. BROADBAND CURRENT STATUS (Q3 2002)

Broadband headlines	Q3 2001	Q3 2002	% change
Take-up	249,200	1,000,000[11]	+ 300%
Average ADSL Retail Price[12]	£40	£26	- 35%
Average ADSL Wholesale Price	£30	£14.75	- 51%
Coverage	60%	67%	+ 7 points

2.1 Summary

- Terrestrial broadband services are now available to 67% of the UK's 24 million households, although coverage remains concentrated around areas of high population density.

- Broadband services are available to 95% of the population in urban areas, 58% in suburban areas, but availability falls significantly in non-urban areas.

- The UK has just over 1 million broadband subscribers (4% of all UK households). However take-up has increased by 300% since mid November 2001 and growth is continuing to accelerate.

- 6.2% of households with access to broadband have now taken up a broadband service.

- 7.8% of households with a PC have a broadband service (53% of households have a pc[13])

- Following a 51% reduction in BT's wholesale ADSL prices, the UK now has some of the lowest prices for broadband access in Europe, with continued downward pressure on retail prices.

- There is facilities based competition across 40% of the UK market. ntl is the largest broadband retailer, followed by Telewest and BT Openworld.

- Over 100 ISPs are now retailing BT's ADSL products. BT Openworld has a 50% market share of all ADSL lines.

- Based on the Analysys[14] extensiveness index which combines coverage and addressable market, the UK is ranked 5th (unchanged from 2001), ahead of France and Italy[15]

- Based on the Analysys competitiveness index, which combines regulation, choice and price the UK the UK is ranked 4th in the G7 (unchanged from 2001), ahead of France, Italy and Germany

[11] October 9 2001, Source, Oftel (note take-up figures are currently increasing very rapidly)
[12] ADSL specifically refers to IP Stream 500, Source, Oftel,
[13] Source, Oftel
[14] Analysys was commissioned by the Office of the e-Envoy to provide a regular UK broadband status report. This has been shared with the BSG and used as the basis for much of the data in this section.
[15] G7 Rankings Source: Analysys. Although the UK ranking has not changed the relative positioning has. In terms of competitiveness the UK is now only slightly behind the US (3rd) and has opened up the gap on the other European G7 nations. The broadband market is a complicated and dynamic environment making benchmarking very difficult. BSG believes these rankings may underestimate the UK position on competitiveness and will review the methodology and indicators used to develop these rankings, to ensure that they accurately reflect recent market developments.

2.2 Take-up

The UK market for broadband services remains relatively modest although it is now growing rapidly. Analysys estimated that there were approximately 908,230 broadband (ADSL, cable modem, FWA) subscribers at the end of August 2002, and on October 9th Oftel announced that the 1 million user milestone had been reached. (At the time of writing it was estimated that there are 1.1 million broadband users). The rise from 249 200 users at the end of Q3 2001 to one million in October 2002, represents an increase of over 300% in 12 months.

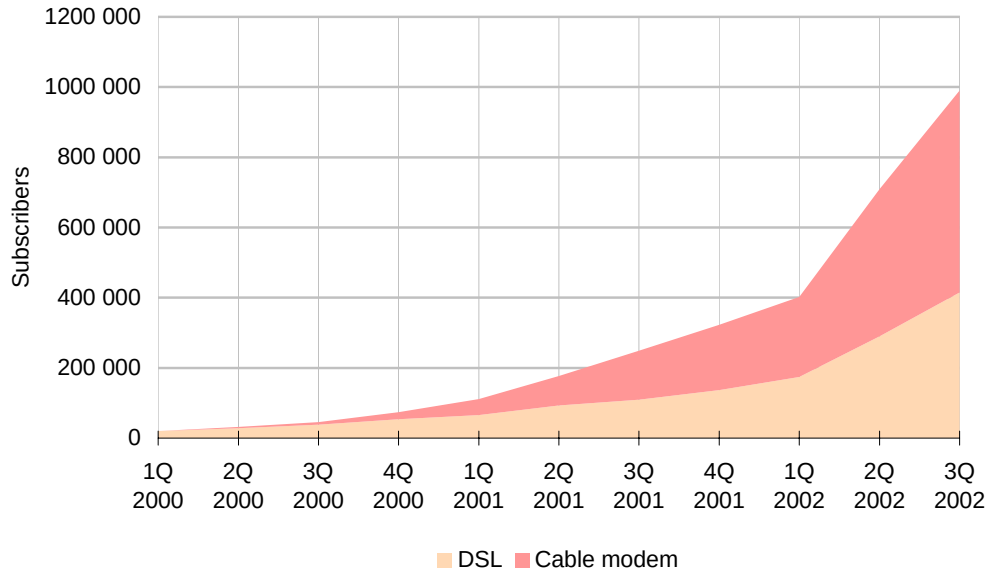


Figure 2: Broadband Subscribers to October 2002 [Source: Analysys]

4% of the UK's 24 million households now have broadband. More meaningfully, 6.2% of households that can access a broadband services (i.e. are inside the coverage areas) have now taken up a subscription.

Over the last 12 months, cable modem subscriber numbers have grown at a slightly faster rate than ADSL (see Figure 3). This has been in part due to cable modem's lower price for much of the period.

However, BT's price cuts at the end of Q1 2002 have provided a very significant boost to the DSL subscriber grow rate, with subscriber numbers increasing by 111% in the five months following the price cuts, compared with a rate of only 59% in the previous six months. BT's current marketing campaign is likely to further accelerate growth. BT is currently connecting new subscribers at a rate of 16 000 per week and the combined cable companies connect a further 10 000 – 15 000 per week.

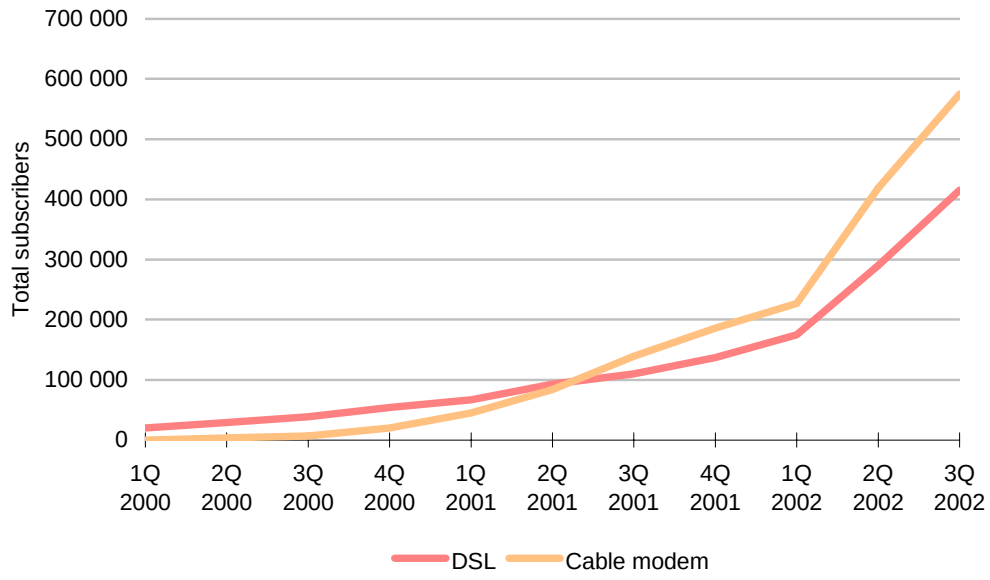


Figure 3: Broadband subscriber growth [Source: Analysys]

2.3 Addressable market

Certain consumers can be regarded to have a high propensity towards taking up broadband. This addressable market would include subscribers to services such as flat rate narrowband, ISDN and digital TV that share some of the key characteristics of broadband (flat rate, higher speed, interactivity).

Unlike most other EU countries flat rate narrow band products are available in the UK priced at approximately £15 per month allowing users to stay online for as long as they like for a fixed price. Flat rate narrow band is therefore an attractive substitute to broadband for many internet users. However, as the range of new content, applications and services requiring broadband increases, it can be expected that increasing numbers of users will make the jump from flat rate narrowband to broadband. The level of residential internet access is therefore an important indicator for the development of the broadband market.

Approximately 11.5 million UK households (46% of the population) have access to the Internet at home[16], 48% of which are on some type of flat-rate package[17]. In a survey by Oftel[18], over 60% of residential Internet users thought that access speeds ten times faster than currently experienced was a 'very attractive' option, with 25% claiming they were either fairly likely or very likely to sign up to ADSL within the next 12 months. There is a strong correlation between PC ownership by household and home internet access in the UK[19]. However, the fact that only 53% of households own a PC, places a real constraint on the potential market for broadband (affordability and adoption of PC's may well be a barrier to broadband take-up for many households). Although, the introduction of broadband enabled games consoles together with the launch of new online games is likely to increase demand for broadband access.

[16] Oftel: Internet and Broadband Brief
[17] Oftel: Residential Survey July 2002
[18] Residential survey, Q3 2000
[19] OECD estimates that 80% of UK households with a PC have home internet access

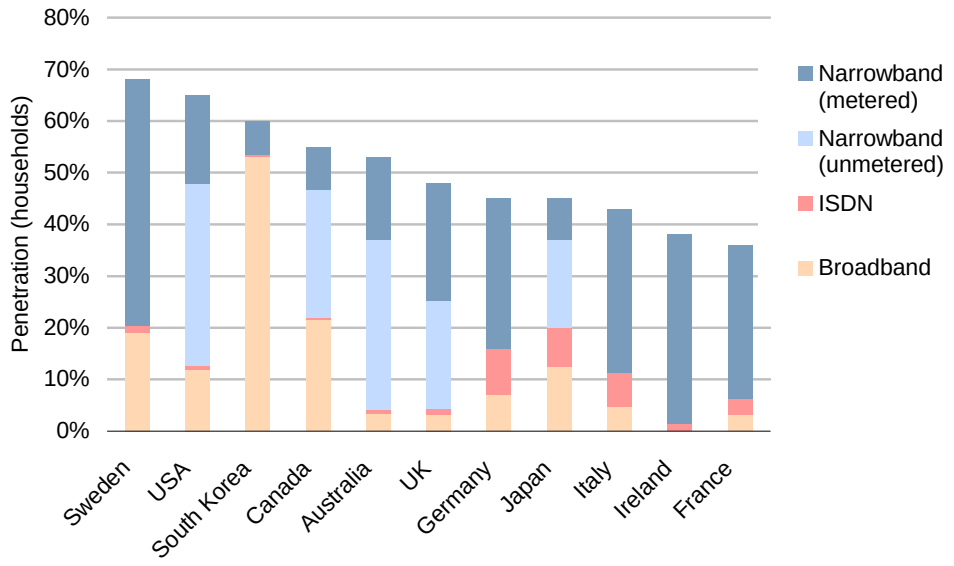


Figure 4: Residential Internet Penetration [Source: Analysys]

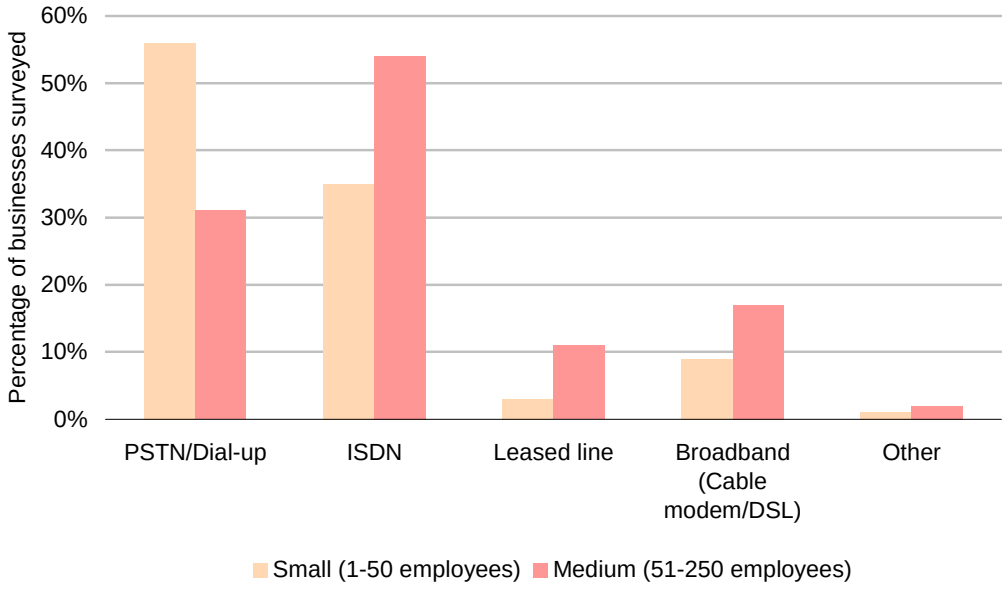


Figure 5: SME access methods, May 2002 [Source: Oftel]

2.4 Competition and market share

The UK market is characterised by a mix of infrastructure competition and retail competition. Infrastructure competition in the UK broadband market is currently limited, with only three major infrastructure operators (BT, ntl and Telewest) actively offering a broadband service and only one (BT) offering an open wholesale service[20]. The low level of wholesale competition had been cited as a possible reason for the relatively high prices that had been in place in the UK prior to BT's price cuts. Competition is more apparent in the retail market, where ISPs can resell BT's wholesale product (approximately 100 service providers do so at present).

Whilst competition in the UK may be less than ideal, it compares favourably to many other European markets where competition from cable can be limited (e.g. Italy and Germany) and wholesale DSL services may not be available (e.g. Germany).

Infrastructure competition

Currently, BT provides virtually all DSL lines (outside the Hull area where Kingston operates), whilst ntl and Telewest provide cable coverage. There is very little overlap in terms of ntl and Telewest's coverage areas. Infrastructure competition only therefore exists between BT and cable operators within cable franchise areas, with the result that approximately 40% of the population have a choice broadband infrastructure. Outside the cable areas the only competition comes from Liberty broadband's FWA service, which currently only has a few thousand subscribers.

Local Loop Unbundling

LLUB was intended to increase infrastructure competition by providing alternative operators access to BT's local loop. To date LLU has not had a significant impact on competition at wholesale level, however, since the implementation of co-mingling, orders in recent months have increased, with over 1100 unbundled by August 2002, with 50 distant location sites and 86 physical co-location sites operational by this date.[21] However, the number of companies interested in offering services via LLU is now very limited. In order to make a sufficient return on investment these companies are focusing on niche business markets in densely populated areas.

ATM Interconnection services

On 21 June 2002, Oftel issued a directive requiring BT to allow operators to interconnect with its ATM network and set prices on a non-discriminatory basis. The availability of such ATM Interconnect services will enable operators to offer wholesale DSL to service providers or retail to end users without purchasing BT's end-to-end wholesale offer or undertaking LLUB.

