



# Leicester Shire: Intelligent Landscape ICT Strategy

## Technical Appendices

(Supporting the Research Report)



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## 1. Introduction

- 1.1 The Leicester Shire Economic Partnership (LSEP) commissioned DTZ Piedad Consulting in September 2003 to develop an ***Intelligent Landscape ICT visioning strategy for the Leicestershire sub-region*** (representing the area of the County of Leicestershire).

The overarching objective of the ICT strategy is to identify the ICT needs of Leicestershire in 2010 and to present a vision of how these needs can be met. Within this, the assignment brief set out the following specific objectives

- identify the ICT needs of the City and County in 2010
  - present a vision of how these needs can be met
  - sets out a roadmap for the implementation of the infrastructure, services and skills development required
- 1.2 The assignment brief identified how ICTs are identified as a key cross-cutting theme within LSEP's economic regeneration strategy for 2003-12 and are identified as particularly important to economic competitiveness and future prosperity. Specifically, the brief sets out how ICTs will underpin success in four key strands of the strategy
- People and skills
  - Enterprise and innovation
  - Land and buildings
  - Sustainable communities
- 1.3 The overall ICT vision that has been adopted is:

*...By 2010, all citizens and organisations in Leicestershire will have the knowledge, confidence and skills to effectively harness the power of information and communications technologies (ICTs) to support economic vitality, lifelong learning, social cohesion and the delivery of modern public services in the sub-region...*

### SCOPE AND PURPOSE OF THIS DOCUMENT

- 1.4 Our work has resulting in a number of documents:
- The strategy itself – prepared by DTZ Piedad Consulting and finalised by LSEP
  - A 'research report' that sets out the supporting research, investigation and analysis undertaken.
  - **This document** - separately bound 'technical appendices' providing background material

- A report providing guidance on the key issues, topics and options open to local planning authorities when considering how to influence the provision of broadband in their areas through the planning process

## 2. List of Consultees

2.1 We have consulted with over 30 stakeholders in Leicestershire in order to discuss the workshop findings in more detail, to determine the ICT issues that need to be addressed to allow stakeholders to achieve their objectives, and to determine and discuss potential ICT interventions that could be implemented as part of the ICT strategy for Leicestershire. We would like to thank all for their time and their input into this strategy. The names of the consultees that we consulted **with face-to-face** are given below:

- **Julie Bellm**, Leicestershire Learning and Skills Council (LSC);
- **David Cheetham**, East Midlands Broadband Consortium (EMBC);
- **Uday Dhalokia**, Global Consulting Group;
- **Brian Hayes**, Charnwood Borough Council;
- **Gareth Howarth**, EMNET;
- **Max Hunt**, Charnwood Borough Council;
- **Michael Jewitt**, Business Link for Leicestershire;
- **Howard Needham**, Charnwood Borough Council;
- **Brian Negus**, East Midlands Area Network (EMAN);
- **Jiva Odedra**, Leicestershire Asian Business Association (LABA)/ Lightwave Solutions;
- **Gwent Paylor**, East Midlands Area Network (EMAN);
- **Lily Tabiner**, East Midlands Development Agency (EMDA);
- **Martin Traynor**, Leicestershire Chamber of Commerce;
- **Andy Roberts**, Leicestershire County Council;
- **Andy Robinson**, Leicestershire County Council;
- **Ray Smith**, Leicestershire Rural Partnership (LRP);
- **Alan Srblijanin**, East Midlands Development Agency (EMDA);
- **Andrew Thomas**, Leicester City Council;
- **Robert Watson**, BT;

- **John Winter**, Leicestershire County Council;
- **Andy Woods**, Astra Zeneca R&D.

2.2 We also undertook a number of **telephone-based consultations** and these names are given below:

- **David Best**, Leicester City Centre Manager;
- **Jill Craig**, Leicester City Council;
- **Chris Down**, CVS Community Partnership;
- **Kevin Feltham**, Leicestershire County Council;
- **John Hughes**, Leicestershire Constabulary;
- **Andy Laws**, Next;
- **Ian Wakeford**, Leicestershire, Northamptonshire and Leicestershire Strategic Health Authority.

### **3. The evolution of ICTs and their importance to a sub regional economy**

- 3.1 This section provides a high level think piece regarding the evolution of ICTs, and their importance to the sub regional economy (any sub regional economy); the principal developments, potential, barriers and hence key issues. In 'high level' easily digestible terms, this piece demonstrates why a sub region needs an ICT strategy, providing an additional justification for the Leicestershire Intelligent Landscape (ICT) strategy
- 3.2 We briefly define what ICTs are, and in particular what communications aspects are that are so important) and in so doing, we set out the chief technologies; we look back to see how the technologies have evolved and what the adoption and impact has been. We look at current 'technology shifts' and potential near-future developments; and consider the issues around adoption. The section concludes with a discussion of the potential broad impacts, on business, transport, living, learning and health; and derived from this, the headline implications for the Leicestershire economy.

#### **ICTs (INFORMATION AND COMMUNICATION TECHNOLOGY)**

- 3.3 Information and Communication Technologies (ICTs) concern the manipulation and communication of information (data) digitally (mainly so far on the PC, but also of recent by mobile phones and other interfaces.
- 3.4 ICTs can be defined in many ways and one of the most useful we have identified for economic strategy work is to separate the IT from the C:
- IT (information technology) - broadly refers to the manipulation of data and human interface with this e.g. manipulating data on the PC, with the interface being inputting data and reading/ printing out the results. This requires hardware (e.g. the computer) and software (e.g. programmes/ digital content)
  - Communications (the C part of ICTs) refers to the ability for PCs and other interfaces to communicate with each other e.g. for computers to send information to other computers. This is often termed digital communication as opposed to voice communication
- 3.5 Most people understand what computers (and other IT interfaces are); but less so what digital communications are. Moreover, digital communications are a more recent phenomena and are likely to evidence the most change and have the most impact in the short to medium term, and hence are worth special reference. But we will come to this further on. First, lets briefly consider the history and evolution of ICTs.

## BRIEF HISTORY

### It all started with the telephone

- 3.6 It all started with Graham Bell and the telephone, which enable sound (voice) to be transmitted (point to point) along a copper wire, using analogue encoding/ decoding technology (\*define analogue)
- 3.7 In the 60s, came the computer – initially large ‘mainframe computers’. The very first of which filled entire rooms and had less processing power than today’s mobile phones.

### The Personal Computer (PC)

- 3.8 The 80s saw the advent of the personal computer (PC) enabled by a massive revolution in processing technology (the micro chip) and associated storage technologies, hand in hand with falling cost, ***Some of us will remember the pioneering Amstrad from entrepreneur Clive Sinclair; but global corporations quickly moved into this space, dominating and leading development in the PC market place***
- 3.9 The 90s saw rapid increases in processing power which enabled development of data rich content and applications – ***remember the first word processing packages and compare these with current Microsoft Word. Remember too the first computer games (e.g. black and white ‘tennis’) and compare this with the graphics and complexity of current games. It would not be wrong to describe the change as ‘awesome’.***

## NEXT CAME COMMUNICATION BETWEEN COMPUTERS

- 3.10 Communication between computers is, by definition, digital communication, because it involves the sending and receiving of digital information (information that has been digitally encoded):
- Initially, communication between computers was literally physical, via the physical carriage of data on a floppy disc, or tape
  - Some computers, were networked, most commonly within a building, but sometimes between buildings and sites. This was enabled by BT or another telecoms carrier interconnecting your site with another site or sites (the industry termed this a leased line connection because the user literally ‘leased a data link’). Leased lines are expensive and tend to be limited to major companies, organisations and sites

### The rise of the Internet

- 3.11 The tail end of the 90s also saw the growth of a radically new form of communication between computers in different buildings, sites, towns, cities and countries – via the ‘internet’.
- 3.12 The internet is kind of the equivalent of the telephone system for computers (for data). The phone system sends voice messages from one address to another; the

internet sends packets of data from one IP address to another; but more than this, the internet allows point to multi point communications (e.g. one person can communicate with many), most notably via the concept of the 'website'.

- 3.13 The internet enables individuals via the PCs (and of recent, other devices including handhelds)
- to send information to a particular address or addresses; and to receive it (termed point to point(s) communications)
  - to view information – placed on a website; and to have information viewed by placing it on a website (sometimes termed virtual broadcast)
  - And of recent, to 'interact' with websites – enabling actions/ processes/ transactions to be undertake on the internet
- 3.14 Adoption of the internet has followed the 'standard adoption' curve and we are probably moving towards the final third, with the internet being used by the majority of businesses and a high proportion of people to communicate.
- 3.15 The internet has created mass digital communications, heralding a true communications revolution.

### **Clever routing**

- 3.16 The early years of the internet were plagued by problems – by capacity problems, but routing problems, and by security and reliability problems. The advent of the 'router' heralded solutions to many of these problems; to the point where it is now possible for a telecoms carrier to emulate the equivalent of the traditional lease line (an expensive point to point connection leased to the end user) using VPN technology. VPN stands for 'virtual private network' and describes the ability to create a virtual private (lease line) network using the internet, avoiding the need to use dedicated and expensive lease lines.
- 3.17 This but one major technological enhancement impacting the internet. Others, on the horizon are likely to be:
- The Grid – next generation internet
  - Voice over the internet (voice over IP or VoIP) enabling voice to be transmitted via the internet, replacing the telephone system
  - And not lease, wireless technologies enabling cheaper, faster, easier and mobile access

### **Full circle – voice via the internet!**

- 3.18 We still (apart from mobiles) tend talk to each other via the old telephone system (much of which is analogue). Hence voice communications are largely separate from data communications. This will change as 'Voice over IP' (VoIP) is taken up.

- 3.19 So the process is coming full circle in that analogue voice communications (which is where it all started), will increasingly transfer to digital voice, over data communication networks.