Depending on the final interconnection prices set by BT and Oftel, this piece of regulation has the potential to add a significant degree of competition in the supply of wholesale DSL services. This will be especially important given the lack of significant competition expected as a result of the LLU process (at least in the short to medium term).

Retail competition

BT offers a wholesale DSL product, which can be resold by ISPs (such as AOL and Freeserve), thereby opening up competition at the retail level. This has resulted in a very open retail market compared to countries where a wholesale service is not available (e.g. Germany), with more than 100 companies competing to provide retail ADSL services. Following BT's 41% price cut in ADSL wholesale prices, the margin available to ISPs has increased and there is continued downward pressure on retail ADSL prices.

[20] ntl has reached a wholesale agreement with Freeserve, but this is not available to other ISPs
[21] Source: Oftel LLUB Fact Sheet, September 2002

Market Share

The faster growth of cable modem subscribers compared with DSL over the last 12 months has resulted in ntl, the market leader, extending its market position (as illustrated in Figure 6). Meanwhile Telewest, has retained its position as the second largest broadband retailer, whilst BT Openworld has increased its share of the total broadband market from 18% to 21%.

BT Openworld's share of ADSL lines has been increasing over the last 12 months and now appears to be stabilising at approximately 50%. The remaining DSL lines are accounted for by ISPs reselling BT Wholesale's offer (e.g. Freeserve, AOL, Pipex etc.), Kingston Communications in Hull, BT Ignite and LLU (e.g. Easynet).

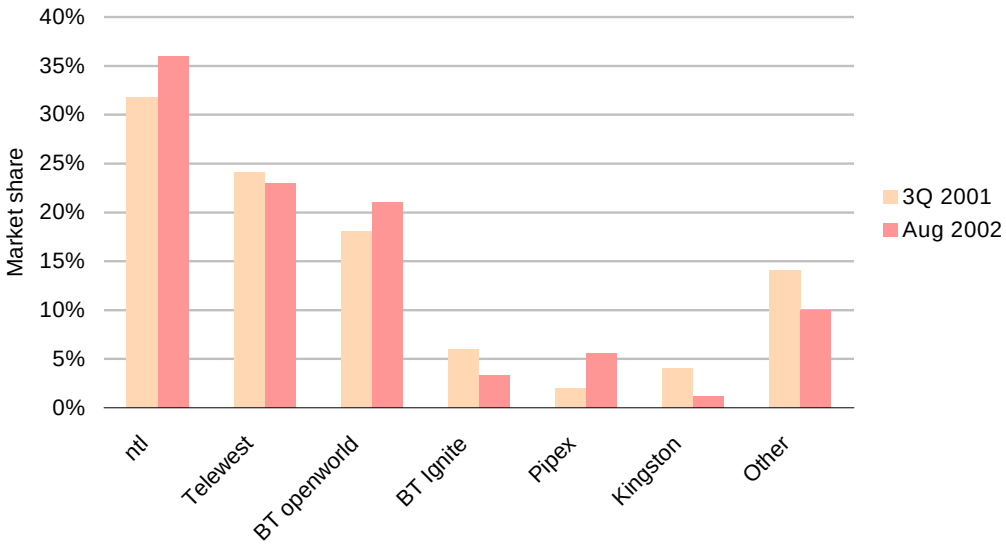


Figure 6: Market share of broadband operators [Source: Analysys]

2.5 Price

Price competition in the broadband access market has been driven by the cable operators with their 512Kbps cable modem service being priced at £25 per month in mid 2001. As a result the take-up of cable overtook DSL in Q3 2001. BT Wholesale followed in Q1 2002 with the announcement of a 41% reduction in its wholesale ADSL prices, leading to significant reductions in retail prices. As a result, the UK now has some of the lowest broadband retail prices in Europe.

By way of comparison, Figure 7 shows the average cost of a residential broadband connection across a range of countries, although it should be noted that quality of service may differ between the offers.

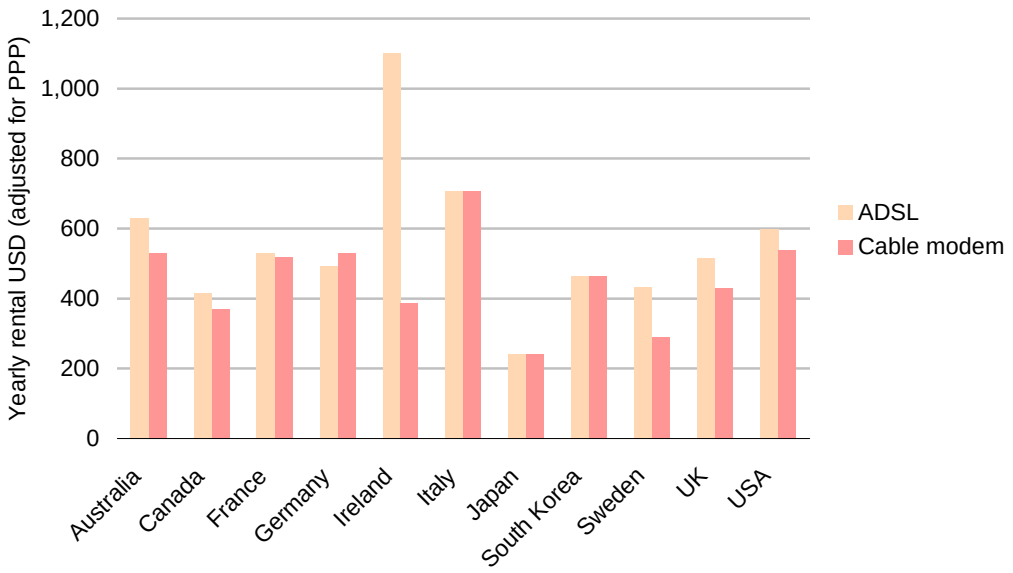


Figure 7: Cost of a residential broadband connection, adjusted for PPP, Q3 2002 [Source: Analysys]

DSL

Following BT's dramatic wholesale price cuts at the end of Q1 2002, wholesale prices for ADSL have remained unchanged and the current monthly rental change for the mainstream consumer service (500kbits/s IPStream Home) remains at £14.75. This has increased the margin available to ISPs reselling BT's wholesale product and as a result ADSL retail prices have fallen from £40 per month to between £20 and £30 pounds per month (with a number of smaller ISPs offering ADSL services for less than £20 per month).

The recent official launch of the BT broadband service, priced at £27 per month is expected have an impact on other service providers' packaging and pricing. The BT broadband service is not comparable with other packages on the market since it is a connection-only service which does not include facilities such as email access. However, if consumers readily adapt to this lower-cost package, other ISPs may be forced to either lower the prices of their existing packages, or provide their own cut-down services at similar prices to BT broadband. AOL has already reduced the price of its full service ISP product to the BT broadband price point.

Cable

Retail prices for cable modem services have remained relatively stable at £24.99 per month for the standard 512kbps service. However, the cable operators have reacted to falling DSL prices by increasing the bandwidth of their services, in order to compete on quality. ntl has upgraded its 512 kbps service to 600 kbps and both cable operators have launched 1 mbps services at approximately £35 per month.

Satellite

BT Openworld's two-way broadband Satellite product (which has a rental charge of £59.99 (individual) /£109.99 (SME) per month and an initial installation charge of £899/ £1299 (excluding VAT) has been available for a year. The BT Openworld service delivers a downstream speed of 500kbit/s, with upstream speed limited to 150kbit/s. At the time of going to press Tiscali had not yet disclosed its pricing.

Service	Bandwidth (kbit/s)	Monthly rental (GBP)
Flat rate narrowband (FRIACO)	56	15[22]
ntl 'Budget' cable modem	128	15
Cable modem (ntl and Telewest)	512/128	25
BT ADSL Home 500 (contention ratio 50:1)	500/250	30
Telewest high speed cable modem	1000/250	35
Liberty Broadband FWA	512/256	40
ntl high-speed cable modem	1000/250	50[23]
BT		
Broadband Satellite (single user)	500/150	60
ADSL Business 500Plus (contention ratio 20:1)	500/250	80
Broadband Satellite (SME)	500/150	110
ADSL Business 1000Plus (contention ratio 20:1)	1000/250	120
ADSL Business 2000Plus (contention ratio 20:1)	2000/250	150
Leased line (30km circuit)	128	420
Leased line (30km circuit)	256	500
Leased line (30km circuit)	512	673

Figure 8: Internet access options [Source: BT, ntl, Telewest, Liberty Broadband]. Note: this chart does not include installation and equipment costs which have a significant impact on cost of ownership

2.6 Product Innovation and Promotion

A key development over that last quarter has been an increased focus on marketing by broadband service providers. A number of the major operators have either completed major marketing campaigns during the last quarter or have announced plans for marketing activities in Q4. These activities will raise awareness of broadband and its benefits and will help to drive future subscriber growth.

BT general broadband advertising campaign
At the end of September, BT ran a major television advertising campaign (at the cost of GBP10 million) promoting not just the company's own DSL services but the adoption of broadband as a whole. BT hopes that the intensive, 10-day campaign will see the rate of new broadband subscriber additions double.

Official launch of BT Retail's BT Broadband service
Following a soft launch in June, BT Retail officially launched its BT broadband product in October, immediately following the conclusion of the advertising campaign mentioned above. BT broadband is a stripped-down ADSL package which does not include features which are

[22] Typical retail price. ISPs are currently offering this service in £13-15 price range
[23] ntl currently offers its 1Mbit/s service at a special price of £34.99 until the end of 2002

commonly bundled with most other existing broadband access packages, such as email accounts and Web-hosting space. The service is provided on an access-only basis – users will be able to choose services such as email and content from a number of online service providers. The launch of BT broadband marks the first time that BT Retail has offered a broadband ISP service directly to its existing telephone service customers, and because it is an access-only service BT Retail will be able to utilise its existing customer database to assist in marketing. Approximately £23 million will be devoted to the launch, which is in addition to the £10 million campaign. BT has signed up Carphone Warehouse as its initial marketing partner to enable high street distribution of the product. At mid-September, BT stated that during the soft launch phase, BT broadband subscribers were running at 1700 new customers per week.

AOL reduces price of its broadband service

In October 2002, AOL reduced the price of its broadband service to £27.99, including the full range of its content. AOL has also announced its intention to develop additional broadband specific functionality.

BT sponsorship funding for ISP advertising

In August, BT selected five ISPs (easynet, COLT, One.Tel, Albion and Colloquim) as the recipients of grant funding amounting to £200 000 each, which is to be used by the ISPs to advertise their broadband services. In addition, BT is allocating a number of £50 000 grants to several other ISPs. These announcements follow the successful completion of a similar scheme earlier in 2002, under which marketing grants were made to a total of 41 ISPs. BT claims that by July 2002, 13% of all broadband installations were specifically linked to its sponsored marketing campaigns.

ISPs offer broadband packages with reduced initial costs

In the last quarter, many ISPs have introduced special offers to encourage new customers to sign up for broadband services. These offers have reduced or eliminated the initial connection fees (although the ADSL modem must still be paid for) for a limited period. For example, Freeserve has been offering its 'broadband in a box' product for £84.99, a saving of £65 on the standard cost of £149.99. Similarly, it is offering its connection-only service which excludes an ADSL modem, without any initial connection fee. This offer matches a long-running BT Openworld offer. In a separate move, during September BT Retail offered half priced connection to its BT broadband service. Connection to this service in September cost £30.

First Direct bank offers discount on BT Openworld ADSL service

In August, First Direct bank announced it is to offer its 1 million customers the opportunity to sign up to BT Openworld's ADSL service at a discounted rate of £27.49 per month –a discount of £2.50 per month on BT Openworld's standard pricing. First Direct expects 25 000 of its customers to sign up to the services within a year. This offer is part of First Direct's 'advanced Internet banking' campaign, which will initially target 100 000 of its customers who live within reach of broadband-enabled exchanges and who have been identified as keen adopters of new technology. A joint marketing campaign includes a competition for one hundred people to win free broadband service for a year.

BskyB to offer BT Broadband service to its customers

At the end of July, BT and BSkyB announced an agreement to develop a package to offer the BT broadband service to BskyB's 6.1 million customers. This announcement supplements a long-standing arrangement whereby BT customers are entitled to discounts on BSkyB's pay-TV packages. Whilst it was announced that this offer would be supported by a variety of marketing and advertising initiatives, the full details of the scheme have yet to be announced.

Telewest to use Gamestation high street stores to drive broadband take-up
In August, Telewest announced that consumers would be able to subscribe to its Blueyonder cable modem broadband service by purchasing a £25 pack in Gamestation stores across the UK. Gamestation is a chain of video game retail stores which currently has 59 sites across the UK and a mail order operation. The packs, which include a CD-ROM featuring tips and information about Internet content made possible by broadband, are placed in dedicated display units; customers can check that the broadband service is available in their area prior to purchase. The £25 fee includes installation by a Telewest engineer and represents a 50%-discount on the standard installation cost. The initiative is being supported by a marketing campaign which includes in-store and direct mailing promotions.

easynet broadband advertising campaign targets SMEs
In September, easynet launched an advertising campaign targeting small-to-medium sized businesses. The campaign highlights the cost-saving potential of broadband as compared to ISDN and dial-up access. The campaign centres on print and taxi advertising in London and will be supported by a series of 'broadband for breakfast' seminars and a national direct marketing initiative.

BT Openworld offers cashback to SMEs to promote broadband take-up
BT Openworld announced in July that, until the end of September, it would offer a 50% cash-back discount on the installation charge when new customers subscribe to its multi-user broadband products targeted at SMEs. The discount is available on the Business 500PLUS, 1000PLUS and 2000PLUS products when purchased with BT Openworld's Internet Business Pack, and amounts to a saving of £130. The company sees the move as significant in that it temporarily removes one of the major obstacles to SME take-up of broadband solutions.

ntl targets non-cable television customers
As a source of new subscribers to reinforce its position as the leading provider of broadband connections in the UK, ntl announced in September that it would begin to actively target households which do not subscribe to other cable services. Such customers will be offered a cable modem service on the same basis as the company's existing telephone and pay-TV services. This move may prove particularly attractive to households which do not have a fixed line connection (instead relying on mobile phones) and thus cannot obtain ADSL service, as well as to households which subscribe to BSkyB's services and so do not initially want to receive ntl's cable television services.

ntl upgrades its 512kbps service to 600 kbps
In mid-September, ntl confirmed its plans to upgrade its 512kbit/s service to 600kbit/s. This further differentiates ntl's offering from the main ADSL services based on BT's wholesale service which provide 512kbit/s access speeds. Whilst the access bandwidth has been reduced, the monthly pricing for the service remains at £24.99, and so provides even greater value for money compared with BT Openworld's market-leading ADSL package priced at £29.99.

ntl reduces price of 1Mbps broadband service
ntl is currently running a promotion on its 1Mbit/s cable modem service (launched in March this year). The monthly charge has been reduced from £49.99 to £34.99 until the end of this year. This promotional pricing matches the standard pricing of Telewests's comparable package.

In addition to this move, ntl has reduced the initial one-off costs of subscribing to its broadband service for a limited period. Until the end of 2002, new subscribers to either the 1Mbit/s or the 600kbit/s services will receive free installation, a saving of£50 for existing ntl customers and £75 for new customers.

BT to launch SDSL trial
In September, BT confirmed its plans to offer SDLS services and announced that it will conduct a trial in October which will offer two wholesale DSL services (IPStream Symmetric and DataStream Symmetric) through 20 exchanges in the London area. Following the conclusion of this trial, BT expects to extend its coverage to 50 local exchanges in London, Manchester, Leeds and York. It hopes that up to 20 other telecoms operators will join the trial and offer the wholesale products to retail customers. This follows the announcement in June that BT would be working with broadband service provider, Bulldog, to run an SDSL broadband trial in London from late autumn.

Tiscali to launch broadband satellite service
In August, Tiscali confirmed its intention to launch a broadband satellite service in the autumn which will compete with a similar service offered by BT Openworld. By the time of the launch, BT Openworld's product (which has a rental charge of £59.99/£109.99 per month and an initial installation charge of £899/£1299 excluding VAT) will have been available for a year. Tiscali has yet to disclose its pricing.

The BT Openworld service delivers a downstream speed of 500kbit/s, with upstream speed limited to 150kbit/s. Tiscali has commented that the delay in launching its service is due to its desire to create a scalable and robust product, and that new technology to be implemented in the autumn will improve broadband connection.

Whilst these services may offer an acceptable broadband solution for some customers, especially small businesses, they are not suitable for all broadband applications. One drawback to these services is that, because the satellites are more than 250 miles away, the slight delay in bouncing the signals up to the satellite and on to a ground station will mean the service is not suitable for online gamers or Internet telephony applications.

BT launches commercial WLAN service
BT's WLAN hotspot service, Openzone, was commercially launched in August. The launch pricing is initially targeted at corporate users. BT charges £85 per month for unlimited access, £40 per month for 900 minutes of use and £20 for 300 minutes. A 50% discount is available on these packages until the end of the year. Two pre-pay schemes have also been launched. For a £6 fee, customers can use a total of 60 minutes access over a 24-hour period from the time of the first log-in, whilst unlimited access over a 24 hour period costs £15.

In addition to the trial hotspot at the Hilton London Heathrow Airport which was launched in June, BT has added coverage at a further 11 locations at hotels and motorway service stations and also at the Bluewater shopping centre in southern England, Earl's Court Olympia convention centre in London. BT's current site partners include the Hilton, Jarvis, Thistles and Travel Inn hotel groups and the Moto and Roadchef motorway service groups.

BT eventually plans to sell WLAN in the residential market as well, by offering access by the hour or day. It hopes to have 70 hot spots built by the end of 2002, and 400 by June 2003. The commercial launch was enabled by a ruling in June 2002 by the Department of Trade and Industry (DTI) that exempted from licensing all operators offering commercial wireless LAN services using the 2.4GHz band.

Powerline trials
SSE Telecom, part of Scottish & Southern Energy, is continuing with its trials of powerline technology in Scotland. In September, the company reported that the trial was progressing well, with approximately a dozen customers connected in the Crieff and Campbelltown areas of Perthshire. Symmetric speeds of up to 1Mbit/s are being achieved.

easynet continues to make progress with LLU

In September, easynet announced that it is providing service to 850 customers over unbundled local loops. In August alone, the company added a further 254 customers to its services and now provides unbundled local loop services at 71 BT exchanges in London, Manchester, Leeds, Sheffield, Newcastle, Brighton, Edinburgh and Glasgow. It has suggested that it may continue to expand its coverage and may increase the number of unbundled exchanges by up to 100 over the next 18 months. easynet continues to be the most active player in LLUB.

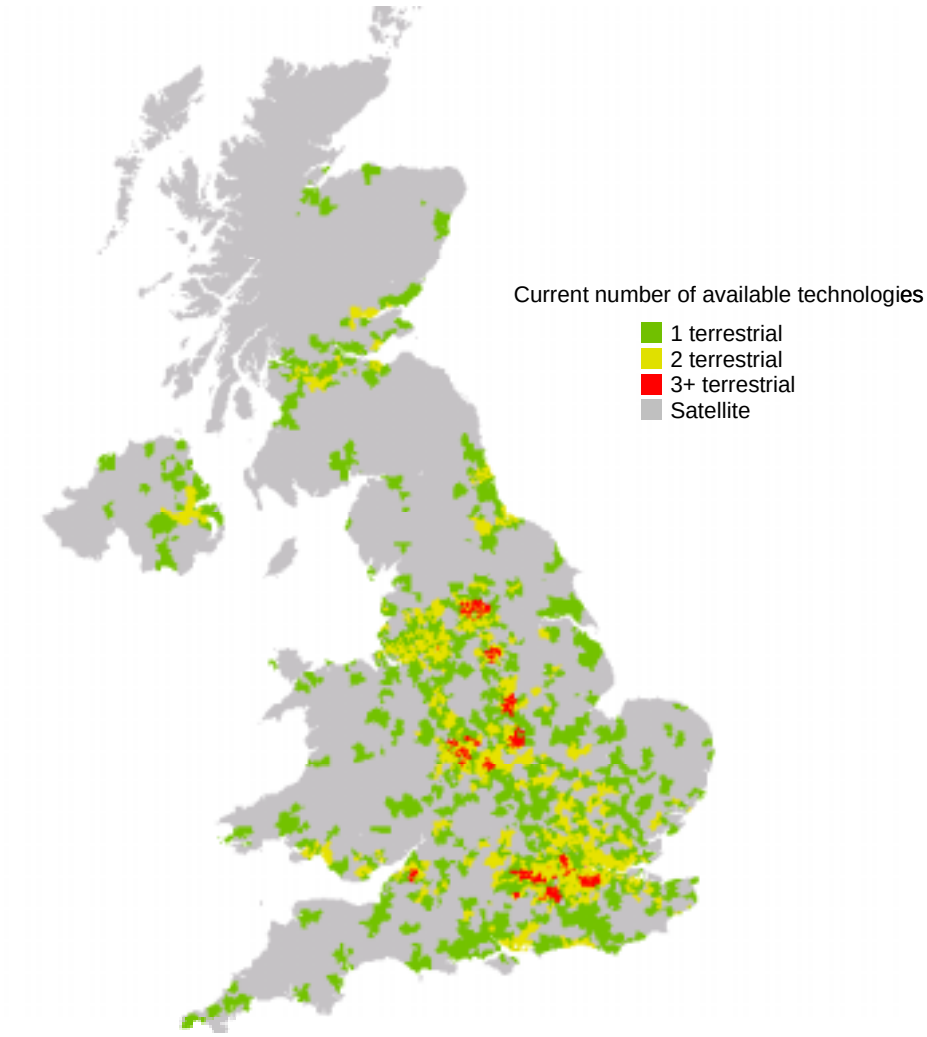
ntl and Freeserve enter wholesale cable agreement

In May, ntl and Freeserve announced that they had teamed up in the UK's first wholesale broadband cable deal. Freeserve customers will now have the choice of receiving a branded service through ntl's 512kbit/s cable modem service, or through BT's ADSL service. The ISP's broadband in a box service, available through retailers, will be offered with a cable modem or an ADSL modem. Details of pricing and marketing are yet to be announced but a launch was originally expected in September.

2.7 Broadband Coverage

There has been a 7% increase in broadband coverage over the last 12 months. 67% of the UK population now has access to a mass-market broadband solution – that is, one that is targeted at residential or small business customers. Ubiquitous satellite services are also available, although they continue to be priced at a premium to terrestrial solutions. Broadband availability is highest in urban and suburban areas (where 75% of the UK population live), where economies of density make the deployment of broadband relatively cost effective. However, broadband availability falls significantly in market towns, rural villages and remote areas (home to 25% of the UK population). The map below shows the coverage of mass-market broadband technologies in the UK as at the end of August 2002.

Figure 9: Broadband coverage in the UK, Q3 2002 [Source: Analysys]



The government, with the assistance of the BSG is working to build on existing data to develop and make available a detailed map of broadband availability in the UK. BSG hopes to be able to publish this map shortly. As an illustration, the map will colour code broadband availability across the UK as follows:

Area	Coverage Status
Dark Green	Competitive market for affordable mass-market broadband services
Light Green	At least one provider affordable mass-market broadband services
Grey	No services currently available but potential for the deployment of commercially sustainable broadband services
Red	With little expectation that the market will provide affordable broadband services for the consumer market

Technology	*Current population coverage (%)*
ADSL[24]	61
Cable modem	40
FWA[25]	12
Satellite	100
Total (ADSL, Cable modem, FWA)	**67**

Figure 10: Proportion of population (households) covered by broadband technology, Q3 2002 [Source: Analysys]

	DSL	*Cable*	*FWA*	*Total*
Urban centres (50% UK population)	89%	60%	22%	95%
Suburban centres (25% UK population)	52%	33%	3%	58%
Market towns (15% UK population)	21%	11%	1%	26%
Rural villages (7% UK population)	6%	1%	0%	7%
Remote rural (3% UK population)	1%	0%	0%	1%
Overall	**61%**	**40%**	**12%**	**67%**

Figure 11: Population (household) coverage by mass-market broadband by area type[26], Q3 2002 [Source: Analysys]

[24] At present, 66% of households are served by an exchange that has been updated to offer DSL services, however, only approximately 90% of these customers live close enough to the exchange to receive DSL

[25] Figures for FWA will tend to overestimate coverage since line of sight issues may decrease effective coverage. This is not accounted for in the FWA coverage figures presented in this report

[26] Note: The definitions of area type are based on the population density of the postal sector (see Annex B for details). This means that low population density postal sectors may be classed as rural, even if they are close to high population density areas

As figure 11 illustrates, broadband remains a relatively 'urban' phenomenon. The high infrastructure costs associated with the roll-out of broadband technology remains a major barrier to their deployment in less densely populated areas.

DSL Coverage

BT has now enabled 1116 of its 5600 local exchanges providing ADSL coverage to 61% of households[27].

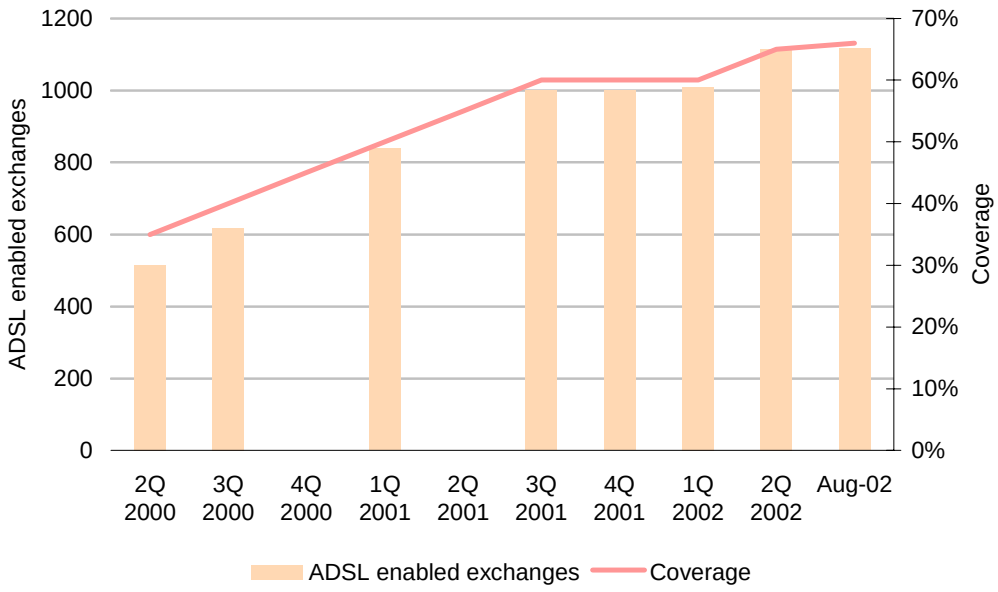


Figure 12: Exchanges upgraded to offer ADSL [Source: Oftel]

BT has stated that upgrades of further exchanges will only be carried out where clear demand indicates commercial viability. To this end, the company has announced the levels of demand necessary to trigger upgrades of further exchanges and established a scheme to measure potential customer demand in the 653 exchange areas being considered for upgrade. To date, 16 of these are now in the process of being upgraded and 29 more have passed their pre-registration trigger levels and are being confirmed. In addition to the public demand registration scheme, BT has stated its willingness to upgrade exchanges in areas which do not exhibit high levels of demand through partnership arrangements with other organisations such as Regional Development Agencies. An existing example of such an arrangement is the Cornwall ACT NOW partnership. BT is currently conducting trials with new DSLAM equipment with a view to reducing the cost of serving smaller pockets of demand.

[27] The upgrade of local exchanges involves the installation of a DSLAM, associated equipment and cabling, plus the provision of sufficient backhaul capacity (which may involve connecting the exchange with suitable fibre if this is not already in place). The average cost to upgrade an exchange to offer DSL is estimated to be in the region of £200 000. Once the local exchange has been upgraded, DSL is available to all lines served by that exchange, subject to the length (max 5.5km) and quality of the local loop, the capacity of the DSLAM and the availability of sufficient backhaul capacity. DSL can be offered at prices within reach of the mass market because it utilises the existing copper local loop infrastructure, thereby eradicating the need to construct new local networks.

Figure 13 shows an international comparison of DSL coverage in Q3 2002, (primarily provided by incumbent operators)[28].