#### HOW ICTs HAVE IMPACTED SO FAR

- 3.20 Information technology and more recently digital communications (ICTs when combined) have had tremendous impact:
- Information technology has had the most impact to date (e.g. advent of the PC) – the PC has revolutionised much of business, many aspects of living, education, science, health and other walks of life (can include selected diagrams/ charts \*\*)
  - Digital communication has had some impact, which of recent is escalating – e.g. the internet and mobile phone, but the extent of digital communications and its application is in its infancy

#### FUTURE DIRECTION

- 3.21 No doubt there will be future innovations on the IT side (particularly miniaturisation enabling embedding of IT devices in machines and people – also termed micro electronics and nano technology); but these impacts lay more in the future. The most significant immediate impacts are likely to derive from provision and exploitation of high capacity high quality data communications, between PCs, but and particularly so, between mobile devices.
- 3.22 So we should look a little more closely at the opportunities and issues around digital communications (the C part of ITC)

#### Focussing on the C of ITC (digital communications)

- 3.23 To send and receive data (e.g. digital encoded information representing a document, spreadsheet, slide presentation, diagrams, pictures (still or moving); an sound (voice and music in particular)), the two (or more) IT **devices must be interconnected by an appropriate digital communications network.**
- 3.24 The problem is that the electronic communication networks we have in place are very largely built for voice (for analogue voice transmission e.g. the telephone system). Although the phone system can be adapted to send data, it is not ideal and does have limitations. Hence, as the demand for data communications has grown, these limitations have been hit. One of the principle issues for any town, city or sub region is the absence of sufficient electronic communication systems that are better suited to high volume, high capacity data communications.
- 3.25 ***Unlock this, and many argue that you unlock significant economic potential in the locality.***

## Digital Communications Technologies at a glance

- 3.26 This is not the place for a technical discussion, so in brief, the principal alternative digital communication systems are:
- Cable (coaxial cable networks) laid by the Cable TV franchises in the 80s to bring cable TV to households, now being adapted to provide data services
  - Fibre optic networks – usually the preserve of the trunk network and large companies, organisations and sites
  - Fixed Wireless – point to point and point to multi point – used for filling gaps in the trunk network where fibre optic links are not available or require backup; and also used to link end-users with local distribution points
  - Mobile Wireless – communication between mobile devices and between mobiles and fixed devices, via the mobile phone networks (that are part wireless and part fixed) and via wireless LANs
- 3.27 Probably one of the biggest issues under the ICT banner for Leicestershire is the extent to which it can provide high capacity high volume data links between its citizens and the outside world; and the extent to which it can do this before others do, thus gaining a head start. Much of the evidence suggests that this will not happen on its own and that a public sector strategy and action plan is required to ‘fill the gaps’, to facilitate the process. Many areas are preparing such strategies.

## Digital communications – the barriers

- 3.28 The key dynamic concerning digital communication networks and interconnection is the volume of data (measured in bytes) that can be sent and received per second e.g. 1 KBPS; 1Mbps.
- 3.29 Almost everyone can send and receive around 56 KBPS via the telephone network. This is termed narrow band because this is not a huge capacity and many data products and services take a long time to down load, or send, or the system just crashes, hence failing all together
- 3.30 More and more people are therefore seeking high capacity links – around 2 MBPS and the requirement is expected to gradually rise to 5 MBPS, then to 10 MBPS and so on, as broadband access becomes more and more common place; as it becomes a ubiquitous utility, available at commodity prices
- 3.31 The problem is that most people cannot access this level of connectivity, unless they pay a high price, both for the capital set up cost and then for the service. So how can the digital communication revolution ever take place.
- 3.32 Essentially, digital connectivity is a utility, like a gas supply – and one person in the street placing an order will not justify a commercial decision to invest in a gas main – the entire street, or neighbourhood will need to decide it wants gas for this to happen. Pre privatisation, BT was required to provide a telephone connection to anyone who wanted one and still is, but data services are not covered by this arrangement, and BT, as all other telecoms carriers, will make a commercial decision. Often the

answer is not, because the price is too high, because the scale of network upgrade and build is too great for one small order to support. It helps if you are a large organisation or company, placing a large order for data services; but for medium and small companies and individuals, unless their immediate area is 'enabled', they will not be able to secure higher capacity data connections either at all, or at a feasible cost.

- 3.33 Economists and policy makers see this as a temporary (or transitional problem) requiring some help. There is a range of actions that can be taken, but the process will also be helped, potentially considerably, by developments in wireless technology

### **Wireless to the rescue**

- 3.34 The principal barrier is the cost of laying or upgrading ground based communications systems. On the other hand, wireless systems require not digging or way-leaves and the transmission and receiving equipment can be cheaper and far easier to install.
- 3.35 Wireless communications, due to the laws of physics, is subject to a number of drawbacks –e.g. needing line of site; atmospheric conditions and other factors effecting the reliability, quality and capacity
- 3.36 However, recent innovations are solving some of these problems, and as technology marches forward, we can expect to see wireless technologies solving more and more of the cost problems;

### **Mobile communications**

- 3.37 Moreover, these technologies will be applied to mobile communications, enabling increases in capacity and miniaturisation (so that mobile devices can be placed in moving parts, and in humans) to monitor and potentially control/ intervene).

## **LEICESTERSHIRE – THE ICT VISION**

- Leicestershire will implement an ICT strategy that ensures that leading edge digital communications (fixed and mobile) are available to all residents, businesses, and organisations – both in their place of work and residence, but also on the move and in public places
- Building on Leicestershire' reputation for and image of being a leading technology city, the strategy will ensure that Leicestershire is an 'early adopter' playing a lead role in the provision and exploitation of high capacity, high quality digital communications
- The strategy will enable the telecoms industry to provide digital communications and services that meet next generation expectations
- And at the same time, will ensure that local people, as residents, as employees, managers and entrepreneurs, as learners and as public services consumers, are fully aware of, and have the know-how, knowledge and confidence to exploit digital communications

- As a by-product, Leicestershire will foster the growth of a specialist ICT services cluster and expert skills pool, not only serving the needs of its own residents and businesses, but creating a competitive cluster that plays a key part in the wider regional and national economy

### LEICESTERSHIRE – IMPACT OF THE ICT VISION

3.38 The impacts will be wide ranging, impinging on every walk and aspect of economic and social life. Examples of known impacts include:

- Increased competitiveness of indigenous businesses
- Increased market reach for indigenous businesses
- Increased attraction to inward investors
- Accelerated ITC awareness and knowledge amongst residents and the labour market
- Better operation of the labour market and access to training
- Increase efficiency, quality and range of public services – increased ease of and flexibility of accessing these
- Improved education and learning
- Improved delivery of health and other critical local services
- Improved ranges of services that can be accessed from the home – entertainment, knowledge and information, learning
- Significant impact on location and location options – working from home, flexible working; working on the move

## 4. Broadband Access is the most difficult issue for the strategy

- 4.1 This section cuts to the quick, identifying one of the most difficult challenges faced by the strategy – namely tackling clear market failure in broadband access; and as part of this, finding appropriate ways to ensure that the sub region not only stays level with competitor regions in terms of broadband access rollout and utilisation; but that it finds ways of securing ‘early mover’ advantage; of generating both competitive advantage and higher visibility, particularly on the international inward investment stage, through provision of advanced ‘flagship’ ICTs.
- 4.2 This is not to say that the other themes in the strategy will be ‘easy to tackle’ and drive forward, but comparatively, addressing broadband access is the most difficult.
- 4.3 Why?
- 4.4 Because of the:
- complex and evolving technologies
  - because of the high capital cost of some access infrastructures
  - because of the complex market competition, state aide and operation regulatory environment
  - because of the complexities around identifying the precise causes of market failure and particularly the extent to which barriers are demand-side or supply-side
  - the complex ‘tiering’ of the telecoms carrier market place (e.g. whole sale, intermediate retail, and final retail)
  - and not least because of difficulties associated with any kind of ‘supply-side’ intervention that involves public sector in any form of ‘direct provision’, even if on a temporary ‘pump priming basis’.
- 4.5 In short, it is a lot easier to assemble a complex site and put up an advanced factory or workshop unit that it is for public sector to become a temporary intermediary telco

## 5. Defining Broadband Access – the technologies available

- 5.1 Section 5 defines what we mean by ‘broadband access’ and specifies the principal features, elements and issues associated with current access technologies. This is presented in lay terms, avoiding technical specifications and ‘jargon’ as far as possible, but we cannot entirely avoid this given the nature of the topic.

### MAIN TYPES OF ACCESS TECHNOLOGY

- 5.2 Broadband (data) access technologies (network technologies) can be divided into several main categories:
- Ground-based – these include copper (twin pair), cable and fibre
  - Air-based (e.g. wireless) – these can be fixed and mobile; utilise ground stations and satellite (and potentially balloon platforms); and can be point to point or point to multi point or broadcast

### DIFFERENCES

- 5.3 There are very significant differences. The key metrics to consider when comparing access technologies are:
- Capacity (bits per second) Kbps/Mbps/Gbps/Tbps
  - Reliability and resilience
  - Form of transmission technology supported
  - Cost

### LOOKING AT SOME OF THE KEY METRICS

#### Capacity and Transmission Technology

##### *Copper*

- **Integrated Services Digital Network 2e (ISDN2e)** ISDN 2e, also known as Basic Rate Interface (BRI), provides two digital 64 Kilobits per second channels to give a maximum **bandwidth of 128 Kilobits per second**.
- **Integrated Services Digital Network 30 (ISDN 30)** ISDN 30, also known as Primary Rate Interface (PRI), provides up to 30 digital 64 Kilobits per second channels to give a maximum **bandwidth of 2 Megabits per second**.
- **Asymmetric Digital Subscriber Line (ADSL)** ADSL allows broadband to be delivered down an upgraded copper telephone line. ADSL can only be delivered from local telephone exchanges that have been ADSL-enabled by locating a Digital Subscriber Line Access Multiplexer (DSLAM) equipment in the exchange. Due to signal degradation over distance, ADSL can only be

offered to businesses and households that are within approximately 3.5 Kilometres of an ADSL-enabled local exchange. In the UK, ADSL currently **offers data rates of 512 Kilobits per second downstream and 128 Kilobits per second upstream.**

### **Cable**

- **Cable Modem:** cable modem systems utilise cable television company's coaxial cable networks to supply broadband connectivity at **data rates of approximately 500 Kilobits per second both downstream and upstream.**

### **Fibre**

- **Fibre-Based Systems:** A number of telecommunications companies are offering broadband telecommunications services direct to users over fibre optic cables. The main advantage of fibre based systems is that the bandwidth can be scaled immediately.

### **Wireless**

- **Satellite Internet Systems:** Satellite Internet systems offer broadband Internet connectivity via satellite. The main advantage of satellite Internet systems is that they work in parts of the country that do not have access to fixed broadband copper or cable networks.
- **Broadband Fixed Wireless Access:** Broadband fixed wireless access offers customers broadband services through radio links at **data rates of approximately 512 Kilobits per second both downstream and upstream.** The main advantage of broadband radio links is that the technology is flexible because fixed infrastructure (such as copper, coaxial cable, or fibre) does not need to be installed between the customer's premises and the service provider. However, there are a number of limitations to the technology which include concerns over radio wave safety, susceptibility to interference and very limited availability.