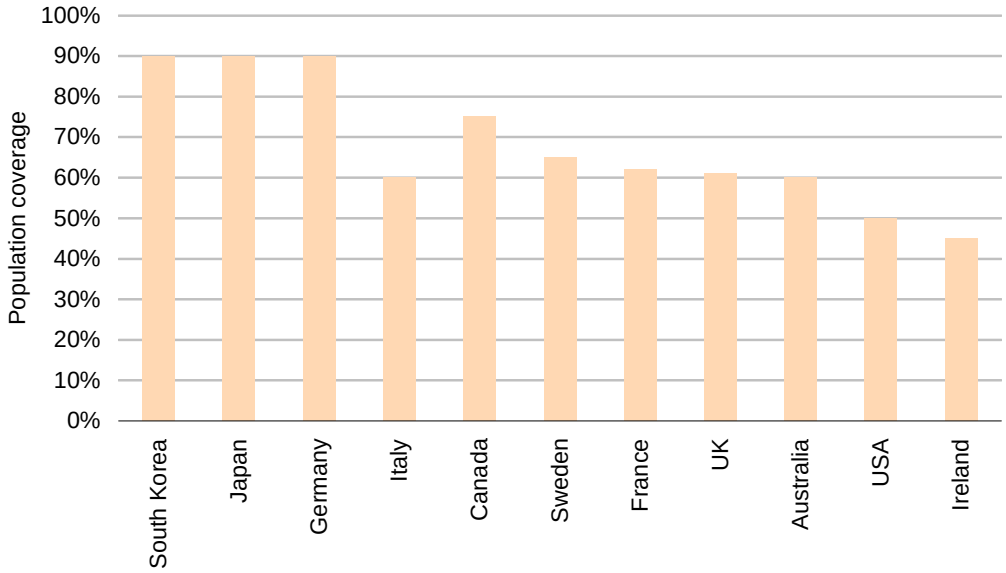


Figure 13: DSL coverage (households) Q3 2002 [Source: Analysys] [29]

Cable modem coverage

Cable modem coverage remains at approximately 40% (9.5 million households) – Telewest covers 4.9m homes (almost all of which are broadband-capable following the network upgrade in Devon and Cornwall, completed at the start of September) and ntl 8.4 million (80% of which are broadband-capable). The proportion of ntl's network that has been upgraded is lower than Telewest's, due in part to the fact that many ex-C&W franchise areas have not yet been upgraded. It is expected that the cable operators will eventually upgrade all of their networks, though the timing remains uncertain.

[28] Note there is a correlation between DSL coverage and population density, as DSL technology can be deployed more cost effectively in countries with highly urbanised populations such as South Korea, Japan, Germany and Canada.

[29] Figures for Italy and Japan are Analysys estimates

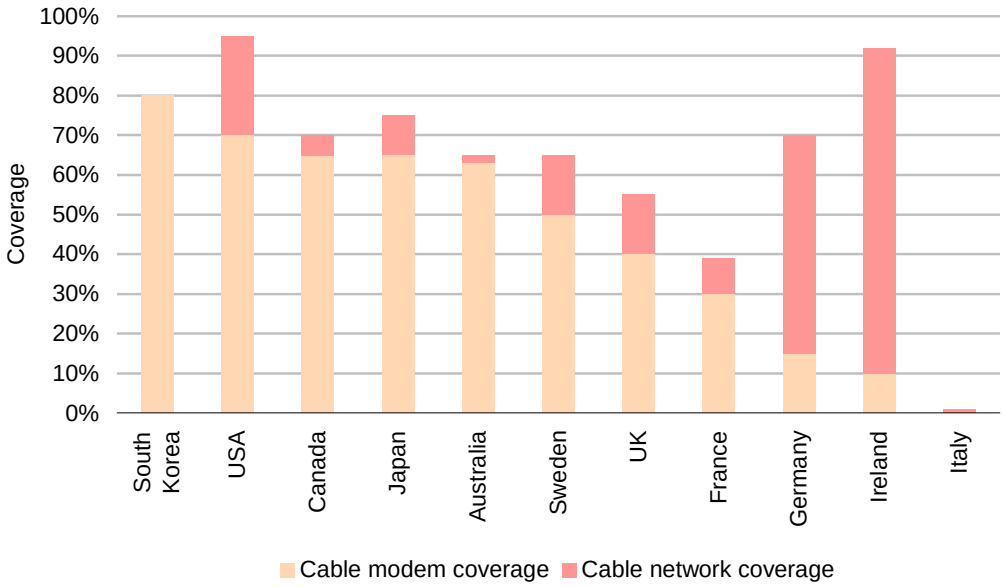


Figure 14: Cable coverage (households) Q3 2002 [Source: Analysys]

Fixed Wireless Access (FWA) coverage

Liberty Broadband (formerly Tele2 (UK)), was the only operator to have rolled out any 'mass market' FWA service at any scale in the UK, offering a service in the 3.6GHz to 4.2GHz spectrum in the Thames Valley (Reading, Wokingham, Bracknell, Windsor, Slough), Leicester, Nottingham, Birmingham, Coventry, Leeds, Bradford, Uxbridge (including Heathrow), Crystal Palace, Bath and Bristol. The company has been undergoing restructuring and in May it was announced that it no longer intends to offer services to residential customers. It remains unclear whether Liberty Broadband will continue to provide service in its current areas shown, or if it will roll-out service to further locations.

Your Communications has installed 28 GHz base stations in Cumbria, Leeds, Birmingham and Manchester and have recently started offering 28GHz as part of its overall product suite, with prices starting at £4 000 for a symmetrical 512kbit/s link (£15 200 for 3Mbit/s), placing the product as more akin to a leased line than 'mass market' broadband (this coverage is not shown on the above map). None of the other 28Ghz licence holders has yet launched commercial services, although trials are underway.

Satellite Coverage

Coverage is theoretically available throughout the UK, enabling broadband connectivity to be offered in areas where no service is available from terrestrial providers. A number of service providers (BT Openworld, Tiscali and Aramiska) have launched two-way broadband services in the UK providing broadband coverage to over 99% of the UK[30]. One-way broadband satellite services are currently undergoing trials with BT.

Capacity constraints of satellite systems mean that it is unlikely to be practical to provide satellite broadband connections to a high number of customers i.e. it will not be a mass market technology to rival DSL, with millions of subscribers. Satellite has a significant role to play in serving remote areas, but is expected to have a modest overall market share.

[30] A small percentage of customers will be unable to receive satellite, due to line of sight constraints

CHAPTER 3: MAKING BROADBAND A 'MUST HAVE' SERVICE

3.1 Introduction

Broadband adoption is increasing rapidly. Worldwide broadband subscriber growth is predicted to grow 53% in 2002, from 30 million to 46 million[31]. In many countries across the globe, consumers are adopting the current generation of broadband technologies at a faster pace than colour TVs, VCRs, CD players and even mobile phones. The phenomenal take-up of broadband in South Korea may be a new world record for the mass adoption of new technology.

Broadband take-up is now increasing rapidly in the UK, which has seen 300% growth in subscribers in 12 months since end November 2001. However, due primarily to the late launch of services, the UK continues to lag behind the leading broadband economies in terms of market size. We therefore need to ensure that we not only maintain the current high growth rates, but accelerate them if we are to keep pace with the G7 leaders. Moreover a significant increase in take-up is required to stimulate further investment in rolling out new networks and infrastructure, as well as investment in the development of the content, applications and services that new subscribers will be looking for. To do this it will be necessary to overcome a number of barriers to broadband adoption (see figure 1) including issues related to: Awareness; Availability; Cost / value; Content; Convenience and Usability and Confidence

Over the last year the BSG has developed actions for collaborative promotion and awareness raising for consumers and SMEs. The BSG has provided industry advice and support in the development of the government's web-based guide to broadband; agreed a range of support measures and joint actions with UK Online for business; and, used public platforms and speaking opportunities to change the tone of the public debate on broadband from negative to positive.

3.2 Background

3.2.1 Understanding the benefits of broadband

Most broadband early adopters tend to have been heavy narrowband internet users and normally upgraded to broadband from a flat rate narrowband package. They usually explain the benefits of broadband in terms that only other regular dial-up narrowband users would understand:

- Increased speed
- Always on
- Fixed cost

These benefits are cited in almost all of the consumer research done on broadband adoption. In a consumer perceptions study published in January 2002, Oftel reported that "once demonstrated broadband is perceived as the future and is not viewed as an alternative to narrowband. People agree that broadband both offers and successfully delivers clear benefits compared to narrowband. Broadband is demonstrably faster than narrowband both in terms of getting online and downloading websites, documents and software etc. Such speeds of access can enable people to use the internet more effectively and to gain more pleasure from (and encounter less frustration with) using the internet. It can also open up new possibilities, for example watching video clips online." Understanding and communicating these 'new possibilities' that make up the wider broadband value proposition is a key challenge for the next phase of broadband adoption. Another challenge is to determine how we can demonstrate the benefits of broadband to people who haven't used it.

[31] In-Stat MDR, July 2002

3.2.2 Understanding the wider broadband value proposition

"one can get caught up in technologies and applications but when one gets down to it, communicating with others is the primary driver of internet use[32]"

Broadband is an enabling technology. It allows users, be they individuals, businesses or organisations to do the things that matter to them differently - more conveniently more entertainingly and more effectively. Like all enabling technologies, the benefits depend on the way in which the technology is used.

Whilst the number of broadband subscribers was limited to a small number of early adopters it was difficult to predict how users would adapt this technology to their needs in the future and the industry was left to develop its own predictions as to what the user benefits of broadband would be. These predictions tended to be a linear extension of narrowband applications (i.e. the same but better/ faster) with video on demand often being cited as the eventual killer application that would make broadband a 'must have' service.

However, recent research on usage patterns and behaviours is starting to discern more complex and subtle behavioural changes enabled by broadband connectivity. In particular, it is becoming apparent that the broadband characteristics of high speed and always on allow broadband users to behave quite differently to narrowband users.

In terms of online behaviour, broadband users spend significantly more time on-line and on average use ten times more bandwidth than narrowband users. For example, Germany's 2.6 million broadband users use as much bandwidth as the rest of the seven million narrowband users put together and use an average of 43 Mbytes per session compared to narrowband users who use only about 1 Mbyte per session[33]. Broadband users also access the internet much more frequently than narrowband users, often 'dipping-in' for several very short sessions during the day, behaviour akin to online "snacking". Meanwhile, users across the world tend to stay on-line longer later in the evenings with many service providers reporting peak usage after 10 p.m. at night[34], suggesting that broadband useage may be displacing late night television viewing.

As more users adopt broadband and adapt it to their needs the full picture of the value proposition for users will become apparent. Whilst business is busy looking for a 'killer app' for broadband, users are busy getting on with it. The huge increase in peer-to-peer traffic resulting from the take-up of broadband is a clear indication that users will drive the development of broadband as they exploit its bandwidth, to access, create and share content within their own online communities of friends, families, colleagues, interest groups and peer groups. Whether a user driven application equivalent to SMS will emerge for broadband is not yet clear, however, it is becoming increasingly evident that once users have adopted broadband, they will not consider going back to narrowband and some have reported that they would now take broadband availability into account as a key factor when considering relocating homes or offices.

There is a clear need for a deeper understanding of the reasons why users become so attached to broadband, the value they gain from it and the way in which it is shaping and changing their behaviour patterns.

In order to get behind the murky picture of broadband adoption and understand the place of broadband in everyday life; as it is used, experienced and talked about by households and

[32] Understanding Broadband Demand, Office of Technology Policy, US Dept. of Commerce
[33] Deutsche Telekom
[34] BBCi has reported a peak usage period of its broadband only content after 10pm.

business the BSG has undertaken an initial ethnographic study entitled 'My Broadband' based on a very small sample group of broadband users. Early findings will be presented and discussed at the Building Broadband Britain conference in November 2002.

3.2.3 My Broadband Study

The research used the ethnographic methodology in order to understand the wider context of broadband use and adoption within 4 households and 2 small businesses in the UK. Additionally, the researchers spoke to individuals working at community level to ensure the provision of broadband.

The objective was to understand how ordinary people use the internet and other technologies in their everyday lives. Very early findings suggest that:

- **Technological Competency**
  The uptake of broadband is delayed by low levels of technological awareness and competency, both with ICT in general and broadband specifically. An 'if it isn't broke, don't fix it' mentality hold potential broadband adopters back. Language used is often too technical for 'normal' users: the issues and advantages are too often couched in technical jargon.

- **Speed**
  Speed of connection is the principal communication of broadband providers. About being faster online: surfing faster, downloading faster and getting tasks completed in less time. Understanding of how everyday households use the internet and email suggests that speed may not be the advantage that will drive adoption. In fact, there is a danger of over-promising the speed of broadband, which is inclined to raise expectations and leave adopters disappointed. Broadband allows users to not worry about the speed at which they perform activities such as searches and shopping. Broadband allows people to go slow. Conversely, dial up makes people worry about time.

- **Time – Dial Up and Broadband.**
  Broadband offers an abundance of time. The result: the internet becomes more 'plentiful' and more approachable. With a broadband connection people don't feel nagged by time or the clock. They can relax, enjoy the internet, and consequently their uses of it begin to broaden.

- **Always There**
  A result of the timeless time that broadband offers the internet user, an 'always there, always available resource and the PC and the internet become more entrenched in daily life.

- **Drivers of Adoption**
  No single, all encompassing driver. Rather a mesh of factors, including: cost of dial-up relative to what it offers; integration with communication / entertainment package; freeing up a telephone line; education of children

- **Barriers to Adoption**
  Committing to 12 month contract; lots of internet activity happens at work;
  Leisure is TV, Video and Consoles: PCs still hold too many associations with working life; people feel the amount they use the internet doesn't justify broadband

In terms of applications, communication remains at the core of almost all broadband applications, content and services and is reported as the key benefit in almost all broadband markets around the world. Entertainment is also a key benefit and has been a major driver in all markets although different entertainment applications have succeeded in different countries (on-line games being a particularly strong driver in Asian markets, including South Korea, Japan, and Taiwan). The availability of local content also appears to be, and it is interesting that for example, almost all of the content driving the South Korean market is produced and hosted locally. Education is also perceived to be a major benefit by consumers in most markets, and is relevant to all stages of learning and all age groups from pre-school to third age. In South Korea, it seems to have been the combination of education and entertainment benefits that drove the huge consumer demand for broadband with young people being the primary early adopters, and marketing targeted at parent's and their concern for their children's educational welfare.

3.2.4 Barriers to Broadband adoption

Barriers to Broadband Adoption for Consumers	
Awareness	There is still relatively low awareness of what broadband is and the benefits/ value it can deliver to the user. This is now improving as a result of increased promotion by the major commercial players, although there is still relatively low awareness of the full broadband value proposition.
Availability	Lack of availability is a fundamental barrier for take-up for some (see Chapter 4)
Cost /value	Despite significant price reductions (particularly for DSL products) in the past 12 months cost remains a significant barrier, particularly given the existence of substitutional flat rate narrowband products which offer a significantly cheaper (if slower) alternative for home internet access. In a recent Oftel survey over 60% of residential users thought that access speeds ten times faster than dial up was a 'very attractive option'. However, the average amount respondents were willing to pay for such a service was £13 per month[35]. Currently there is little expectation that commercially sustainable services could be provided at that price point. If there is little room for prices to come down, then perceptions of value and benefit need to increase.
Content	At present the number of applications that demand a broadband connection are limited, so whilst a broadband connection will enhance the quality of the user experience dial up access remains an 'acceptable' option for many users. 71% of current narrowband internet subscribers say they are satisfied with their current service, 29% are very satisfied. Only 16% express dissatisfaction and only 3.7% say they are very dissatisfied[36]. This is likely to remain the case until more applications become available that demand broadband. 'Must have' content applications and services will increase the value for users and therefore their willingness to pay for broadband access at price points that are commercially sustainable. However, concern about the protection of creative and intellectual property rights remains a major obstacle to the legal availability of compelling digital content such as movies, and music.
Convenience	Would-be broadband adopters can to be deterred from taking up broadband due to concerns over installation hassles and the lack of plug and play equipment. Most households do not have advanced computer expertise and are therefore wary of having to reconfigure their home PCs or spend hours waiting on operator helplines. There is clearly a need to push the 'ease of use envelope'. The introduction of self-install ADSL products is a major added benefit as users don't have to wait for engineers to come and install equipment. Consumers expectations for quality are high and they are intolerant of services that fall short of their expectations. Services that do not work literally as advertised result in customer dissatisfaction, not only will they not be repeat customers but they will also tell others about their experience – word of mouth is extraordinarily powerful in the internet.
Confidence	Consumer concerns about privacy, security (hackers, viruses, fraud, identity theft), SPAM, and unsavoury content (particularly unsolicited e-mail from adult oriented web-sites) continues to deter internet take-up in general.