## **WIDEBAND**

- 5.4 Wideband refers to applications that deliver telecommunications services at data rates in excess of 2 Megabits per second. Wideband services are typically delivered over fibre optic networks due to the capacity that the transmission medium offers. Specialist wideband services are also delivered over point-to-point radio, although there are a number of limitations with this technology including capacity - radio can only deliver services up to 155 Megabits per second - and reliability - radio systems often fail in adverse weather conditions such as heavy rain or snow and the technology is not suited to developing networks.
- 5.5 There are a number of transmission technologies that are used to deliver wideband services and some of these are detailed below:

- 5.6 **Synchronous Digital Hierarchy** (SDH) is the most commonly used wideband technology. It is based upon internationally agreed transmission standards and enables inter-working of all operator networks and manufacturers' equipment. Bandwidths range from 2 Megabits per second to 2.4 Gigabits per second and above. SDH is delivered on self healing electronics supported by fibre optic networks configured in rings to give maximum resilience and service reliability.
- 5.7 **Asynchronous Transfer Mode** (ATM) is a network technology that allows the transmission of video, audio, and computer data over the same network without any single type of data monopolising the line, by splitting data into small packets. It is used as a means for forming Wide Area Networks (WANs) and supports data transfer rates from 2 Mb/s to 622 Mb/s. When purchasing an ATM service, occupiers will tend to have a choice between four different types of service:
- **Constant Bit Rate** (CBR) specifies a fixed bit rate so that data is sent in a steady stream.
  - **Variable Bit Rate** (VBR) provides a specified throughput capacity but data is not sent evenly. This is used for applications such as voice and videoconferencing.
  - **Unspecified Bit Rate** (UBR) does not guarantee any throughput levels and is used for applications that can tolerate delay, such as large file transfer.
  - **Available Bit Rate** (ABR) provides a guaranteed minimum capacity but allows data to be busted at higher capacities at times when the network is free.

## RELIABILITY (RESILIENCE)

### Resilience (physical)

- 5.8 Resilience is the term given to the ability of a network and its transmission equipment to minimise service disruption in the event of a failure in any network element. Resilience needs to be taken into account because networks can and do fail from a number of occurrences such as physical damage to fibre optic cables, optic line systems, microwave systems and multiplexer equipment. Lucent Technologies (who manufacture network equipment) estimate that on average, a piece of fibre optic cable is cut per annum for every 100 km of fibre optic cable laid.

### *There are two practical ways of achieving physical resilience:*

- 5.9 The **first option** is to divide traffic proportionally between two separate transmission routes. Under this option, 50% of the traffic load is delivered over each route, although variations on this are often used. For a single building, this would involve a traffic sharing agreement, but for a multi occupancy business park, could more easily be facilitated through a resilience on-site ducting strategy with competing carriers serving different occupiers and able to provide back-up to others should their primary supplier fail

- 5.10 The **second option** is to provide redundancy in the form of back-up transmission paths and electronics. The provision of redundancy requires that back-up equipment be installed that may never be used. This form of resilience is usually in the form of two transmission routes: a primary route that is permanently live, carrying 100% of traffic; and a secondary route, which remains inactive until the event of a network element failure.
- 5.11 In either case, a single carrier can provide the resilience, but a more common strategy is for two carriers to create physical resilience through option 1 (e.g. BT and one other carrier). It is critical that 'the other carrier' is not using any part of BT's physical network to serve the site or runs its network next to BT's. Classic examples of 'false physical resilience' occur when two supposedly separate fibre optic links share the same duct, or run in parallel to cross a railway for example, or connect into the same PoP.

### Resilience (commercial)

- 5.12 Reliability can also be impacted, particularly in the current economic climate, by the financial performance of individual carriers. A growing number are converging or going into receivership, which at the very least, raises concerns about their network's ability to sustainably deliver high quality services.
- 5.13 Such concerns have even been raised with respect to BT data services, which do not currently fall within the USO. Speculation that BT's data network or entire network will be subject to hostile take over raises concerns about BT's ability to continue to deliver quality data services in the future. The protection against commercial risks to resilience is to ensure that the site is served by at the minimum of two and ideally three entirely independent carriers – independent in a financial sense, but also using entirely physically separate metropolitan and local access fibre optic networks and transmission equipment to serve the site. In this way, if one network falls into receivership or is subject to take over activity, what ever the impact of this on service, there are two others to continue to provide viable and competitive quality services.
- 5.14 Major sites, such as eCampuses and Knowledge Campuses, ideally ought to aim for circa five to six independent carriers because three might become two should two of them merge - as may be the case with Cable & Wireless and ntl (this would have direct implications for employment sites as C&W is the only carrier other than BT serving the site at present and the nearest alternative carrier is ntl).

## PERFORMANCE/ QUALITY

### Availability

- 5.15 The availability rate of a telecommunications application represents the amount of downtime that the service provider expects to occur in any given period. It is usually expressed in uptime percentage terms, for example a 90% availability rate indicates that the application will be available for 90% of the time. Availability is usually grouped into what are referred to in the industry as the five nines - 90%, 99%, 99.9%, 99.99%, and 99.999%. Some telecommunications companies are now offering 100% service availability guarantees.

## Latency

- 5.16 Latency measures the speed of a network, usually the time it takes a packet of data to make a round-trip from one hub router to another hub router and back again, and is measured in milliseconds (ms). It is particularly important to take latency into account when using real time applications such as videoconferencing and collaborative working.

## Service Level Agreements (SLAs)

- 5.17 Service Level Agreements (SLAs) are documents that constitute a contractual agreement between the service provider and the end-user on the quality, availability, reliability, delivery and price of the service being offered. SLAs also detail the financial penalties that will be incurred on the service provider if it fails to deliver the service as specified in the SLA.

## Certainty

- 5.18 Given the multiplicity of factors (commercial, physical, landlord and tenant, planning, telecoms regulatory and other) that can delay or prevent the availability of the required service level, the only effective way of guaranteeing certainty is to provide the physical services 'in advance of demand'. Or at the very least, to have undertaken all the major physical works to the point of laying ducting to the site, and within the site and upgrading/ providing all the necessary transmission equipment and making all off-site connections.

## FIBRE REMAINS THE 'MEDIUM OF CHOICE' BUT IT IS EXPENSIVDE

- 5.19 Having established that more and more ordinary firms, and especially typical target occupiers of blue chip business parks, will require high capacity data links (particularly wideband links offering between 5 and 35 Mbps), it is important to establish the different ways in which these levels of bandwidth can be delivered to a site or building.

## PRICE OF BANDWIDTH

- 5.20 The final important dimension of a telecommunications service is price – price principally in terms of tariff, but sometimes, also regarding the contribution the customer (occupier) could be required to pay towards instillation (e.g. a one-off capital contribution).

## Capital cost contribution

- 5.21 Whether a capital contribution is required depends on:
- The distance of the customer from the nearest point of connection to the carrier's network
  - The carrier's charging strategy – some prefer to bundle-up a proportion of the capital cost in the form of a higher tariff, others adopt a more overt approach

- Current 'state of the market' and negotiation – whatever the carrier's preferred approach, much will also depend on the current state of the telecoms market place and on the customer's negotiation approach

### **Annual Tariff**

- 5.22 Probably of more importance to an occupier is the on-going annual tariff. Tariffs are a function of distance, bandwidth, quality of service (set out in the SLA along with penalties) and specialist services.

### **The basic tariff is coming down**

- 5.23 The annual price of bandwidth is comparatively expensive and comes as a surprise to those not familiar with the industry. For example,

#### **2Mb/s private circuit (rental pa)**

- £13k-£18k.....key route
- £18k-£21k.....more remote route

#### **34Mb/s private circuit (rental pa)**

- £110k-£120k.....key route
- £125k-£140k.....more remote route

#### **155Mb/s private circuit (rental pa)**

- £190k-£400k.....key route
- £350k-£450k.....more remote route

- 5.24 Tariff discounting is set to increasingly become the norm, driving down prices for basic bandwidth, with carriers' making their money on value-added services (VAS). Many carriers are already prepared to consider providing basic bandwidth at highly discounted prices if a profitable value added services package is included in the contract

- 5.25 The price of basic bandwidth is being driven down by competition (enabled by deregulation which has opened up the market to OLOs (other licensed operators) and which, in the UK through OFTEL, requires the incumbent not to use its monopoly position to its advantage). Many in the sector believe that bandwidth will soon become fully commoditised.

- 5.26 The key to securing a competitive deal on a given site, is the ability to negotiate between a choice of carriers serving the site. Hence, it is essential for the site to be served by at the very least, BT and one other independent carrier, but ideally by BT and two others. Business parks seeking to promote themselves as offering world class connectivity - such as eCampuses and Knowledge Campuses - need to move towards being able to offer a 'colocation-level carrier neutral environment' offering services from up to 5 or more carriers.

## EXISTING AVAILABILITY

5.27 To understand existing availability, we need to adopt a suitable geographic typology:

- International trunk (backbone/ backhaul)
- National trunk (backbone/backhaul)
- Metropolitan trunk (backbone/backhaul)
- Local area network
- Micro connections from local PoPs/ street cabinets to individual heriditiments (end-users sites)

## THE CURRENT PICTURE

- International trunk (backbone/ backhaul) – extensive provision, capacity and competition
- National trunk (backbone/backhaul) – extensive provision, capacity and competition
- Metropolitan trunk (backbone/backhaul) – varies but most regions/ sub regions will have BT plus three to four other networks
- Local area network – other than city centres and other high value locations, most areas will only currently be served by
  - BT's network (fibre to exchanges and some cabinets; twin copper pair onwards to end-users)
  - And those areas that were 'cabled up' as part of the TV cable franchise build out in the 80s and early 90s, will have potential access to cable modem – BUT – this will not cover all of the area, only the residential neighbourhoods that were targeted. Moreover, not all approved rollout plans were implemented and not all existing cable offers data services
  - Other than BT and Cable, the only other alternatives will be satellite and wireless projects, which at this stage are in their infancy
- Micro connections from local PoPs/ street cabinets to individual heriditiments (end-users sites) – highly variable (customer driven)

## 6. The Supply of Telecommunication services

### ELEMENTS THAT MAKE TELECOM SERVICES

Network typology	the hardware and software that make up the network
Contributors	suppliers of equipment and services
Types of service	what is actually supplied
Charges	the cost to customers
Service surround	delivery and support

- 6.1 The make-up of the value chain depends on the type of market being served, which in this context can be divided into residential, small business or organisation, and large enterprise, and core service demanded- access only, manages service, content management, or published material.
- 6.2 Access only services are the straightforward supply of circuits, with the users determining what the circuits are used for.
- 6.3 Managed services include data storage and circuit monitoring in addition to access.
- 6.4 Content are services that are actually carried over the circuit supplied, which have be configured and managed according to service level agreements (SLAs) between suppliers and end users
- 6.5 The critical relationship is between the customer and the primary supplier. Historically this was BT, which supplied everything from the receiving and transmitting device- Customer Premise Equipment (CPE) to the service and support.- see Figure 5.1. Though BT remains the dominant supplier the story of last two decades has been the fragmentation of the supply chain with the entrance of new suppliers for all the different elements of both old and new telecommunication services. The other innovative trend has been the re-bundling of different parts again in a multiplicity of new services. Again these new services have varies according the market served and the core service supporting the total offering. Crucially, though content suppliers now have direct contractual relationships with users, they are still wholly dependent on the network suppliers configuring access channels in order to carry content to users. Network operators still retain their own channels for the delivery of equipment and content- see Figure 5.2.

**Figure 5.1 - Traditional Value Chain**

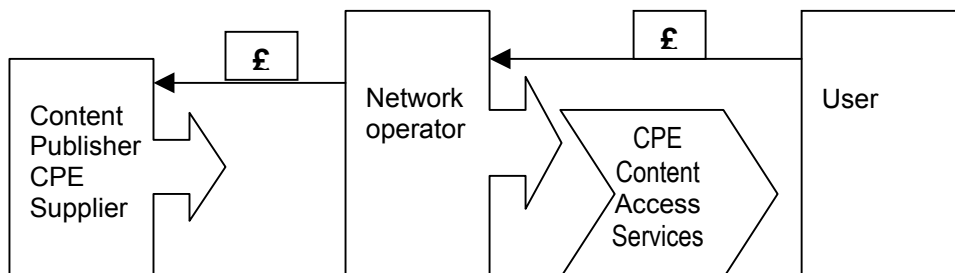
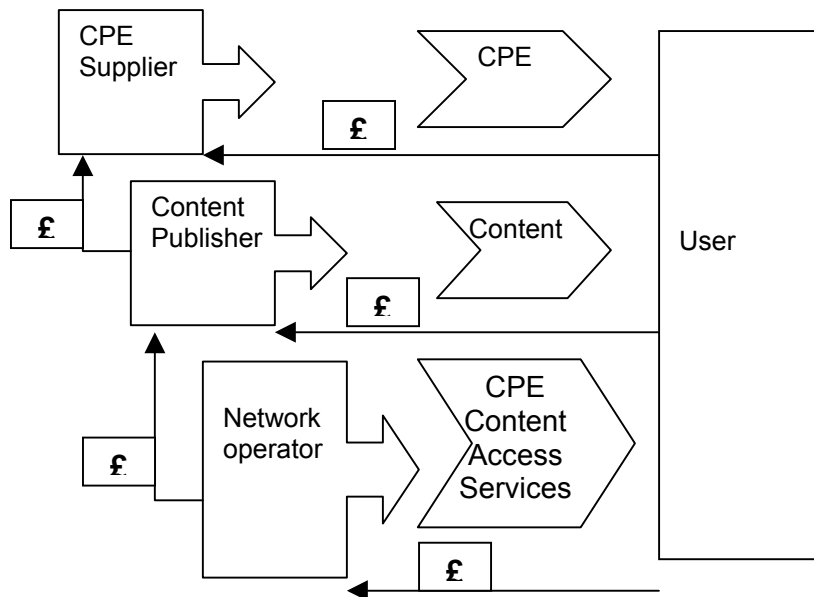


Figure 5.2 - Evolving Value Chain



6.6 In broad terms the smaller the customer the greater the dependency on pre-configured, bundled services, paid for according to usage. At the opposite end of the scale, the larger the enterprise the greater the freedom to source individual services for self configuration, and obtain volume discounts and flat rate charges. Smaller concerns can only gain savings through intermediaries bulk purchasing services and re-configuring them on a shared basis,.

## NETWORK SERVICE ISSUES BY TYPE OF USER

### Large Enterprises

- Access- technical resilience- choice of direct access suppliers at the site level
  - Commercial resilience- financial standing of primary suppliers and integrators
- Managed services- availability of technical skills for either in-house or outsourced management
- Content management- the development and configuration of services to meet business needs
- CPE- interoperability and service support

## SMEs

- Access/ managed services- choice of suppliers and access technologies
- Content/ content management- development of user friendly and relevant services
- CPE- interoperability and service support

## Residents

- Access- links with corporate LANs for home to work and home to education links
- Content- development of competitively priced, interactive services and compelling, user-friendly content

## Network typology

Customer Premises Equipment (CPE)	Generic term for telephone or other service provider equipment that is located on the customer's premises (physical location) rather than on the provider's premises or in between. Telephone handsets, switchboards and cable TV set-top boxes are examples.
Personal Devices	Mobile phones, PDAs
Network Termination Point (NTP)	Junction where the customers private network meets the public network; a simple example is an ordinary telephone point
Switch	A device that channels incoming data from any of multiple sources toward its intended destination. In the traditional circuit-switched telephone network, one or more switches are used to set up a dedicated though temporary connection or circuit for an exchange between two or more parties.
Packet Switching	In contrast to dedicated circuits, packet switching is the routing of small units of data through a network based on the destination address contained within each packet. This allows the same data path to be shared among many users in the network.
Router	On the Internet, a router is a device or software in a server that determines the next network point to which a packet should be forwarded toward its destination. The router is connected to at least two networks and decides which way to send each information packet based on its current understanding of the state of the networks it is connected to.
Gateway	A junction point where one network meets another, which can be on a local- national- international hierarchy with an a single network or between different Network Service Providers
Point Of Presence	An Internet access point with a unique internet address that includes switches, routers and computer servers for data storage and software systems.

### Contributors to the Telecoms Value Chain

Equipment Manufacturers and suppliers	The physical hardware from CPE to network electronics to network cabling
Network Service Providers	Supplier and operators of publicly accessible networks and circuits from Network Termination Points back to switches, routers and POPs
Managed Service Providers	Supplier of integrated computing systems over public and private networks
Application Service Provider	Supplier of computing applications and software services over public and private networks
Systems integrator	Procurer, installer and sometimes manager of network and system services

### Types of Network Services

Access	Circuit use, bandwidth capacity
Access Managed Services	Lease line, Virtual Private Network, hosting, collocation, caching, Local Area Network, Wide Area Network
Content Management	Voice, call management, video conferencing, video streaming, database management, ASP services, EDI, portals, e-commerce
Content Publication	News, data, gaming, video-based entertainment

### Typical Charging Structures

Access	Time limited circuit rental
Managed Services	Point to point distance charge, capacity charge, volume charge, time on line charge
Content Management	Subscription, rental
Content Publication	Subscription, rental, purchase

### Network Service Surround

Provisioning	Network connection, supply of CPE, pre/ post configuration
Delivery	Supply of contacted services
Maintenance	Monitoring and repair of failed elements according to contracted response agreement or Service Level Agreement (SLA), usually just to NTP
Upgrades	Replacement of network hardware and software elements
Billing	Billing and collection of rentals, subscriptions and usage charges
3 <sup>rd</sup> party management	Procurement and management of hardware and services necessary to deliver agreed services from other suppliers
Capacity guarantee	Contention- number of connection sharing same circuit at the same time
Availability guarantee security	99.xx%

## 7. Wireless and other ‘breaking technologies’

7.1 This section looks a little more closely at some of the ‘breaking’ access technologies and particularly wireless.

<b>Next Generation Broadband Services in Leicestershire – Current Position</b>		
<b>Technology</b>	<b>Summary</b>	<b>Relative Position of Leicestershire</b>
<b>Higher Bandwidth Cable Modem</b>	NTL’s existing coaxial cable infrastructure has the potential to deliver up to 20 Mbps+ synchronous connectivity but this is predicated on the switch from analogue to digital TV signals, which is expected to occur in the next 2-3 years.	<ul style="list-style-type: none"> <li>Although the company has yet to confirm this, NTL will be capable of delivering next generation (20 Mbps+) broadband services to all end-users in Leicestershire with access to their network by the end of 2005;</li> <li>This will require investment at the digital head end and in customer premises equipment (CPE).</li> </ul>
<b>Fibre-to-the-Door</b>	Fibre optic cabling is a technology that uses bundles of glass or plastic threads to transmit messages modulated onto light waves. It has a number of advantages over other broadband media including virtually unlimited bandwidth, low susceptibility to interference and very low latency <sup>1</sup> levels but is expensive to deploy - as such fibre-to-the-door is only viable for large volume sites.	<ul style="list-style-type: none"> <li>There are a significant number of under-used fibre-optic networks in Leicester city – offering potential for intermediaries to aggregate demand for lower volume end-users in the city;</li> <li>Outside Leicester city, fibre coverage is limited to trunk routes that could not be used to offer services to end-users in the sub-region without significant capital investment.</li> </ul>
<b>Broadband Fixed Wireless Access (BFWA)</b>	Broadband Fixed Wireless Access (BFWA) is a radio technology that operates within the microwave region of 1-40 GHz and systems operate within either the licensed or unlicensed parts of the microwave spectrum. Licensed BFWA spectrum is in the 3.4, 3.6 and 28 GHz bands.	<ul style="list-style-type: none"> <li>The 28 GHz licensed spectrum for the East Midlands has not been bid for since its release in 2000 and therefore no services are offered under this spectrum in Leicestershire;</li> <li>If taken up, the 28 GHz licensed spectrum could be used to offer 2 Mbps+ broadband services to end-users in the sub-region;</li> <li>Pipemedia offers services over the 3.4 GHz licensed spectrum, equivalent to ADSL service-level offering, in the Market Bosworth area but take up to date has been very low.</li> </ul>
<b>Wireless Fidelity (WiFi)</b>	Wireless Fidelity (WiFi) is a wireless local area network that uses high frequency radio signals to transmit and receive data over distances of a few hundred metres, using the Ethernet protocol. WiFi operates in unlicensed spectrum, predominantly using the 802.11 family of standards.	<ul style="list-style-type: none"> <li>A number of WiFi hotspots have been developed in Leicestershire that allow very localised broadband Internet access. As with the rest of the UK, we consider that this coverage will become near universal in the urban areas of the sub-region in the next few years;</li> <li>Wireless Rural BroadBand (WRBB) states that its Sunshine product will offer broadband services up to 24 Mbps in the east of the sub-region in 2004. However, it must be noted that Sunshine will operate in the unlicensed spectrum and may be prone to service issues with regard to interference and security.</li> </ul>

<sup>1</sup> Latency refers to the amount of time it takes data to travel from destination to source on a network.

## 8. ADSL Exchange Status in Leicestershire

### SUMMARY

- 8.1 Nationally BT now report that 80% of households are now connected to the 2,481 activated exchanges; a further 700 have confirmed service dates, 485 have been triggered for service, and registrations are being collected for the balance of 1,856 exchanges. In April 2004 the Northern Ireland announced that every dwelling in the province will be entitled to service no matter where they are located.
- 8.2 There are 73 BT exchanges in the county of Leicestershire, 46 of which have been activated for ADSL Service, and another 5 have 'go live' dates- see tables 1 and 2. Reach is improving all the time; up from the original 3.5 km to 6 km.
- 8.3 Six of the non-enabled areas have triggered and are waiting for a service date- see table 3. All of the remainder are still collecting registrations, and since BT's announcement to achieve near as possible 100% coverage by the end of 2005, the carrier is now giving estimates of when activation will take place. Ten Leicestershire exchanges have collected between 28% and 75% registrations and have estimated dates up to April 2005, and a further one has a date of June 2007.
- 8.4 This leaves just three very rural exchanges in Leicestershire without a trigger target or estimated service date.