[35] Oftel Residential survey July 2002
[36] Source BT

Barriers to Broadband Adoption for SMEs	
Awareness	There is still relatively low level of awareness of what broadband is and the return on investment that it can deliver. DTI starting to address this through UK online for Business and the BSG will be working with the CBI to develop further business case studies.
Availability	Lack of availability is a fundamental barrier to the take (see Chapter 4)
Cost /value	For businesses using leased lines DSL and cable can deliver significant cost savings. However for small enterprises using dial up cost may still be an issue and dependent on perceived value in terms of ROI.
Content	There is probably a richer range of business applications than consumer applications currently available. However, many SMEs may not yet be aware of these applications or how they could be applied and implemented in their businesses.
Convenience	SMEs often fear that they lack the skilled experts to manage networks, run applications, and implement new upgrades etc. Uncertainty about the range of options available and the risks of changing supplier etc can hinder broadband adoption. Quality of service is also a key concern for SMEs.
Confidence	SMEs often express concerns about privacy, security (hackers, viruses, fraud, identity theft), and other legal considerations

3.3 Recommendations for accelerating the take-up of broadband services

To overcome these barriers to broadband adoption the stakeholders must work together to:

1. Understand more fully the benefit existing subscribers derive from broadband
2. Promote and explain the broadband value proposition to consumers and businesses
3. Increase the range of content, applications and services available that demand broadband
4. Increase ease of use and address concerns about installation and customer support
5. Continue to address trust and confidence issues related to the internet
6. Promote the use of broadband in and by public services.

Note: a number of these issues were included in the 2001 BSG Report and are being addressed as existing BSG recommendations.

3.4 Increasing understanding of the user benefits of broadband

Understanding and communicating the 'new possibilities' that make up the wider broadband value proposition is a key challenge for the next phase of broadband adoption. Another challenge is to determine how we can demonstrate the benefits of broadband to people who haven't used it.

The BSG has now published an interim list of Broadband case studies at http://www.telecomsadvice.org.uk/infosheets/case_studies.htm. (TelecomsAdvice is Oftel endorsed and industry sponsored.) A categorised, searchable database of broadband applications for businesses is being developed by UK Online for Business, and a complementary database which will include residential, public sector, aggregation and community applications and projects, as well as business applications is being developed by TelecomsAdvice.

Recommendation 2:

The BSG should continue to focus on researching and articulating the wider user benefits of broadband

- Research the wider benefits of broadband use and share results with all stakeholders.
- Investigate and learn from the way in which local 'grass roots' organisations have succeeded in communicating the benefits of broadband in their communities.
- Continue to collate and make available case studies.

3.5 Promoting the broadband value proposition to consumers and businesses

Industry Promotion

There have recently been a number of large-scale advertising campaigns will significantly increase awareness of broadband, leading to further take-up by early adopters upgrading from flat rate narrowband packages. (i.e. people who understand the benefits of high speed always on access, and who possibly have access to high speed broadband services at work etc) however it will be a more difficult task to sell broadband to those who have had little experience of its benefits.

Recommendation 3:

Industry stakeholders must continue the aggressive promotion of broadband services to accelerate take-up.

BSG will continue to monitor progress carefully and advise where necessary. However, the industry may also need to ensure that distribution channels (such as PC retailers) are properly trained and informed about the full range of broadband technologies available to consumers/ users.

Government Promotion of Broadband

Recommendation 4:

Government must continue to assist in the promotion of broadband services, by:

- Providing public access to broadband services through the UK online centres. Government is committed to enabling approximately half of all UK Online Centres with broadband. (see Recommendation 11, Status Report)

- Promoting awareness of the benefits of broadband for SMEs via UK Online for Business (being done in close collaboration with the BSG – see Recommendation 8 in Status Report)

- Increasing awareness of existing fiscal incentives to promote the take-up of ICT (which allow SMEs to offset 100% of ICT investment – including investment in broadband access equipment against taxable income) and the relaxation of personal tax benefits to ensure that employer-provided broadband to the home is exempt form personal benefits charges. (being done – see Recommendation 9, Status Report)

3.6 Increasing the availability of content, applications and services

'Must have' content applications and services will increase the value for users and therefore their willingness to pay for broadband access at price points that are commercially sustainable.

There are important benefits to be gained from encouraging broadband content development in the UK, including securing the position of the UK production sector in this growing global industry as well as helping to encourage and accelerate broadband access penetration amongst businesses and consumers. While the broadband content sector is still in very early stages of development worldwide, broadband content is beginning to emerge; however, little is emerging in the UK.

In the consumer sector, there are a number of barriers which are preventing broadband content development today. The limited potential audience make the creation of viable broadband sites extremely difficult. In the business sector, there is a lack of awareness of the potential benefits of broadband, combined with a lack of appropriate broadband access methods at affordable prices. As access prices fall and adoption levels increase, the market will naturally address many of these barriers and increasingly content will become available.

However, the high rate of growth of broadband subscribers over the last six months has not been matched by increased investment from content owners, distributors and portals in the creation of new, compelling broadband services and content. It is likely that the continuing lack of investment and uncertainty in the TMT sector are having a considerable effect on the willingness of players to invest money in innovation, particularly in content and services. Whilst this is likely to change over time, it is essential that players begin to have the courage to invest wisely in this material in order to further drive demand for broadband access.

However, even in the face of increased broadband subscriptions, some barriers will be slow to erode and will retard the development of certain types of content. There is a key role for the public sector in helping the market to develop, both through its ability to prime the market and via its potential to create compelling user experiences and services in line with the e-government targets for 2005.

Broadband content is very much in its early stages of development around the world. In the consumer space, a number of pure broadband aggregators have emerged (e.g. Real One, The Feedroom, Blueyonder) together with sites, often subscription based, specialising in a particular genre. Much othet content is purely promotional in form (such as movie trailers etc) Most consumer broadband-related activity is in sites and applications that are enhanced by, but not dependent on broadband, particularly peer-to-peer sites similar to Napster. The top Internet Service Providers (ISPs) and portals are also some adding increasing levels of broadband content to their core offer.

In the business space the provision of broadband Application Service Provider (ASP) services, commerce platforms and voice over broadband is still in its infancy – particularly to Small or Medium-Sized Enterprises (SMEs). There are few meaningful applications which make broadband a "must-have" for SMEs. In the government sector, there is only a minimal amount of broadband content available, although there seems to be a significant amount in development.

Content Development Barriers
A number of economic barriers could potentially prevent the profitable development of broadband stand-alone content propositions.

• On the revenue side, providers face customer resistance towards paying for most types of content, either via subscriptions or micro-payments, whilst sufficient advertising revenues are difficult to obtain. Furthermore, industry fragmentation means that it is often difficult to justify investing in broadband content and applications for a site in the hope of recovering its cost through incremental revenues from higher numbers of access subscriptions.

• Many content owners are reluctant to make their content available for fear of cannibalising the value of other channels or fears over piracy and an inability to effectively manage the value of their intellectual property rights in this new domain.

• Finally, many content owners also face difficulty in dealing with the problems of geographically defined distribution rights

In the business market, the major barrier to content / applications provision has been a lack of awareness of, and therefore demand for, broadband content and applications that have a clear commercial benefit for the business.

In the government sector, the main barriers to content availability have been lack of a clear understanding of the benefits of making content and applications available for broadband as well as the same adoption issues that are restricting the consumer and business sectors.

3.6.1 Rights Management

Concern about the protection of intellectual property rights and the lack of an agreed solution to the issue of digital rights management (DRM) is a serious bottleneck to the provision of compelling consumer focused content. A number of applications are expected to revolve around the distribution of film, video and music, however a business model needs to be developed that allows the creators of the content to make a reasonable return on their investment, without

increasing charges to the customer to an unattractive level. Failure to find a solution will limit the range and quality of services made available to users and could interrupt the rate of broadband adoption.

With an estimated 30-70 million unique visitors, Napster demonstrated the demand for online digital content and the viability of the internet as a means of delivery, and significant numbers of users worldwide continue to share/swap files (often music and video) that have been copied illegally[37].

There is considerable belief that creative, legal, for profits sites can out-compete 'free' alternatives. Industry must develop and adopt technologies that can protect digital content, and deliver content in ways and on platforms that consumers want. Meanwhile government and the industry must work together to educate users about the need to respect intellectual property on the internet and prosecute clear violations of the law.

Coordinated action is needed on the part of industry and government to give rights holders confidence that they will receive a fair return. Among the issues to be addressed are the extent of the need for inter-operability between currently fragmented Digital Rights Management (DRM) and Payment systems and the need for credible business models as to how these can be used to achieve and distribute sufficient additional revenue to justify the investment and/or risk. The models will need to include agreed routines for policing and for the handling of liabilities and disputes.

Numerous DRM systems have been developed, however, there remain issues about interoperability across platforms (for example, transfer of a file from the PC environment to CD-R) where right-holders lose control of content. But the biggest barrier to application and further development of DRM remains the lack of agreed business models for high value creative content. As DRM is seen by right-holders as the principal mechanism for ensuring an ongoing return on investment, this leads to a reluctance to make creative content available which explains the lack of a valuable consumer proposition for broadband.

This issue is being addressed in various international fora. Technical issues, such as standards for identifiers and inter-operability, are being addressed by a number of dedicated bodies. At European level, the Commission has arranged a series of workshops with users, consumer groups, manufacturers, right-holders and collecting societies to explore the issues.

BSG DRM Working Group

The BSG DRM Working Group was set up in July 2002 to bring together relevant players in the UK industry with the DTI. The DTI has agreed with the BSG that DRM warrants a dedicated resource and is recruiting a secondee from industry to help address the issues and provide an active link with the other parallel initiatives in the UK, Europe and elsewhere. The BSG has also established links with the Commission initiative and will draw on the work of other technical groups in order to avoid duplication.

[37] Motion Picture Association estimates that between 400,000 and 600,000 movies are now being downloaded every day

Recommendation 5:

BSG in conjunction with the DTI to continue its work to identify practical international solutions to rights management issues

- Investigate some of the scenarios already in the marketplace and examining the extent to which they might be more broadly applicable. Agreeing revenue shares between different parties within the broadband supply chain will remain a matter negotiation.

- Make recommendations on how to overcome the risk barrier so that business models can be agreed, DRM solutions can be delivered and high value creative content can become available to consumers.

3.6.2 Government support for the content sector

There has been a lot of work between the DCF, DTI and BSG on content related issues, including on content initiative development (Rec 5.1), Broadband Beacon Projects (Rec 5.2) and Tackling the skills needs of the content sector (Rec 6). Are progressing well. The OC&C report takes these issues forward including further recommendations and the BSG is awaiting the government's response to the OC&C report.

3.6.3 Review Broadband Interconnect and Interoperability Issues

Investment in broadband access will depend on the demands for bandwidth generated by consumers on the one hand and by content and service providers on the other. In other words, consumers will demand access, increasingly more quickly, to a growing range of content and services, and content and service providers will innovate to satisfy this demand and produce more bandwidth hungry applications.

This suggests that the 'any-to-any' model of the telephone world will, ultimately, be appropriate in the multimedia world, so that any consumer can reach their chosen content/services via their chosen equipment and access network.

In turn, access networks will need to become multi-service networks with content and services being created for delivery over different networks, using different technologies, to consumers, who will be using different types of consumer equipment, and who will either be static or on the move. This is already creating new interconnect and interoperability challenges and will continue to do so.

For example, for many consumers, access to the internet could be via the TV, instead of via a PC. The TV is also a logical display for video based services, such as video-on-demand (VOD). However, TV displays have different characteristics to those used for PCs and this implies the provision of content tailored for that form of display. It is desirable that this content should be as similar as possible to that used for PCs and other user terminals so that the costs of content creation are minimised.

The market is having to develop new services, such as content re-authoring and interoperable software and protocols, and find solutions to issues of IPR, DRM, content filtering, network security, etc.

At the same time, regulators are considering whether intervention is necessary in any of these areas. However, in such a nascent market as broadband, it will be important to ensure that investments in any part of the supply chain between the consumer and the content/service creator are not compromised by intervention in another part of the chain.

Recommendation 6:

Oftel together with the BSG to address issues related to broadband interconnect and interoperability

6.1: Interconnect and interoperability

- Regulators and the Industry must take forward work to understand the various interconnect and interoperability issues through the supply chain from consumer to content creator so that any decisions that may effect a nascent market do not limit the scope for evolution.

6.2: Linking broadband with the Digital TV Action Plan

- Government must ensure that its strategies for broadband and digital TV are joined up to ensure a more coherent approach to access to interactive services whether via the TV or PC. Closer links should be established between the BSG and the Digital Television Group in relation to their work on enabling internet access via the TV, which involves the development of a common format for authoring such content. Decisions related to consumer equipment standards or terrestrial broadcast systems in the Digital Action Plan should take account of possible changes to consumer needs for a wide range of high bandwidth services to be available over the same access network.

3.7 Increasing ease of use and ensuring quality of service

Industry can and must do more to innovate and invest to improve the usability and reliability of broadband equipment and services. Making the broadband experience more plug and play, making the installation processes easier and meeting and improving upon customer expectations for service delivery.

The introduction of self-install ADSL products is a major added benefit as users don't have to wait for engineers to come and install equipment. Consumers expectations for quality are high and they are intolerant of services that fall short of their expectations. As we are now seeing in the more established broadband markets such as Korea, consumers are quick to understand quality issues and service providers have to work hard to maintain their reputation in order to avoid churn and to attract new subscribers. Tolerance of breaks in service, shown by current early adopters is likely to diminish over time and the future of broadband services will depend on the ability of providers to provide truly always on continuous service, that meets the advertised specifications and is supported by effective customer support.

Recommendation 7:

Oftel together with the BSG to keep broadband Quality of Service issues under review:

- Oftel has agreed that quality of service is important to consumers and is monitoring the situation. Practical problems exist with setting minimum standards for end-to-end performance. BSG Regulatory working group will continue to monitor and review this issue with Oftel.

3.8 Addressing security, trust and confidence issues

Trust and confidence

A wider acceptance and usage of ecommerce channels is likely to greatly benefit broadband take-up. Essential to this is building consumer and business trust and confidence. Broadband users share the same concerns regarding using the world wide web for e-commerce as dial-up users, however, the risks relating to transacting online are for the main part more perceived than real. Industry has gone to great lengths to address this issue – both in terms of technology and process. The current challenge is to make consumers and business more aware of measures taken. This is something that UK industry has taken steps to address both through the establishment of bodies to ensure best practice is adhered to (i.e. tScheme[38] and TrustUK[39]) and the raising of awareness of security issues (i.e. AEB Web-security Guidelines[40] and SAINT[41]).

Security

Broadband users do need to be more aware of security issues as the always-on constant connection can increase the risk of either viruses or malicious control and/or access of the machine ("hacking"). Users need to be informed and aware of the straightforward measures they need to take to protect themselves (installing firewalls, up-dating anti-virus etc.) in order to mitigate these risks. Raising awareness of these specific issues is also being tackled by industry and government – in a manner following the example of the USA, which recently launched a cyber security website offering a very basic and easy to comprehend approach[42]. Users need education on these issues in a manner that does not cause undue alarm and have access independent and good quality advice on how to ensure that they are protected; this is what industry will provide through initiatives such as SAINT[43].

BSG recognises that work is being done to address these issues and supports the actions being taken by a range of government and industry bodies and does not see a need for additional recommendations on this issue.

[38] www.tscheme.org
[39] www.trustuk.org.uk/
[40] www.intellectuk.org/publications/business_guidance_papers/web_sec_guidelines.pdf
[41] www.intellectuk.org/saint
[42] www.staysafeonline.info/
[43] www.intellectuk.org/saint

3.9 Increasing use and take-up by public services

The government has taken a number of steps forward to the aggregation of demand for both broadband access and content, applications and services (see above). The BSG will continue to work with OeE and UK BB Task Force to share knowledge and best practice on gaining user benefit in the public sector from the deployment of broadband. Our primary focus has been on education.

The BSG is establishing a health sub group in light of the NHS's significant commitment to broadband and have proposed that there should be an NHS Broadband Stakeholder Group.

Broadband in Education

Education can be one of the biggest drivers of demand for broadband services. As seen in South Korea the "killer" combination of education and entertainment was a key driver of consumer demand for broadband with young people being primary adopters, and marketing targeted towards parents and their concern for their children's educational welfare. The UK government has recognised the potential benefits of broadband for its own education policies and is actively pursuing this agenda. The BSG fully supports this, and is working together with key players in the education sector to look at how we can expedite the integration of broadband services into the daily lives of schools, teachers, learners and parents.

The BSG Education Working Group has been investigating barriers and opportunities for the exploitation of broadband in the education sector. The work of this group is ongoing and it will publish its full report in February 2003. However, a number of barriers have been identified and potential recommendations are currently being explored along the following lines.

Barriers to the wider deployment and use of broadband in education	
Lack of motivation to adopt broadband	There is low awareness amongst teachers, learners and parents about the educational benefits that broadband has to offer. Action is required to clarify and develop the broadband value proposition for education, in order to make this an educational pull rather than a technology push. One approach could be to create local broadband application champions in representative communities (backed up by regional support and resources) to identify and disseminate best practice from across the UK.
Fragmentation of funding, activity, demand/ supply, administration, benefits, content etc	Authorities (LEAs, RDAs etc) should be given clear guidelines on acceptable practices for combining funding from multiple sources (paying particular regard to state aid rules etc) Schools should be given advice on how to aggregate their ICT demand cost effectively. Schools could be provided with incentives to find best use of broadband for administration and management, as well in the classroom.
Disjunction of technology, pedagogy, assessment, curriculum and QA	e-learning will need to be fully integrated into education. It needs to be embedded within current educational targets.

Lack of a model for sustainable private sector investment	Living health was widely acclaimed as a very successful pilot project but was ended 1 year ago and no decision has been taken on rolling it out nationally. Need more sustainable funding models. The allocation of funding on an annual basis does not allow for sustained private sector involvement in public/private partnerships (particularly for projects which require some form of infrastructure investment). Funding programmes therefore need of a longer duration (3 years). Explore options for the creation of small-scale research pilots to look at the benefit of broadband for pedagogy models, in terms of creating a richer learning environment. Government should then set appropriate targets to encourage teachers and learners to use broadband material within the curriculum.
Lack of accessibility	Lack of ubiquitous coverage and access to broadband services needs to be addressed through demand aggregation in order to prevent an increased digital divide (see chapter 4).

Recommendation 8:

The BSG will publish a report on the opportunities and barriers to the use of broadband in education (in conjunction with the DFES) by February 2003

Curriculum Online

Whilst there are some difficult commercial issues and disagreements in relation to the proposed curriculum online initiative, the BSG believes that it is imperative that all parties concerned strive to achieve rapid resolution of these issues. The provision of high quality immersive learning tools online that are linked to the national curriculum will have a significant positive impact on both educational outcomes and the demand for, and take-up of, broadband services in the home and this issue should be unblocked as quickly as possible.

Recommendation 9:

Obstacles to curriculum online should be unblocked as quickly as possible.

CHAPTER 4. EXTENDING BROADBAND COVERAGE AND INCREASING COMPETITION

4.1 Introduction

Approximately 67% of the UK has access to a mass-market broadband solution – that is one that is targeted at residential or small business users [whilst ubiquitous satellite services are available, they continue to be priced at a premium to terrestrial solutions].

Significant barriers persist to the extension of mass-market broadband coverage. In the BSG's view, continued, concerted action is required to further extend the percentage of the population with access to broadband services. This is essential for both regional economic development and social inclusion. Further action is therefore required to enable market driven solutions for the wider provision of broadband access. In some areas of the UK public sector funding may also be required to ensure coverage and regional authorities will have a pivotal role to play in harnessing private sector investment, regional funding and public sector demand.

Whilst the BSG's role is primarily to advise the government on meeting its broadband targets for 2005, there is also a need to plan beyond the current generation of broadband technologies and consider upgrade paths and migration strategies for the introduction of the next generations of broadband that will provide higher bandwidth, improved quality of service and facilitate true broadband interconnection and interoperability.

This chapter seeks to address both: a) How we can further develop the broadband market so that by 2005 we meet the extensiveness and competitiveness targets set by the government; and b) Looks beyond 2005 at how we can enable the provision of next generations of broadband services.

However it is important to recognise that demand uncertainty remains one of the biggest barriers to extending coverage. Further infrastructure investment is dependent upon increased take-up of broadband services where they are currently available (see Recommendations in Chapter 3).

Broadband coverage and population density

There is a close correlation between broadband coverage and population density as the average cost per user of deploying new technology in less densely populated areas is significantly higher than in urban areas. Economies of density are a primary factor in determining the cost effectiveness and therefore commercial viability of providing new or upgrading existing local access networks[44] in any given area. High economies of density have usually been a key success factor in countries where there has been very rapid deployment of broadband such as South Korea[45]. Unfortunately, almost a third of the UK population lives in areas of relatively low population, making the commercially sustainable provision of broadband access more difficult.

As a consequence in the UK broadband availability is highest in urban areas (95% coverage) and suburban areas (58% coverage) but declines significantly in market towns (26% coverage) and becoming scarce in rural villages (7%) and almost non-existent in remote rural areas (1% coverage).

[44] During the late 90s there was heavy investment in backbone infrastructures leading to the oversupply of capacity in trunk networks. However, this investment was not matched by investment in the local access network and it is this part of the network that is currently the bottleneck for pervasive mass-market broadband access.

[45] Source: Investigating Broadband Technology Deployment in South Korea, Brunel/ DTI July 2002

Economies of density are a factor for both fixed and wireless technologies, although wireless has greater potential as an economically viable broadband access technology for less densely populated areas. Population density is not a constraint for satellite services, which can provide ubiquitous coverage.

Distance is also a major constraint for DSL technology as DSL cannot be deployed over copper lines longer than 5.5km. (Oftel estimates that 10% of customers connected to BT's DSL enabled exchanges live too far from the exchange to obtain DSL. This percentage is likely to be much higher in the more rural exchange areas that have not so far been enabled).

The impact of the current investment climate

The high costs of extending coverage are exacerbated by the challenging financial conditions currently facing by the ICT sector. The current funding problems experienced by many telecoms operators are obviously slowing the growth of broadband. It could be argued that this is not really a market failure as such, but is simply a reaction to the excessive hype and valuations given to telecoms operators prior to March 2000. Market conditions will stabilise, but it appears that this could be a slow process and so access to capital will continue to be a major constraint on the development of broadband and the UK. This is a factor that must be recognised by both the government and the regulator.

Increasing competition

Progress in LLU has been very limited over the past 18 months. Since the implementation of co-mingling, orders in recent months have increased, with over 1100 lines unbundled by the end of August 2002.

In retrospect, LLU was probably wrongly regarded as a panacea for wider availability and increased competition in the broadband market. LLU has been a problematic in a range of countries (e.g. Italy and France), with continual tension between incumbents, new entrants and regulators. Nevertheless, the competitive framework has been set and as the OECD noted recently, " policies such as local loop unbundling are driving the development of broadband access for business ... and placing competitive pressure on incumbents to bring down prices and augment their own broadband access services"[46]

New routes for enabling infrastructure competition

Nevertheless the lesson being drawn from the LLU experience is that, as the OECD argued, "infrastructure competition [facilities based] continues to be the best way to develop broadband access"[47]. This view was echoed recently by Michael Powell, Chairman of the FCC who stated that facilities based competition was critical to the future development of the broadband market, as it was the only way for new entrants to 'bypass incumbents' and provide 'true product and price differentiation to consumers. Powell concluded, that in the current financial climate, the need for new facilities would require a new regulatory approach including incentives to encourage re-investment in the sector based on sound economic fundamentals.

One approach advocated by some players in the industry would be for the forced separation of BT into a Net Co. (providing infrastructure) and a Service Co. (providing services) an argument recently re-iterated in a paper by Demos[48]. This issue has been discussed within the BSG but is not widely supported on the grounds that it will not help the UK meet its objectives for broadband deployment by 2005 (in fact it could be counter productive) and would not create a competitive access market for the future. Nor does it address the real issue of how to create a

[46] OECD Broadband Access for Business, August 2002
[47] OECD Broadband Access for Business, August 2002
[48] Demos, The Politics of Bandwidth, October 2002

market that will attract the investment required to modernise the local access network and deliver the full potential of broadband over the next decade.

However, other routes do exist for increasing infrastructure competition, including enabling the commercial deployment of a range of wireless broadband technologies and facilitating the provision of third party provision of civil infrastructure[49] (ducts, poles, masts and buildings).

The BSG believes that wireless broadband technologies have the potential to make the biggest impact on extending coverage and enhancing facilities based competition by 2005. Joint investment action through public and private partnerships on a regional or local community basis could also play a role in extending coverage and stimulating demand. Beyond 2005, both wireless and third party provision of civil infrastructure could help to enable further long-term investment required for the next generations of broadband.

[49] i.e., other than that provided by licensed communications operators

4.2 Barriers to extending coverage and increasing facilities based competition

Barriers to the further extension of coverage and increasing facilities based competition	
Closed financial markets	As a result of the over valuation of the TMT sector in the 1990s, the oversupply of capacity in backbone networks the over exposure of the financial sector to telecoms pre March 2000, and the negative impact of 3G licence fees on operators debt ratios and credit ratings, the ICT sector is now facing extreme negative sentiment in the financial markets, resulting in a massive decline in capital flows for network investment.
Low economies of density	Less densely populated areas offer poor economies of density for network provision resulting in high rollout costs per user making the business case for investment in these areas marginal or negative.
Equipment Costs	Although equipment costs have fallen significantly over the last 12 months as vendors compete for scarce orders from operators, equipment costs remain a significant cost and a major barrier to the rollout or upgrade of new networks.
Civil Infrastructure costs	65-70% of the cost associated with the deployment of new fixed local access networks is related to civil infrastructure, i.e., the trenches, ducts, poles, masts and buildings.
Lack of appropriate spectrum	Appropriate spectrum is required to enable the rollout of low cost mass-market broadband wireless services equivalent to DSL/ Cable. Given the current financial constraints on the market operators have not yet been able to launch viable services using the spectrum frequencies currently available.
Demand uncertainty	Uncertain demand (current low take-up levels where broadband has been made commercially available (6.2%) make it difficult to justify investment in low density areas with a lower projected ROI.
Regulatory uncertainty	Commercial operators making long-term investment decision must take a careful assessment of any regulatory risks they may face in the short and long term. Current industry concerns relate to: the role and duties of OFCOM; threat of lane rental charges; uncertainties about the threat of content regulation being extended to the Internet; cost impact of threatened data retention obligations; imposition of new price controls on mobile operators; and, the risk of 'broadband access' becoming a relevant market under current European Commission proposals.
Technology limitations	• ADSL – Distance limitations, bandwidth, contention • Cable – Requirement for new civil infrastructure • BWA – Needs suitable spectrum and affordable CP equipment • Satellite – CP equipment costs, and latency • Fibre – Deployment cost • WLAN – interference, backhaul requirement

4.3 Solutions to extending coverage and increasing facilities based competition in grey and red areas.

Recommendations:

- Encourage and promote demand registration schemes to provide a reliable indication of growing demand
- Facilitate the deployment of new mass market wireless broadband alternatives to DSL/ Cable
- Facilitate infrastructure sharing to reduce capital requirements for new service provision
- Reduce regulatory uncertainty for operators and investors by ensuring that both sector specific and non-sector specific regulation supports broadband objectives
- Actively encourage and enable pragmatic public sector demand aggregation
- Encourage the RDAs, devolved administrations and local authorities to develop effective public private partnerships to extend coverage (particularly for red areas)

4.4 Encouraging local demand registration schemes

A number of operators, including Liberty Broadband and BT have launched demand registration schemes in order to target their investment to areas where there is a demonstrated level of demand. These schemes have been successful where local community groups have actively campaigned to encourage local residents and businesses to sign up for broadband.

BT has stated that upgrades of further exchanges will only be carried out where clear demand indicates commercial viability. To this end, the company has announced the levels of demand necessary to trigger upgrades of further exchanges and established a scheme to measure potential customer demand in the 653 exchange areas being considered for upgrade. To date, 16 of these are now in the process of being upgraded and 29 more have passed their pre-registration trigger levels and are being confirmed.

Recommendation 10:

Regional and local government should encourage and promote local demand registration schemes to provide a reliable indication of growing demand

4.5 Facilitating the deployment of new wireless broadband alternatives to DSL/ Cable[50]

In addition to 3G (UMTS) services which are currently being deployed to deliver higher speed mobile data services, there are a number of other wireless technologies that can be exploited to provide a) mass-market broadband services in areas that are currently un-served by cable or DSL and b) increased competition where fixed line services are available.