Aylestone	Leire
Asfordby	Loughborough
Ashby De La Zouch	Lutterworth
Beaumont	Market Harborough
Belgrave	Markfield
Birstall	Measham
Braunstonegate	Medbourne Green
Castle Donnington	Melton Mowbray
Coalville	Montfort
Desford	Narborough
Earl Shilton	Nether Broughton
East Wigston	Oadby
Evington	Quorn
Fleckney	Rearsby
Glenfield	Rotherly
Goscote	Sapcote
Great Glen	Shepshed
Hathern	Sileby
Hinckley	St Barnabas
Ibstock	Sutton Elms
Kegworth	Thurnby
Kibworth	West Wigston
Kirby Muxloe	Woodhouse Eaves
Leicester Central	Wymeswold

<b>Table 2</b>	
<b>Exchanges Ready for Service as at April 2004</b>	<b>Expected Service Date</b>
Bagworth	8 May 2004
Husbands Bosworth	11 August 2004
Peatling Magna	11 Aug 2004
Rothbey	26 May 2004
Waltham on the Wolds	16 June 2004

<b>Table 3</b>			
<b>Non- activated Exchanges in Leicestershire as at April 2004</b>	<b>Registrations</b>	<b>As % of Set Target</b>	<b>Expected Activation Date</b>
Billesdon			Triggered
Bottesford			Triggered
Buckminster	98	28%	March 2005
East Langton			Triggered
Gaddesby			Triggered
Hallaton			Triggered
Harby			Triggered
Hungarton	22	Not set	
Knipton	58	28%	June 2007
Market Bosworth	281	56%	Oct 2004
Osgathorpe	184	36%	Jan 2006
Scalford	41	41%	Apr 2005
Somerby	63	42%	July 2004
Stoke Golding	155	51%	Dec 204
Swinford	149	74%	June 2004
Thurlaston	51	51%	Aug 2004
Tilton	29	Not set	
Tugby	29	Not set	
Twycross	104	52%	Jan 2004
Wymondham	47	47%	Jan 2005

## 9. Broadband Access – common types of market failure

- 9.1 This section identifies the common types and causes of market failure in the broadband access arena. The discussion is pitched at a practical level, rather than an economic level, but economic definitions of market failure are provided.

### DEREGULATION SETS THE SCENE

- 9.2 In brief, the telecommunications sector, that was previously the domain of nationalised incumbents, has been progressively deregulated in order to bring competition and market forces into play regarding the provision of telecommunications infrastructure and services. Deregulation has in particular stimulated new entrants and increased competition in the provision of network infrastructure and services to carry data as well as voice.
- 9.3 Despite extensive enthusiasm of new entrants, the rollout of telecommunications network infrastructure has been far from universal, illustrating significant instances of 'structural market failure' (using the DTI's definition). More recently, the technology sector down turn and as part of this, the radical shake up within the telecommunications sector, has resulted in additional 'transitional' market failure.

### MARKET FAILURE

- 9.4 The result has been that many areas do not have appropriate network infrastructure to access necessary broadband services. This coincides with the generally held view of European development agencies that ready access to broadband infrastructure and services is a non-negotiable requirement for both inward investment and the digital transformation of indigenous businesses. Areas that do not provide the infrastructure to enable broadband services to be provided (at competitive prices) at the point of demand are suffering widening disadvantages. Moreover, by definition, many of these types of area already suffer multiple disadvantages and deprivation on other economic and social measures and therefore do not need yet one more. On the contrary, there is a growing requirement to eliminate this imbalance by stimulating the provision of advanced broadband infrastructure and services in such areas. It is a paradox that this view has grown since the dot com crash, which, of course, halted the geographic expansion of infrastructure, reinforcing the sense of market failure.
- 9.5 This has inevitably resulted in many economic development agencies/ organisations considering what they can do to resolve the market failure in network infrastructure provision and a wide variety of initiatives have been considered.

### ADDING PUBLIC SECTOR NEEDS TO THE EQUATION

- 9.6 In parallel, the electronic service delivery objectives set by Government for local authorities (termed eGovernment), coupled with the growing digital communication needs in the health and other sectors has heightened awareness of the need for broadband communications across a wide spectrum of user-groups. Equally, concerns have grown regarding the implications if these are not provided.

## **WHY HAS DEREGULATION FAILED TO ENSURE FULL AVAILABILITY OF BROADBAND ACCESS?**

- 9.7 This is not the place to embark on a full discussion of this complex topic. Instead, we set out the main 'headline' points, in lay terms.
- 9.8 First, it is worth defining when a market is not failing. In lay terms, a market can be deemed to be working when all those who want and are prepared to pay competitive market prices for a good or service, can secure their good or service of choice, from a full choice, without delay, at the optimal market price.
- 9.9 The European Union and host governments determined that this was not happening in the telecoms sector, because of monopoly control by the previously nationalised incumbent providers. The first step to changing this situation was to change/ implement laws that deregulated the telecoms market, allowing others to invest in network infrastructure and provide alternative services, at competitive prices.
- 9.10 This has worked to an extent, but deregulation alone, is proving not to be enough. Some end users cannot secure a new service at all (at economic prices) and most cannot access a full choice, enabling competitive pricing. Thus, we are still faced with market failure.
- 9.11 The reason why deregulation alone is not sufficient is that telecoms networks are a 'utility', requiring a common infrastructure for delivery (like gas and water) of which the costs need to be shared by a community of users, to be economic. The deregulated telecoms market place is not proving very effective in tackling this issue.
- 9.12 Moreover, although it is technically and legally possible for more than one service provider to 'run a service' down the same pipe (same network), there are certain price and quality handicaps faced if you 'do not own the pipe', which gives the owner an advantage. Therefore, for end users to receive a full and fair choice, it follows that their house, office, factory needs to be served by at least two and ideally three or more physically separate networks. This vastly compounds the 'common good' 'shared cost' issues,
- 9.13 These, in lay terms, are the two most important dynamics of market failure in the deregulated telecoms market place, which, in simple terms, are resulting in:
- Failure of the market to provide certain types of service 'at all' to many end users
  - And failure of the market to provide end-users with full choice enabling competitive pricing

### **The market is failing to provide certain types of service 'at all'**

- 9.14 Looking more closely at the first of these:
- It does not make economic sense for a carrier to build a network to serve a single new user. Like a water or gas main, the network needs to serve a community of users, spreading the cost. As such, a telecoms network has 'common good' characteristics

- The only part of a telecoms network that is free from common good elements is the 'last mile' or that part of the connect that is specific to the individual user e.g. the final link from the street cabinet or local PoP to the door of the new user. The remainder of the network is for common use
  - This means that a single new user cannot on their own, secure a service requiring new network build, unless the element of build required, is only the last mile (the final link from the local street cabinet or PoP) to the door of the end user – the cost of this 'last' part of the link is normally attributed to each individual end-user and factored into the overall pricing of the service (unless there are unusual obstacles raising the cost of connection).
  - If the new service requires more extensive network build, upgrade or investment, which is a cost that needs to be shared by a community of end users, then the single user faces problems and will not be able to secure the new service unless
    1. The carrier is prepared to take a risk and invest in the new link, anticipating that other users in the vicinity will take up the service
    2. Or, the new user placing the order is prepared to pay for much of the network build cost (which would be very expensive and uneconomic)
    3. Or unless they (or the carrier, or a third party) can persuade a sufficient community of other users in the vicinity to also order the service, making it economic for the carrier to invest in the new link.
  - In the 'hay day' of the dot com boom and early days of deregulation, many carriers, including new entrants, were able to raise the funds to invest in network extension, without firm orders (e.g. 1 above). In the current economic environment, carriers are not prepared or able to do this, and will only build to order. This poses an immediate problem in that unless someone else bundles the individual orders of a community of end users together (e.g. aggregates them), carriers will be faced with an ad hoc mix of individual orders, which, unless from a 'major user' will not justify much if any investment in the network
  - Regarding 2 above, the individual user is unlikely to be able to justify paying for the network build out costs unless they are a major user or are totally reliant on a certain connectivity service and are able to justify paying for it. This rules out the majority of users
  - Regarding 3 above, this is the most obvious solution, overcoming the 'aggregation' bottle neck, but individual carriers (so far) have not engaged in this sort of exercise.
- 9.15 The result is one often termed 'cherry picking' by the industry e.g. city centres and other high demand-density locations find that carriers are prepared to speculatively invest in network rollout and service; major end-users also find that carriers will invest in a certain amount of network build. Every where else, and everyone else, faces obstacles.

### Area-based services

- 9.16 The above arguments and issues equally apply to area based services such as ADSL where the local distribution network is already in place (the telephone system) but investment is required to upgrade each local exchange. Only when there is a sufficient number of end-users signed up, is it economic for a carrier to make the investment in the exchange.
- 9.17 A single user placing an order will not be sufficient.

### Is demand part of the problem?

- 9.18 Many analysts have argued that part of the problem is low demand. This is without doubt the case. Technically, 'low demand' is not a market failure issue. However, the issue is more complex than just 'low demand'. Many commentators argue that:
- Economies that have access to high capacity broadband and that utilise it effectively, generate significant competitive advantage
  - Therefore, from the perspective of the local economy as a whole, provision of broadband is vital, even if individual businesses perhaps do not realise this yet, or are prepared to pay for it yet
  - It is argued that local economies face a 'chicken and egg' situation – e.g. once they have and fully utilise broadband, they will realise they want it and will pay for it. Yet, the current lack of use of and familiarity with broadband translates into low demand, which prevents carriers from investing in network roll out
  - Many economists argue that this deadlock has to be cracked – by tackling supply side and demand side issues, together.

### The market is also failing to provide full choice

- 9.19 Even if the 'shared cost' and 'low demand' issues were resolved, the deregulated telecoms market place would still not provide individual end-users with enabling competitive pricing. This is because it is uneconomic to build two or more physically separate network links out to each and every end-user, in the same way that it is just not feasible to provide two gas mains, two water mains, or two roads (unless the first has capacity problems, and then one would upgrade the first before contemplating a second).

### TO SUM UP

- 9.20 The above provides a simplistic lay discussion setting out the key dynamics/ issues regarding why the deregulated telecoms market place is not providing all end users with the option to purchase any type of service, and at competitive prices. In summary, the issues are:
- Telecoms networks and their costs (both access network and transmission) are a utility, which to be economic, need to be provided to a community of users, who share the costs (like gas and water mains)

- New network provision therefore requires a community of users to come together to place an economic order – the deregulated telecoms market place alone, is not geared up to do this
- Moreover, for all end users to have access to a full and fair choice of services, essential for competitive pricing, each end user must be linked up to two or more separate networks. This is uneconomic except in high density demand locations like city centres or for large end users.
- The result is that, despite deregulation, many end users cannot access all types of service at economic prices; and most do not have access to a full and fair choice
- There is an important issue of low demand compounding the above, but most analysts identify a 'chicken and egg' situation, where the deadlock must be broken for the good of the local economy, through a series of demand side and supply side actions. Even if there was not a low demand situation, the above market failures would still apply and need to be tackled, but in unison with demand side issues.

## 10. Regional and Sub-Regional ICT Policy Context

### INTRODUCTION

- 10.1 This Section starts by determining the ICT policy context within the East Midlands by assessing the ICT-related components of the East Midlands Regional Economic Strategy, Destination 2010 and the Regional ICT Strategic Framework. It then goes on to assess the sub-regional ICT policy context by referring to the relevant plans and strategies of a wide range of stakeholders in the sub-region including the Leicester Shire Economic Partnership (LSEP); Leicestershire County Council; Leicestershire Learning and Skills Council (LSC); Leicestershire Rural Partnership (LRP); Welland Partnership; Leicester City Council; and Leicester Regeneration Company (LRC).

### REGIONAL ICT POLICY CONTEXT

- 10.2 The **East Midlands' Regional Economic Strategy**, Destination 2010, recognises the important role that ICTs can play in supporting economic and social development and identifies the following objectives for the region's three principal users of ICT:
- **E-business** – the efficiency of business and the productive capacity of the region will be improved substantially by increasing the numbers of businesses that trade online and addressing the concerns of the significant minority of businesses that remain sceptical about the relevance of ICT;
  - **E-government** – the Audit Commission reported recently that local government was confident about achieving its 2005 target, but saw little evidence yet of the re-engineering of business processes acknowledged as a necessary pre-requisite to delivering successful business transformation;
  - **E-learning** – the growing importance of ICT is evident in the way that it increasingly features in the delivery of learning in schools, colleges, universities and lifelong learning. The region needs to provide a consistent, integrated, high quality ICT learning experience to ensure the delivery of qualified, ICT-literate citizens across the whole of the region.
- 10.3 The **East Midlands Regional ICT Strategic Framework**<sup>2</sup> provides a policy architecture within which strategic partners in the region can focus their efforts and resources to address the key issues that will place the East Midlands amongst the foremost regions in Europe with regard to ICT infrastructure, usage and skills. The **East Midlands Regional ICT Action Plan** is comprised of the following seven strategic targets:
- **Strategic Target 1: The Role of ICT in the Development of the Region** – the strategic adoption and use of ICT will be a fundamental aspect of the economic development of the region and the principles of the ICT strategy will be embedded into all related policy actions. By 2010, the region will be among the foremost in Europe in terms of ICT infrastructure, skills and usage;

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<sup>2</sup> The East Midlands Regional ICT Strategic Framework is currently being upgraded and will be available in January 2004.

- **Strategic Target 2: The Region's ICT Infrastructure** – the provision of a comprehensive regional coverage of the ICT infrastructure will be pursued, such that every business and educational establishment will have a access to a minimum of 2 megabits per second broadband by 2005;
- **Strategic Target 3: Access to ICT Across the Region** – maximum adoption and use of ICT will only be made possible if access to the regional infrastructure and its services is also optimised. By 2004, emda will aim to make access available to 90% of the region's population at home, at work or in the local community;
- **Strategic Target 4: ICT Information Dissemination** – By 2005 the region will be exemplary in its provision of easy access to key ICT-related information;
- **Strategic Target 5: E-Government in the Region** – by 2005 all interactions with local authorities in the region should be capable of being carried out electronically;
- **Strategic Target 6: E-Learning in the Region** – by 2010 90% of citizens in the East Midlands will have basic IT skills and high quality e-based learning material will be readily accessible to them;
- **Strategic Target 7: E-Business in the Region** – by 2005 95% of all businesses will in the East Midlands will have broadband access, use e-mail, have a marketing website and use ICT effectively to store, transmit and receive data as defined by their business processes and strategy. Most of their interactions with both customers and suppliers will be conducted online.

#### SUB-REGIONAL ICT POLICY CONTEXT

10.4 In order to ensure that the ICT strategy for Leicestershire is aligned with the strategic ICT objectives of key stakeholders in the sub-region we have also assessed the relevant strategies and documents of the following organisations:

- Leicester Shire Economic Partnership (LSEP);
- Leicestershire County Council;
- Leicestershire Learning and Skills Council (LSC);
- Leicestershire Rural Partnership;
- Leicestershire, Northamptonshire and Rutland Health Authority (LNRHA);
- Leicestershire Constabulary Police Authority;
- Leicestershire Fire and Rescue Service;
- Welland Partnership;
- Leicester City Council;

- Leicestershire’s District Councils;
- Leicestershire’s Universities;
- Leicester Regeneration Company (LRC).
- Leicester Shire Economic Partnership (LSEP)

10.5 The Leicester Shire Economic Partnership’s (LSEP’s) Economic Regeneration Strategy for the period 2003 to 2012 sets out the organisations overarching vision of creating the right economic conditions to improve the quality of people’s lives and the environment within which they live in Leicestershire. In order to complement EMDA’s regional vision, the LSEP will concentrate its activities on the four areas of People and Skills; Enterprise and Innovation; Land and Buildings; and Sustainable Communities and the objectives for each of these are summarised in Table 1 below.

<b>Table 1 LSEP Economic Regeneration Strategy – Summary of Key Areas of Action</b>	
<b>People and Skills</b>	<p>To support a sub-region that:</p> <ul style="list-style-type: none"> <li>• Becomes a ‘centre of excellence’ through the quality of its education and training;</li> <li>• Gives people the confidence to develop and better use their talents and abilities;</li> <li>• Enables graduates to be attracted to and stay in the area because of the increased number and variety of jobs on offer;</li> <li>• Uses its ethnic and cultural diversity in promoting employment opportunity.</li> </ul>
<b>Enterprise and Innovation</b>	<p>To support a sub-region that:</p> <ul style="list-style-type: none"> <li>• Has a strong enterprise culture where many more local people are prepared to set up in business and have the support to succeed;</li> <li>• Supports the transfer of research ideas from its universities into business opportunities;</li> <li>• Has a broad mix of innovative businesses which are at the cutting edge of technology;</li> <li>• Has increased household incomes through higher wage rates.</li> </ul>
<b>Land and Buildings</b>	<p>To support a sub-region that:</p> <ul style="list-style-type: none"> <li>• Maximises the use of development sites and buildings and revitalises derelict and under-used land and buildings;</li> <li>• Has an established image and high profile which will be used to attract investment and capital to further its ambitions;</li> <li>• Has high quality health, education, transport and other public services achieved through increased investment;</li> <li>• Promotes quality buildings and community spaces through sensitive design and development, which</li> </ul>

Table 1 LSEP Economic Regeneration Strategy – Summary of Key Areas of Action	
	projects the vibrancy and safety of the area.
<b>Sustainable Communities</b>	<p>To support a sub-region that:</p> <ul style="list-style-type: none"> <li>• Has much reduced the gap between its more deprived and wealthy communities;</li> <li>• Has a measurably better environment and has increased its environmental ‘capital’ for future generations;</li> <li>• Secures partnership commitments to work together to deliver the vision for the sub-region.</li> </ul>

10.6 With regard to activities within the field of ICT, the LSEP’s discussion paper for the **2004/05 ICT Programme** is structured around the following three areas:

- **Connectivity and Access;**
- **Business Support;**
- **Business Innovation.**

10.7 Table 2 below outlines the key activities with regard to the LSEP’s **Connectivity and Access** theme.

Table 2 LSEP ICT Programme 2004/05 – Connectivity and Access	
<b>Demand Stimulation</b>	The LSEP, in partnership with Leicestershire County Council, has embarked on a broadband campaign that has delivered a leaflet to all households and businesses in BT exchange areas across the sub-region that are not currently ADSL-enabled. The response has been extremely positive and local champions across the sub-region have been recruited. This exercise will continue through 2004 under the auspices of EMDA’s eMidlands campaign.
<b>Broadband Intervention Fund</b>	<p>Emda has approved an LSEP project to support the roll-out of broadband to rural areas in the sub-region. The £560,000 project will focus on providing a broadband service to economic clusters, currently being defined through an extension of the broadband mapping work being undertaken by consultants Intercai Mondiale.</p> <p>Working in partnership with the Northamptonshire and South Derbyshire Sub-regional Strategic Partnerships (SSPs), the LSEP will contract RABBIT to deliver the project in association with a PSO that has specialist telecommunications procurement skills. It is also hoped that this intervention will provide a broadband service to the surrounding communities and possibly diversity of supply to those areas already broadband-enabled.</p>

Table 2 LSEP ICT Programme 2004/05 – Connectivity and Access	
<b>Micro-Community Intervention</b>	The LSEP recognises that there are small communities within ADSL-enabled areas in the sub-region that are unable to access the broadband service for technical or geographical reasons. Working with Leicestershire County Council, the LSEP will investigate a programme of small-scale intervention to address this based on, for example, a broadband satellite connection linked to a Wi-Fi network.
<b>Access Points</b>	The LSEP is commissioning research to provide guidance on the development of access centres within the sub-region, with a particular focus on areas of economic and social exclusion. This will include consideration of Internet access through managed access centres and stand-alone access points.
<b>Leicester Science Park</b>	The LSEP, in partnership with emda, is actively supporting the Leicester Regeneration Company's (LRC's) proposals to develop a Science Park in Leicester. Support LSEP is providing includes advice on the technical ICT infrastructure required for the project and a demand analysis for bandwidth and managed services from both occupiers of the proposed science park and the emerging creative industries sector, based in Belgrave. This work will be undertaken through an extension of DTZ Piedad Consulting's Intelligent Landscape ICT strategy.

10.8 Table 3 below outlines LSEP's ICT activities in the area of **Business Support** over the period 2004/05.

Table 3 LSEP ICT Programme 2004/05 – Business Support	
<b>Business Support</b>	<p>Working with partners, the LSEP is assessing the feasibility of creating an ICT brokerage for SMEs that will provide a single independent contact for ICT support across the sub-region. Preliminary discussions have confirmed the value of such a project and, subject to feasibility, the ICT brokerage service will become live in 2004. Specific support activities are likely to include:</p> <ul style="list-style-type: none"> <li>• The engagement of demonstrator companies, drawing on best practice from the North West, who would demonstrate to other local companies the benefits of ICT;</li> <li>• The use of 'broadband plumbers' to help businesses (particularly SMEs) to overcome the ICT skills barriers associated with physically connecting a broadband service.</li> </ul>

10.9 Table 4 below outlines LSEP's ICT activities in the area of **Business Innovation** over the period 2004/05.

<b>Table 4</b> <b>LSEP ICT Programme 2004/05 – Business Innovation</b>	
<b>Public Sector e-Procurement</b>	The UK Government National Procurement Strategy requires all councils to develop and implement local procurement strategies. The LSEP is commissioning research to assess the barriers SMEs face when engaging with the public sector and to determine how ICTs can be used to break these barriers down – including catalogue punch-out and document transfer using open standards. This research will form the basis of a project over the period 2004/05.
<b>Satellite Land Mapping</b>	The LSEP is commissioning a feasibility study of the development of an ERDF-supported project to develop a satellite land-mapping centre of excellence at Brooksby Melton College. It is anticipated that this project will support the sub-region's rural economy by helping the agricultural sector and land planners to make more informed decisions on agricultural production and land usage through interpreted IR satellite images delivered over broadband.
<b>Web Services</b>	The LSEP will support projects that deliver specific economic benefit to a geographic or sectoral cluster through the creation of web collaboration, content, or applications that demonstrate an added-value to the cluster as a whole and which could not be achieved without the intervention of the LSEP.