As noted above, 30% of the population are currently without access to a broadband service. 30% of the population is approximately 18 million people. The BSG believes that by using an appropriate selection of wireless technologies all these people can be provided with a service. Furthermore, by using high capability wireless systems where needed, adequate transmission capability could be provided to even the most demanding users. Wireless schemes therefore have a very significant role to play in the achievement of Broadband Britain in the desired timescale.

The key advantages that wireless access systems offer include relatively fast, cost-effective system deployment; coverage from dense urban through sparse rural situations; easy installation and roll-out; improved user bandwidths; nomadicity/ portability or even full mobility. Clearly not all advantages are attainable simultaneously, but a judicious national mix of conventional (wired) and wireless systems constitutes a much sounder policy in terms of supporting the range of user profiles, geographical and regional economic considerations and of simply making the broadband landscape more competitive.

Critically, the ability to deliver low cost mass-market wireless solutions to complement equivalent fixed line services such as ADSL and Cable depends upon the availability of appropriate spectrum. Not all spectrum is equal, some frequencies have the right combination of physical properties such as range achievable and data capability (for a given service) which results in that band being very much more suitable than other bands for the provision of commercially viable mass-market wireless broadband services. So far, very few services targeted towards residential users have been launched using the frequencies currently available, mainly because the frequency properties do not allow for commercially sustainable low cost products (given the current financial constraints facing the sector as a whole, operators need to have very robust business models in order to secure investment funding for new networks).

By prioritising spectrum to support the commercial needs of broadband users, the government could significantly improve the economic gain achieved for the Nation from the use of the spectrum and, in so doing, the commercial case for rapidly deploying new wireless broadband services to areas beyond the existing broadband coverage areas and facilitate increased infrastructure competition more generally. To do this government would need to prioritise the provision of spectrum for wireless broadband, over other uses, controlled by the government.

Given that wireless services can be deployed relatively quickly, their facilitation (through the provision of appropriate spectrum) could rapidly improve the availability of broadband services.

UMTS (3G) is part of a family of wireless technologies that were developed to provide high data throughput, operators-class mobile broadband connectivity to a broad range of users. Rather than compete, UMTS complements Wireless LAN (WiFi) 802.11 and FWA in the UK's broadband infrastructure. UMTS makes other wireless access technologies, as well as fixed broadband networks, more powerful by offering a mobile component.

In summary, the reason that wireless deployment is not as widespread as it could be is because of spectrum limitations and regulatory barriers.

[50] For the full report of the BSG Wireless working group see www.broadbanduk.org

A full and detailed overview of the wireless situation, together with a summary of the range of terrestrial and satellite wireless access systems that could be deployed and the measures that are necessary to remove impediments to their rapid exploitation is available on the BSG web site (www.broadbanduk.org)

Following are a number of wireless related recommendations, which when implemented will significantly assist in increasing broadband deployment in the UK while also promoting a more competitive environment. Naturally, the major thrust of several of these recommendations revolves around the issue of ensuring prompt availability of sufficient, appropriate and affordable radio frequency spectrum and under fair and reasonable terms.

Recommendation 11:

Government must facilitate the deployment of wireless broadband alternatives to DSL/Cable and develop a strategic plan for wireless broadband.

11.1 Prioritise More Spectrum for Broadband in Appropriate Bands.

- The government should prioritise the deployment of broadband services when deciding policy on spectrum allocations in the bands appropriate to the service intended.

- Wireless technologies offer the greatest potential for providing mass-market broadband services to parts of the country that are currently un-served and their timely deployment will be crucial to the achievement of the Broadband Britain objectives by 2005. Recognising that the commercial viability of a proposal is dramatically affected by the operating frequency it is crucial that the right band is made available for the particular service intended.

11.2 Spectrum Assignment on the Right Terms

- Spectrum assignment processes must result in terms and conditions that enable the deployment of broadband services to 'grey' and 'red' areas to become viable. Access to the spectrum prioritised for broadband wireless will be significantly improved through appropriate radio spectrum assignment processes that balance the wider objectives of Broadband Britain with the commercial realities in the current economic climate.

- This will stimulate the timely rollout of extensive wireless technologies. New and innovative approaches for achieving this should be explored immediately and implemented in a defined, appropriate manner. Any approaches should take account of the opportunities afforded by the variety of the frequency bands, technologies; delivery mechanisms available; the possibilities for cross-service provisioning; different licensing frameworks; and CEPT / International harmonisation.

11.3 Innovative Approaches for Backhaul Infrastructure.

- Government, working with Regulators, Regional Development Agencies, Local Authorities and industry, should examine ways to improve the availability of backhaul infrastructure to address areas that are currently underserved.

- Wireless delivery requires adequate back-haul infrastructure, much of which may also be provisioned by wireless systems. Recognising that backhaul infrastructure already exists to support specific public service connections, e.g. education, the government working

with RDAs, Local Authorities and Industry should immediately explore ways of extending this concept to increase capacity and availability through appropriate partnerships. This could also be achieved through third party provision of Civil Infrastructure. This would encourage competition in currently served areas (green and white) and provision of broadband in more difficult to reach areas (grey and red).

11.4 Government Services Online in "Grey" and "Red" Areas

- Given the UK Government is a major user as well as provider of broadband services and infrastructure, and given the need to ensure that these services are available in "grey" and "red" areas, it is essential that the government provides leadership in the use of wireless broadband**.**

- Given the UK government is a major user as well as provider of broadband services and infrastructure, and given the need to ensure that these services are available in "grey" and "red" areas, it is essential that the government provides leadership in the use of wireless broadband.

11.5 Planning and Rights of Way - The government must ensure that planning and rights of way issues do not impede the deployment of broadband services to people in 'grey' and 'red' areas.

- Noting the ODPM review is near conclusion and a consultation will be soon issued as part of a process of addressing these maters. We support this process and look forward to this approach in addressing all other similar matters of this nature.

11.6 A Strategic Plan for Wireless broadband In order to ensure that the objectives for Broadband Britain are met by the 2005 deadline a time-plan with wireless broadband milestones should be included in the UK government's broadband Strategic Plan.

- To enable Broadband Britain objectives to be achieved by 2005, the government needs to adopt in full the five inter-related wireless recommendations immediately and implement an appropriate, co-ordinated government action plan in pursuit of these recommendations to capitalise on the significant Industry investment in recent years. The BSG is keen to work with government, RDA's, and Local Authorities in implementing these objectives.

4.6 Facilitating infrastructure sharing to reduce capital requirements for new service provision

It is generally acknowledged that significant capital is required to achieve wider scale broadband roll out. Because a substantial part of the capital requirement, particularly at the local access network level, is for civil infrastructure, i.e., the trenches, ducts, poles, masts and buildings needed to accommodate the transmission networks, the BSG has reviewed options for making more efficient use of capital for this primary infrastructure.

If this can be achieved, a greater proportion of available capital could be allocated to the secondary and tertiary infrastructure levels, i.e. the transmission systems and the network intelligence and services.

Although this might be more important in the case of fixed local access networks (where 65-70% of the capital cost is for civil infrastructure), and although the practice of infrastructure sharing has become more developed in the mobile sector, the BSG believes that the recommendation is equally appropriate to fixed and mobile access.

The BSG has concentrated on sharing of existing, fixed network infrastructure and has also reviewed the option of third party provision of civil infrastructure. The conclusions are outlined below.

Existing infrastructure

Following a recommendation in the BSG 2001 report, the BSG reviewed the options for sharing existing infrastructure and has taken account of Oftel's publication on the duct and pole sharing.

The BSG concluded that the sharing of existing ducts, poles and trenches by fixed network operators could be beneficial for improving the availability of broadband access. The BSG considers that further action (i) to produce a template of contractual provisions for renting duct space or pole capacity, and (ii) to agree codes of practice to ensure safety and good engineering practice in work on shared facilities would be useful.

New build infrastructure - third party provision of 'civil infrastructure'

The BSG considers that there is a prospect of achieving significant progress in the area of new build infrastructure. There are current examples of operators sharing trenches, ducts and masts in appropriate circumstances but this practice is relatively rare in the key area of the first/ last mile of the access network.

Over the past year, the BSG has become aware of the interest of some local authorities, together with commercial partners, in establishing local network ventures, to accelerate broadband provision in their communities. The BSG felt that best practice guidelines should be produced to ensure that any such initiatives would complement, rather than conflict with, the activities of existing operators.

The BSG also believes that broadband deployment might be extended by enabling third parties to provide such infrastructure. As this platform would be available for use by competing access operators, it would encourage multi-operator, multi-technology competition in the local network in areas where competing access infrastructures would not be commercially viable.

The 'third parties' could include RDAs, local authorities, community groups, construction companies or financial institutions coming together in an attempt to facilitate the provision of broadband access in their areas. The concept could develop as follows:

- The local or regional authorities would decide to ensure the creation of civil infrastructure suitable for telecommunications networks (ducts, manholes, masts, co-location sites etc.) in their area and look for commercial partners.
- The partnership would finance and construct the infrastructure.
- The infrastructure would be leased to operators of both wireless and fixed networks at non-discriminatory prices.

For such a model to work, it would be necessary to address the regulatory and commercial barriers to third parties providing such facilities. The regulatory issues include making the Code Powers currently applicable to communications companies available to civil infrastructure providers and ensuring that the provisions of the Communications Bill accommodate this requirement.

In particular, the definition of 'associated facilities' in relation to 'electronic networks and services', as currently incorporated in the Communications Bill, would include the civil infrastructure. Ideally, independently provided civil infrastructure should fall outside this definition.

The commercial viability of such ventures could be enhanced by providing for only one independent civil infrastructure in any area – in addition to those installed by licensed communications operators. This could be implemented by the grant of concessions for limited periods of time to private companies to deploy and manage civil infrastructures in the areas concerned. In such cases, the risk of investment would lie with the private sector. The local/ regional authority would, of course, need to award concessions through open tender. The local/ regional authority might also use the aggregation of local government demand as the way to ensure 'an anchor tenant' for operators using the civil infrastructure.

An alternative approach would be to create public-private partnerships with the private partner managing the primary telecommunications infrastructure. In such cases, the local authorities may have to assume part of the risk. This may be necessary in the commercially non-viable areas. Aggregation of government demand for broadband services remains an important tool to ensure 'an anchor tenant'.

This option could reduce the cost of primary infrastructure, which has a much longer depreciation period than other parts of telecommunication networks (switches, routers, electronic and optical network devices, antennas etc.). Primary infrastructure resembles property from a financing perspective. It is a low risk, low return proposition similar to any other utility and, therefore, most suitable to be deployed and run as a utility.

Telecommunications transmission networks on the other hand are a higher risk, higher return investment. Capital for telecommunications operators tends to be priced on the basis of this higher risk despite the fact that a high percentage (often more than 70%) will be spent on primary infrastructure. As a result, the cost of primary infrastructure is likely to be higher than it would be if it was 'constructed' by a third party infrastructure company with a 'utility' profile.

There are, however, some conditions that would need to be applied for this model to be successful and to stimulate competition and growth in the sector:

- The third party civil infrastructure company, notwithstanding its ownership structure, should NOT be allowed to provide telecommunication services. Its only way to maximise returns should be to increase capacity in its infrastructure and be an ally to all operators.
- The third party civil infrastructure company should provide non-discriminatory access to all operators.
- Operators should be given the option to sell their existing ducts, sites, masts and co-location spaces to the third party infrastructure company.

For some areas of the UK, the commercial viability of broadband provision may be questionable even after the deployment of third party civil infrastructure. In such cases, local authorities may decide to create financial incentives to attract operators to provide services to the general public.

Recommendation 12:

Government should facilitate infrastructure sharing to reduce capital requirements for new service provision and develop practical steps to enable the provision of civil infrastructure by third parties

12.1 Third Party Provision of Civil Infrastructure

- That barriers to the provision of civil infrastructure by third parties should be removed, notably in relation to ensuring that the Code Powers available to communications providers are equally available to civil infrastructure providers and that the regulation of independently provided civil infrastructure can be handled, where appropriate, separately from the regulation of electronic networks and services.

- BSG to work with the DTI and Oftel to develop practical steps to take this issue forward.

12.2 Sharing Existing Infrastructure

- Further action (i) to produce a template of contractual provisions for renting duct space or pole capacity, and (ii) to agree codes of practice to ensure safety and good engineering practice in work on shared facilities would be useful.

4.7 Reducing regulatory uncertainty for operators and investors by ensuring that both sector specific and non-sector specific regulation supports broadband objectives

4.7.1 Ensure that sector regulation supports broadband objectives - The role of OFCOM

The powers of OFCOM, and how it implements those powers, under the new communications legislation could be pivotal to the achievement of broadband on a more universal scale.

In relation to the regulation of networks and services:
The provisions of the new Communications Bill must assist broadband development by creating a climate that will encourage long-term investment. In the same context, the BSG believes that broadband should be considered as a nascent market for some time ahead and, therefore, OFCOM should be required to provide a comprehensive impact assessment of any regulatory proposals in the area of broadband access to ensure that action in one part of the supply chain does not undermine competition and investment in another part of the chain.

OFCOM should also be required to report annually on how it has assisted broadband policies.

In relation to content:
For broadband to reach the mass market, high volumes of traffic will be necessary to underpin business cases. The BSG believes that current approaches to content regulation in the broadcast world, if extended to the multimedia world, could inhibit the value of broadband and, therefore, it believes that content regulation must relate to the amount of control and choice that consumers have over content. Industry's role should be to ensure that easy to use mechanisms are provided for conditional/controlled access to non-PSB content and that filtering is available for Internet content. It should also work with government to educate users on labelling, rating, filtering and access control.

4.7.2 Ensure that non-sector specific legislation is reviewed to assess its impacts on achieving broadband objectives

Because there is no coherent broadband programme across government, various pieces of legislation and the actions of different regulatory regimes are often in conflict with one another and represent barriers to rapid broadband roll out.

The BSG believes that there are a number of pieces of legislation/regulation that are not specific to the communications sector but which currently act as barriers to investment in 'middle mile' and 'last mile' infrastructure.

Three areas commented on below have been identified as having considerable current impact but these are not the only areas that could act against the government's broadband objectives.

The potential impact of various legislation and regulation on broadband objectives has to be assessed against the wider government agenda but the BSG is not convinced that enough attention is paid to this area.

Therefore, the BSG recommends that government should reinforce the e-policy principles for departments laid down by the e-Envoy's Office, as listed below, and that it could also undertake a cross government review of the major inhibitors to broadband roll out.

- Always establish the policy consequences for e-commerce.
- Avoid undue burdens on e-commerce.
- Consider self and co-regulatory options.
- Consult fully on e-commerce implications

In terms of current tangible impact, the following should be reviewed:

1. New Roads & Street Works Act provisions in relation to lane rentals, overstay charging and notice periods for certain road works
2. Non-domestic property rating

While these problems primarily affect fixed network operators, there is substantial crossover interdependence as a consequence of wireless operators' considerable reliance on fixed 'backhaul' connections to interconnect their transmission (and switching) sites.

New Roads & Street Works Act 1991

The New Roads and Street Works Act 1991 was introduced to provide a national framework for regulating street works. There are powers in the Act to bring in various regulations, some of which have been exercised and it is these powers that the BSG suggests will undermine broadband progress as follows:

- The Act requires utility companies to give advance notice to local authorities of all road works. This area is currently being reviewed in the context of the definition of 'major works', which could increase the notice period required for a wider range of works.

- The Act also included a power (under section 74) to enact regulations enabling local authorities to impose charges where road works were unreasonably prolonged. Regulations imposing these charges for overstaying were implemented (in England) on 1 April 2001.

- The Act was then amended to include a power (section 74A (2)) entitled "charges for occupation of the Highway" (more commonly known as 'lane rental') giving local authorities the power to charge a levy on utility companies for conducting works based on a daily rate. On the 4 March 2002, the government launched a pilot lane rental scheme within two local authority areas (Camden & Middlesborough) allowing them to charge utility companies £500 per day each time they dig up the road. The pilot scheme will last until 2004 at which point DTLR have said that an independent assessment of the schemes' success will be made with regard to whether or not the power will be made available to every local authority in England.

- Currently, a review of what constitutes 'major projects' is underway which could lead to some street works being subject to longer advance notice periods.

Not only do these schemes contradict government broadband policies, it is also likely that they will not achieve the objective of reducing traffic congestion because utilities works account for less than 50% of all road works. Notably, local authority & highway authority works are exempt from the schemes.

Charging utility companies a daily levy for conducting street works and charging for over staying is flawed because telecommunications companies are already striving to work as efficiently, using initiatives such as trench sharing where possible. The imposition of a daily levy would therefore NOT reduce time spent completing works.

Furthermore, because the lane rental proposal does not differentiate between works conducted at peak and off peak hours, there is no incentive for utility companies to conduct works outside of peak hours. Companies are further discouraged from working through the night as this would incur a double charge as a result of the charges being based on a calendar daily rate.

NJUG estimates that compliance costs would be in the region of £1.2billion nationally, equivalent to 8.5% increase in Council Tax. In terms of direct impact, although experience to date is limited, one operator has reported overheads of between 30-75% of the construction cost resulting from the scheme.

Non-Domestic Property Rating

Under current arrangements, some 75-85% of long-line fixed operators' exposure to property tax is in respect of their cable/duct infrastructure, as opposed to buildings. For wireless operators, this proportion is lower but the actual value depends on the specific mix of infrastructure and as to whether their backhaul links are self-provided, subject to indefeasible rights of use, or rented.

For companies seeking to enter the market, or for those wishing to expand their business into new areas, e.g. constructing 'middle/last mile' network infrastructure or using unbundled local loops to launch DSL services, the tax burden has seriously undermined the viability of a large proportion of business cases and has made access to capital and equity funding even more difficult.

There is also inconsistent valuation for tax purposes. Although the activity is essentially identical, there are three different approaches to valuation:

- Fixed operators with long established networks, such as BT and Kingston (within the Hull City boundary) pay property tax on the basis of the revenues they obtain from their network assets.

- new entrants are evaluated on the basis of their construction costs and
- Operators of cable TV networks are evaluated on the number of homes that their networks pass.

From a competition viewpoint, there is a fundamental need to establish a 'level playing field' particularly if public sector investment in civil infrastructure takes place as envisaged in Section 2 above. Such infrastructures would appear to attract no taxation when controlled by, say, a local authority, but would attract tax on being leased to a private company.

The 'constructors test' valuation method as applied to new entrants is calculated on the depreciated cost of constructing networks (decapitalised at a fixed rate from date of installation) at late 1990s prices, so operators are paying tax on a valuation basis, which is out of line with current written-down balance sheet values. New valuations will not take effect until the next review in 2005.

For new market entrants who have not yet become 'cash flow positive', the taxation is causing considerable delays in that stage being reached. Additionally, since new entrants are typically debt-financed during the start-up phase, property tax is damaging their chances of reaching long-term viability and acting as a very significant impediment to future competition.

For new entrant fixed operators, the consequence of the difference in evaluation methodologies has a further distorting effect when considering new network build, since new entrants are taxed on the entire construction cost, whereas incumbents pay only on the basis of incremental revenues.

Recommendation 13

Government should reduce regulatory uncertainty for operators and investors by ensuring that both sector specific and non-sector specific regulation supports broadband objectives.

13.1 Government must take account of the following issues in the Communications Bill:

- In relation to the regulation of networks and services: The duties and powers accorded to OFCOM must have regard to the need to create a climate that will encourage long term investment in networks, services, applications and content in line with Article 8 of the European Framework Directive.
- OFCOM should be required to provide a comprehensive impact assessment of any regulatory proposals in the area of broadband access to ensure that action in one part of the supply chain does not undermine competition and investment in another part of the chain.
- OFCOM should also be required to report annually on how it has assisted broadband policies
- In relation to content: Unnecessary barriers to content access (and to the flow of content and services) must be removed.

- Content regulation must relate to the amount of control and choice that consumers have over content. As a basic principle, the BSG believes that the government should support a liberal approach to non-PSB and Internet content based on horizontal regulation only. In other words, content that is 'pulled' by the consumer via any platform/medium should only be subject to general horizontal regulation (defamation, fraud, obscenity, data protection, customer protection, etc).

13.2 Government should reinforce the e-policy principles for departments laid down by the e-Envoy's Office, as listed below, and that it could also undertake a cross government review of the major inhibitors to broadband roll out.

- Always establish the policy consequences for e-commerce.
- Avoid undue burdens on e-commerce.
- Consider self and co-regulatory options.
- Consult fully on e-commerce implications

13.3 Government should work together with industry to pursue alternative solutions to issues related to street works that do not impair the rollout of broadband services.

13.4 Government should review the current regime for property taxes in respect of their application to cable/duct infrastructure.

- The government undertakes a review of the current regime/practices with a view to addressing the above shortcomings and assessing whether (a) there can be a reduction in the overall industry burden in line with EU policies and (b) a common basis for evaluation can be established that is consistent with principles of proportionality and affordability, and which is applicable throughout the converged Communications sector

- Outstanding appeals casework should be expedited and the appeals process, in respect of telecommunications operators, should be accelerated.

- For the period until 2005, when network assets are due to be reassessed, consideration of the granting of exceptional variations to taxation levels[51] where (a) this would act to correct unfair asymmetries and bring UK into line with EU policy, e.g. Framework Directive (Art 8), Authorisations Directive (Art 13), (b) where the public interest test is met and (c) where such changes would meet any relevant EU regulations, including State Aid.

4.8 Exploiting public sector demand aggregation

The Public Sector is expected to invest hundreds of millions of pounds in broadband connectivity over the next three years. All NHS primary care sites (some 25,000) will need broadband connections, as will all 18,000 primary schools. All 3,500 secondary schools and a proportion of

[51] Precedents exist in other UK industries which have faced serious and unexpected downturns, e.g. commercial property rental market, and Operators believe they can demonstrate that the market for rental of telecommunications network assets has fallen further than was the case in these precedents.

the primary schools will need much higher broadband connectivity to support video conferencing and multi-media applications. In addition, all NHS Trust sites (about 5,000) will need such higher broadband connectivity. Local authorities will increasingly require broadband to support "one stop shops" and other services, typically down to the level of market town. Some will require higher broadband connectivity to support CCTV projects. By the end of this year some 2,700 libraries will have broadband and a proportion of these will need to upgrade to higher bandwidth, particularly larger libraries in urban areas. Police forces are also adding to the demand, not least to facilitate learning on line for off duty officers.

In its 2001 report the BSG recommended that government should exploit public sector demand aggregation in order to help pull the supply of broadband into new areas. By aggregating public sector demand (i.e. combining procurement from different public services and bringing it to the market in a coordinated manner) government can act as an 'anchor tenant' for operators and improve the commercial case for rolling out networks in new areas. A number of significant developments have been undertaken by government in the last 12 months to take this forward.

Public Sector Procurement

Government recognised that public sector expenditure on communications was piecemeal and uncoordinated and in November 2001 the Prime Minister commissioned the Office of Government Commerce (OGC) to consider "what more could be done to help government department and others buy broadband more effectively."

The OGC broadband procurement feasibility study was completed in the spring. It recommended:

- the letting of central framework agreements by OGC enabling public sector organisations to buy commodity broadband services, more efficiently, whilst ensuring value for money;
- that OGC and the NHS Information Authority should work closely together in procuring the successors to the Government Secure Intranet and NHSNet, and should jointly contract for services where appropriate;
- the establishment of a small central broadband procurement team in OGC to provide information, advice and guidance to public sector organisations (and, where appropriate, to suppliers).

Framework Agreements are now being established by the Office of Government Commerce (OGC). They will enable public sector customers to buy broadband services at advantageous rates without requiring a separate procurement for each purchase. The Frameworks will be awarded next spring (2003).

The services are aimed mainly at smaller sites (including but not limited to small regional offices, primary schools etc) and teleworkers and are intended to ensure that public sector users throughout the UK are able to gain access to high-speed connectivity. The frameworks will provide customers with a 'one-stop-shop' for the procurement of commodity broadband services and relieve them of the costs of managing their contract(s).

The OGC and DTI broadband teams will work together, with major stakeholders, to provide a co-ordinated central operation for developing the capability of purchasing authorities and sharing best practice across the public sector.

UK Broadband Task Force

The DTI is also establishing a UK Broadband Task Force to encourage the aggregation of public sector demand and to seek to improve the availability of broadband for the private sector. Twelve

Regional Coordinators, working in close cooperation with the RDAs and Devolved Administrations will be responsible for identifying best practice in the aggregation and transferring knowledge between the regions and devolved administrations. They will also expected to create or expand local groups of public sector users and build on the work of the Regional Broadband Consortia and other existing groupings of public sector broadband users.

The task will not be easy. The public sector bodies concerned have demanding targets and timescales relating to the use of broadband to deliver better public services, and some may be reluctant to engage in any activity that might see these threatened. It will be important, therefore, for the Task Force to develop business models that demonstrate the benefits of aggregation for the individual public sector bodies as well as the community as a whole. The Task Force will also need to identify the barriers that inhibit or constrain aggregation and work with the relevant departments to remove these.

Progress and Barriers to Public Sector Aggregation

As outlined above the original BSG recommendations on demand aggregation have been acted on. Good progress has been made in creating local and national frameworks. A number of pilots have shown what can be achieved. Others have, however, run into problems, highlighting the perceived obstacles. At least some of these obstacles are illusory but the mechanisms for passing information on good practice across departmental boundaries are weak.

There is widespread mythology as to what cannot be done for example:

- because of the EU procurement rules:
- because of academic/public sector discounts,
- because of data protection
- because of Treasury accounting rules" etc.

There is a clear need for authoritative, cross-departmental guidance as to what can and cannot be done under existing legislation without waiting for change. There may be a need for changes in the rules but it may also be that the current rules are perfectly adequate, provided they are correctly followed - without the addition of local departmental constraints. The need for improved guidance applies to suppliers as well as to buyers.

Public Sector Aggregation

We need to move rapidly to build on what has been achieved to date and create frameworks which enable the initiatives of DTI, DfES, NHSIA, OGC, ODPM et al to be aggregated at both local and national levels, while removing perceived obstacles (some genuine, many not) to co-operation.

Private Sector Aggregation

There is also evidence that large private sector organisations which require hundreds and thousands of broadband connections across the UK are becoming frustrated at their inability to place "one-stop-shop" connection contracts. The reasons given are varied but there is a need for rapid action to create a clearing house to aggregate that demand of national, as well as regional, players.

We need to create frameworks which enable the Private Sector to aggregate their needs, and to develop a simple and effective way to aggregate that demand on a local and national level. The barriers on data protection are perceived to be the largest obstacle to this happening

Recommendation 14:

Government should actively encourage and enable pragmatic public sector demand aggregation.

- Officials and their potential partners and suppliers should be tasked to build on what has been achieved to date (including, for example, by the inter-departmental group responsible for the support guidelines for the UK Online Centres) and further increase co-operation across departmental and public/private boundaries.

- Government should set clear guidelines as to what can be done/shared when aggregating demand and disseminate best practice for the implementation of pragmatic aggregations schemes

4.9 Encouraging effective public private partnerships

Local and regional government and the devolved administrations must provide leadership in facilitating the wider availability of broadband services in grey and red areas.

Public / private sector partnerships also have a major role to play in extending coverage and stimulating demand. A very good example of the power of broadband to stimulate community development is in the pioneering project in Cornwall under the ActNow banner. This is a ground-breaking partnership between BT, the South West of England RDA, Cornwall County Council, local business organisations and colleges. Crucially, Cornwall has focused on action to stimulate demand from day one of the project. It has not just been concerned with technology or infrastructure. As a result, the first 1000 customers were signed up within four months of the project start, based on the first six exchanges that were DSL enabled. This, in turn, triggered the enabling of the next three exchanges in the project.

The Cornwall project, and others in the UK, demonstrate some key principles that lead to successful project implementation:

1. Working in Partnership: with the private sector, local authorities, development agencies, the education sector, business support organisations and, crucially, local communities themselves all engaged in the creation and implementation of a broadband development plan;

2. Investment: with shared investment, shared risks and staged roll-out;

3. Focus on the People: the real determining factor in the creation of a healthy broadband market is people, the users. Successful projects focus on motivating people, not just manipulating pipes;

4. Purpose: ensuring that there are a range of compelling applications that mean something to local communities, businesses and individuals;

5. Support: providing high levels of support, training and other help, including financial incentives.

Recommendation: 15

The new UK Broadband Task Force should work with the RDAs, devolved administrations and local authorities to develop effective public private partnerships to extend coverage (particularly for red areas).

- The UK Broadband Task Force develops case study material to demonstrate the focus, benefits and value of current partnership projects such as ActNow, and that these should be disseminated between regions, devolved administrations and other stakeholders.

- The new regional coordinators from the Task Force should spend a significant portion of their time working to facilitate the development of such partnerships, and be required to report on progress. That the DTI, the Treasury and other government Departments consider ways in which funding can be targeted at such partnerships, including making the case in Europe for flexibility in the application of rules relating to State Aid.

Annex

The following documents are available as annexes to this report on the BSG website (www.broadbanduk.org).

Annex 1	UK Broadband performance dashboard This short document presents definitions of BSG broadband dashboard indicators including price, choice, regulation, availability, addressable market and take-up and rankings for G7 countries
Annex 2	Update on broadband programmes in Scotland, Wales and Northern Ireland
Annex 3	BSG Wireless Working Group Report on options and opportunities for wireless broadband deployment in the UK.

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