### **Leicestershire County Council**

10.10 **Leicestershire County Council's e-government strategy** is embedded within a wider framework of corporate drivers for change – the Better Access to Better Services initiative. This initiative is informed by the Medium Term Corporate Strategy and is intended to transform the Council's organisation and business management processes, and to move forward the modernisation agenda, so that service delivery is more focused on meeting customer needs. The **Better Access to Better Services initiative** is structured around the following four key areas:

- Access and Resources;
- E-Government;
- Organisational Change;
- Information Management.

10.11 Leicestershire County Council's **ICT Strategy for e-government** sets out the organisation's vision for local e-government, which is *to deliver joined up services in ways that people understand, which are accessible at times and places that are most convenient to them. These will be delivered jointly with partners, where appropriate, and delivered seamlessly by sharing information as freely as possible. This will make our services more accessible, more convenient, more responsive and better value for money.* The strategy also outlines six strategic issues that are crucial the effective and efficient delivery of e-government across the county and these are summarised in Table 8.5 below.

<b>Table 5 Leicestershire County Council – Strategic E-Government Issues</b>	
<b>Strategic Issue</b>	<b>Goal</b>
<b>Interactions</b>	<ul style="list-style-type: none"> <li>• A programme of developments to deliver transactions to the public electronically will be maintained;</li> <li>• The technology used to support and deliver electronic services will be available to agreed standards and at times outside normal office hours;</li> <li>• A Customer Management Strategy will be developed to specify how customer contacts will be managed and recorded;</li> <li>• There will be a consistent approach to the way in which solutions, and their associated data, supporting the electronic delivery of services are developed and implemented. This will ensure maximum re-use of consistent and approved methods of interfacing with the public;</li> <li>• A consistent and integrated telephony infrastructure will be developed to support all contact events both internal and external to the County Council;</li> <li>• Each e-government project will have a documented business case which identifies priorities and justifies deliverables.</li> </ul>
<b>Access Channels</b>	<ul style="list-style-type: none"> <li>• The infrastructure will be developed to support all delivery channels in line with the Access Strategy;</li> <li>• Advice and guidance will be made available on the technology requested to fulfil solutions to business requirements raised by the BABS Delivery Groups;</li> <li>• The public will be actively encouraged to use the technology delivering services electronically.</li> </ul>
<b>Trust and Connections</b>	<ul style="list-style-type: none"> <li>• The County Council data network will be connected to partners' networks to enable the secure exchange of information;</li> <li>• The County Council telephone system will be linked to partners' systems to enable the seamless transfer of calls;</li> <li>• Common ICT standards to enable joint service delivery with partners will be developed;</li> <li>• Information sources and interfaces will be identified, modelled and developed to support joint service delivery and information exchange;</li> <li>• All County Council ICT facilities and information will be protected from unauthorised access.</li> </ul>

**Table 5**  
**Leicestershire County Council – Strategic E-Government Issues**

<b>Enablers</b>	<ul style="list-style-type: none"> <li>• Data and applications will be integrated to support service delivery based on business requirements;</li> <li>• All information required by front line employees will be made available via the Intranet;</li> <li>• The Intranet will be developed to provide an effective internal communication and workflow system with all County Council employees, based on clearly defined business requirements;</li> <li>• The data network will be enhanced such that all locations where the County Council have employees will have adequate LAN/WAN provision;</li> <li>• The Content Management System will be fully utilised to manage and deliver information to all channels;</li> <li>• All employees and resources will have access to a PC that provides access to e-mail and the Intranet;</li> <li>• The appropriate technology needed by home-based and mobile employees will be identified.</li> </ul>
<b>Core Systems</b>	<ul style="list-style-type: none"> <li>• As part of the documented business case referred to in Interactions Goals above it will be mandatory to include provision for mapping, analysing and, where necessary, re-engineering processes to support the introduction of change based on business requirements</li> </ul>
<b>People</b>	<ul style="list-style-type: none"> <li>• All employees will have the skills to utilise the Intranet and e-mail;</li> <li>• All front line employees will be trained in the effective use of the Intranet;</li> <li>• All employees (be they County Council or Partner based) will have the skills necessary to utilise the technology supporting the management and resolution of contact events in the most effective and efficient manner.</li> </ul>

**Leicestershire Learning and Skills Council (LSC)**

10.12 The Leicestershire Learning and Skills Council’s (LSC’s) Local Strategic Plan for 2002 to 2005 sets out a **vision for Leicestershire** where high quality learning is accessible to all, putting learners at the heart of the system and continually improving services to them, whether they be individuals, businesses or communities. The LSEP’s strategy is based around the five key themes of Young People; Basic Skills; Adults; Workforce Development and Quality Improvement and the key priorities under each of these is summarised in Table 6 below.

<b>Table 6 Leicestershire Learning and Skills Council – Key Themes and Priorities</b>	
<b>Theme</b>	<b>Key Priorities</b>
<b>Young People</b>	<ul style="list-style-type: none"> <li>• Strategic use of funding streams to support both mainstream and innovative programmes;</li> <li>• Retention – implementing recommendations from research to improve retention;</li> <li>• Widening participation – targeting unemployed young people;</li> <li>• Widening participation – targeting those young people going into low skill jobs and agency work, but not participating in learning;</li> <li>• Widening participation – targeting those young people leaving care;</li> <li>• Widening participation – targeting those young people who care for dependants;</li> <li>• Widening participation – targeting young asylum seekers and refugees;</li> <li>• Widening participation – linking in with the work being done to widen access to HE;</li> <li>• Basic skills – supporting pre-16 literacy programmes and family learning;</li> <li>• Collaboration – incentivising providers to collaborate on provision;</li> <li>• Communicate parity of esteem between academic and vocational options open to all young people at all levels of provision;</li> <li>• Working with partners to provide good market intelligence that can help young people choose the most appropriate option.</li> </ul>
<b>Basic Skills</b>	<ul style="list-style-type: none"> <li>• Target those in employment with poor basic skills, by improving awareness, the referral process and customising provision;</li> <li>• Target disadvantaged groups and the socially excluded through outreach working;</li> <li>• Address the shortage of qualified basic skills and ESOL tutors through raising awareness, funding training for both trainers of tutors and tutors, and recruitment;</li> <li>• Develop capacity of ESOL provision, especially for new groups of asylum seekers;</li> <li>• Improve the image of basic skills as an area in which to tutor and learn;</li> <li>• Improve referral and collaboration between providers so that learners do not face repeated assessments;</li> <li>• Develop basic literacy, numeracy and ESOL skills alongside basic IT skills;</li> <li>• Establish a common assessment framework;</li> <li>• Work with trade union learning representatives.</li> </ul>
<b>Adults</b>	<p><b>Widening Participation</b></p> <ul style="list-style-type: none"> <li>• Widen participation in deprived neighbourhoods through the Community Development Worker project (CDW) to stimulate demand;</li> </ul>

**Table 6**  
**Leicestershire Learning and Skills Council – Key Themes and Priorities**

	<ul style="list-style-type: none"> <li>• Improve access to, and quality of, information, advice and guidance;</li> <li>• Improve referral mechanisms;</li> <li>• Develop capacity in community-based outreach provision including that for adults with learning disabilities and/or disabilities;</li> <li>• Using CDWs to communicate gaps in demand at community level;</li> <li>• Work with partners to develop and implement an <b>e-learning strategy for Leicestershire</b>;</li> <li>• More strategic use of funding;</li> <li>• Evaluation of pilot projects and development of good practice networks;</li> <li>• Collaboration between community based providers and mainstream providers.</li> </ul> <p><b>Raising Achievement</b></p> <ul style="list-style-type: none"> <li>• Review mainstream provision to ensure that it is in line with future labour market needs and addresses skills shortages and gaps and the needs of adults with learning difficulties and/or disabilities;</li> <li>• Target industrial sectors and occupations with low qualification levels;</li> <li>• Promote the benefits of learning and skills development to target sectors and occupations;</li> <li>• Work with Sector Skills Councils to meet local needs;</li> <li>• Work in partnership with emda and local strategic partnerships to assess and meet current and future skills needs.</li> </ul>
<b>Workforce Development</b>	<ul style="list-style-type: none"> <li>• Support any organisations that need help in developing their workforce;</li> <li>• Target the SME sector, where need is the greatest;</li> <li>• Maintain current levels of activity in liP, encouraging firms to become committed and helping them to become recognised;</li> <li>• Meet the specific needs of some smaller firms through the option to complete some but not necessarily all phases of the liP recognition process;</li> <li>• Develop a learning and development brokerage service to help organisations define training needs and then meet them;</li> <li>• Better signposting and referral to learning opportunities including those for employees with learning difficulties and/or disabilities;</li> <li>• Use learning and development brokerage service to stimulate demand for management development;</li> <li>• Encourage mentoring between large and small firms;</li> <li>• Incentivise better dialogue between learning providers and employers;</li> <li>• Fund and facilitate collaborative projects between colleges and employers, using CoVE initiative and smaller scale projects;</li> </ul>

<b>Table 6</b> <b>Leicestershire Learning and Skills Council – Key Themes and Priorities</b>	
	<ul style="list-style-type: none"> <li>• Develop capacity of providers to engage with local employers and meet needs.</li> </ul>
<b>Quality Improvement</b>	<ul style="list-style-type: none"> <li>• Provide review and self-assessment to be key parts of the drive to improve quality;</li> <li>• Extend coverage of provider review to include sixth forms and adult and community learning;</li> <li>• Leicester City's area inspection provides a significant opportunity to strategically plan the totality of provision;</li> <li>• Establish baselines and targets for raising standards across all forms and levels of learning;</li> <li>• Encourage greater collaboration between providers, including collaborative marketing and sharing of provision;</li> <li>• Develop Leicestershire LSC as a champion of equality and diversity;</li> <li>• Embed equality and diversity principles into all Leicestershire LSC policies, programmes and actions;</li> <li>• Encourage better communication between providers, employers and individuals;</li> <li>• Work with learning providers to raise the quality of provision for learners with learning difficulties and/or disabilities;</li> <li>• Provide visits to ensure that adequate and effective systems are in place, including health and safety;</li> <li>• Review funding arrangements locally to see if there is scope for greater flexibility, and target discretionary funding to support innovation;</li> <li>• Support the national initiative to help more FE tutors become better qualified;</li> <li>• Support the work done by the Leicestershire Consortium for Education Business Links around staff development;</li> <li>• Increase the number of organisations across the provider network accredited with LiP;</li> <li>• Work with providers to enhance specialist back-up support to teaching and training staff;</li> <li>• Develop appropriate systems to collate the voice of all learners.</li> </ul>

10.13 With specific regard to **e-learning**, the Leicestershire Learning and Skills Council (LSC) states that it will continue to work with partners to develop an e-learning strategy for Leicestershire. This will include the work of the New Technology Institutes (NTIs) optimising the use of new technologies in learning programmes.

### **Leicestershire Rural Partnership (LRP)**

10.14 The Leicester Rural Partnership (LRP) comprises 19 organisations working together to improve the quality of life of those working and living in rural Leicestershire. The **overall vision of the LRP** is that rural Leicestershire will be made up of thriving and diverse rural communities where:

- There is access to all for a range of services and facilities and existing/new facilities are developed;
- The prosperity and competitiveness of the rural economy is strengthened and poverty tackled;

***The natural environment is protected and enhanced.***

10.15 The LRP is structured along the seven Programme Teams of Agriculture and Business Development; Community Development; Information and Electronic Services; Lifelong Learning; Market Towns and Rural Centres; Rural Transport; and Services and Resources. Recognising the importance of ICT to many of these programme areas, the LRP has developed a **Draft ICT Strategy** for the period 2003-2008, which is structured around the following **four interlinked themes**:

- **Access** – All people should have appropriately supported access to ICT facilities at a time and place that meets their needs;
- **Content** – All people should have access to high quality, relevant, personalised and joined-up multi-agency electronic information and services;
- **Business** – All individuals, businesses and other organisations should be aware of the potential benefits of utilising ICTs;
- **Awareness** – All people in rural Leicestershire will be aware of the information and services available to them electronically.

10.16 With regard to **Access**, Table 7 identifies the strategic objectives and actions of the Leicestershire Rural Partnership's (LRP's) ICT Strategy:

Table 7 LRP Strategic Objectives and Actions – Access	
<b><i>Help to make a community access point available in every village in Leicestershire where a need has been identified</i></b>	<ul style="list-style-type: none"> <li>• Co-ordinate consultation at county, district, parish and community group level to identify need;</li> <li>• Produce a map of possible locations across the county – schools, post offices, village halls, libraries, etc.</li> <li>• Maintain a database of existing locations across the county;</li> <li>• Provide help desk and technical support.</li> </ul>
<b><i>Information and services will be made available in a range of suitable locations by the appropriate delivery channels</i></b>	<ul style="list-style-type: none"> <li>• Identify preferred delivery channels for information and services;</li> <li>• Encourage service providers to make information and services available by a selection of channels – PC, kiosk, phone, electronic bus stop, etc.;</li> <li>• Encourage service providers to make information accessible taking into account the needs of minority groups.</li> </ul>
<b><i>Endeavour to be aware of all community ICT initiatives in the area, to ensure that rural</i></b>	<ul style="list-style-type: none"> <li>• Be aware of what is happening through co-ordinated monitoring of bids, forums and consultation;</li> <li>• Ensure that all projects are aware of any other</li> </ul>

<b>Table 7 LRP Strategic Objectives and Actions – Access</b>	
<b>ICT projects have maximum impact</b>	projects in their area.
<b>Be aware of broadband availability throughout Leicestershire</b>	<ul style="list-style-type: none"> <li>• Ensure that there is access to a database of broadband availability across the county.</li> </ul>
<b>Endeavour to identify communities where aggregating demand could result in broadband provision</b>	<ul style="list-style-type: none"> <li>• Co-ordinate consultation at county, district, parish and community group level to identify need and work with suppliers and funders to influence availability.</li> </ul>

10.17 With regard to **Content**, Table 8 identifies the strategic objectives and actions of the Leicestershire Rural Partnership's (LRP's) ICT Strategy:

<b>Table 8 LRP Strategic Objectives and Actions – Content</b>	
<b>Provide a community portal for every village and a parish council website for every parish in the county</b>	<ul style="list-style-type: none"> <li>• Work with community groups and parish councils to actively encourage community involvement and ownership of content management;</li> <li>• Provide the staffing resource to support each community to manage and maintain their own content;</li> <li>• Further enhance the community portals to make them configurable by an individual so that they can have personalised information and services appropriate to their needs;</li> <li>• Provide technical support via helpdesk, training sessions and surgeries;</li>   <li>• Work with service providers to comply with data standards to ensure that data can be aggregated and shared – e.g. events business and community groups, etc.;</li> </ul>
<b>Identify the range of electronic information services required by the community and monitor their availability</b>	<ul style="list-style-type: none"> <li>• Continue to consult on what information and services are required by rural communities;</li> <li>• Inform service providers of the community requirements identified;</li> <li>• Make the electronic information and services available via community portals.</li> </ul>
<b>Endeavour to make available any information/service identified by communities that are not being supplied by any other service providers</b>	<ul style="list-style-type: none"> <li>• If organisations cannot be influenced to make the identified services available then the LRP will endeavour to do so – subject to the LSEP considering the identified services necessary.</li> </ul>

10.18 With regard to **Business**, Table 9 identifies the strategic objectives and actions of the Leicestershire Rural Partnership's (LRP's) ICT Strategy:

Table 9 LRP Strategic Objectives and Actions – Business	
<b><i>Work with other partnerships to map existing ICT advice and provision to small and medium enterprises and identify gaps</i></b>	<ul style="list-style-type: none"> <li>• Contribute to an audit of which service providers are making what advice available by sector, quality, levels and geography.</li> </ul>
<b><i>Facilitate small and medium enterprises in exploiting ICT and in particular Internet technology</i></b>	<ul style="list-style-type: none"> <li>• Ensure that the business development team is aware of the ICT requirements of rural small and medium enterprises;</li> <li>• Build on the business web-page project to provide a content managed website with e-commerce functionality;</li> <li>• Provide help-desk and business support for business websites;</li> <li>• Help in ensuring that every small and medium enterprise business/organisation has an ICT action plan.</li> </ul>
<b><i>Help to ensure that businesses are aware of the benefits of broadband</i></b>	<ul style="list-style-type: none"> <li>• Develop and publish case studies demonstrating the cost benefits made available through the use of broadband.</li> </ul>

10.19 With regard to **Awareness**, Table 10 identifies the strategic objectives and actions of the Leicestershire Rural Partnership's (LRP's) ICT Strategy:

Table 10 LRP Strategic Objectives and Actions – Awareness	
<b><i>Help to make all people aware all the time of the information and services available to them electronically</i></b>	<ul style="list-style-type: none"> <li>• Actively promote the community portals as the 'Electronic One-Stop Shop' for co-ordinated delivery of county, district and other public services;</li> <li>• Provide co-ordinated, pro-active, targeted marketing campaigns via various media to include advertising, news, competitions and awards, posters and flyers, road shows and website training days.</li> </ul>
<b><i>Exploit the services that people use frequently and thus encourage them to use the technology</i></b>	<ul style="list-style-type: none"> <li>• Identify the most used services and make them available via ICT to encourage usage;</li> <li>• Investigate the potential of school children managing their own content on school websites to encourage families to use ICT.</li> </ul>
<b><i>Encourage every service provider to make resources available for an awareness campaign for each electronic services project</i></b>	<ul style="list-style-type: none"> <li>• Identify and promote good practice, especially in awareness campaigns and joined-up working;</li> <li>• Promote each new public service as it becomes available via the 'Electronic One-Stop Shop'.</li> </ul>

**Table 10**  
**LRP Strategic Objectives and Actions – Awareness**

<p><b>Identify groups of people where the level of awareness of ICT is low</b></p>	<ul style="list-style-type: none"> <li>• Identify existing research on the level of ICT awareness;</li> <li>• Use the results from the above action to produce targeted marketing campaigns.</li> </ul>
<p><b>Ensure that the public benefits from using technology to access information and services</b></p>	<ul style="list-style-type: none"> <li>• Identify and quantify the benefits perceived by rural communities;</li> <li>• Use the results to contribute to an awareness campaign.</li> </ul>

### **Welland Partnership**

10.20 The Welland Partnership comprises the five councils of South Kesteven District Council; Melton Borough Council; Rutland County Council; District of Harborough; and East Northamptonshire District Council. The partnership consists of rural areas with tiny villages (most with a population of less than 1,000) and a number of market towns. The Welland Partnership’s Business Plan for the period 2004 to 2007 sets out the **broad aims of the partnerships** as follows:

- Stimulating the creation of **high value jobs** in the area to give a more balanced employment base and to assist emda in moving the region away from its current image of a “low skills, low productivity, low earnings” economy;
- **Raising skills levels** so that a wider range of people can take advantage of these jobs;
- **Addressing rural deprivation** by encouraging business diversification;
- **Addressing the problem of rural isolation** via innovative ICT programmes;
- Investing in **sustainable communities**, both villages and market towns;
- Providing support and advice **services for rural businesses**, including the farming community;
- Considering **innovative branding and co-operative marketing approaches** for tourism, local food products, etc.;
- Developing the **capacity and resources of voluntary and community organisations** within the Welland area.

10.21 The Welland Partnership’s Business Plan for the period 2004 to 2007 also sets out the six cross-cutting themes of sustainable development; ICT; tourism; inward investment; economic inclusion; and skills and training and **a summary of the ICT cross-cutting theme** is given below.

10.22 **ICT is identified as a key element of the Welland Partnership’s overall approach to rural regeneration** as public access to ICT in rural areas has the potential to be

an important element in overcoming rural isolation. The use of ICT has already figured strongly in the approach of the Welland Partnership to rural problems. It has been used extensively in the SRB Rural Training Programme (for outreach facilities to villages, training for farmers, etc.) and in successfully delivering on-line rural transport information. Rutland On-line has been appointed to manage the Broadband Co-ordination role until March 2005. A Broadband Delivery Plan was published in November 2002 and included an audit of broadband infrastructure, identified gaps in provision, potential technological solutions to fill those gaps and a strategy to show how demand could be increased. Rutland On-line is currently involved in delivering the Welland Partnership's Broadband Capital Fund, Broadband Channel 5 and Welland Business Directory projects. They have also completed a feasibility study for a Welland Innovation Centre.

- 10.23 In the period of the Business Plan the Welland Partnership states that it will continue to address the problem of filling the gaps in broadband coverage in the sub-region. However, the recent policy of BT to enable many local exchanges has reduced the need for SSP intervention in the process. The Welland Partnership states that it will also investigate ways of bringing Broadband services to rural communities who not currently able to access them. Where broadband services are already available, the Welland Partnership will investigate ways of encouraging business users and others to make use of the services available. The current Broadband Channel 5 project is piloting an approach to this issue in the Harborough area.
- 10.24 Finally, the Welland Partnership has recently commissioned a Business Skills and Training Survey (June 2003) which was carried out by Marketing Innovation Ltd. This research provided the opportunity of investigating the extent of ICT usage in the business community within the Welland area and was based on a sample of 1,200 local firms.

### *Leicester City Council*

- 10.25 Leicester City Council's **Implementing Electronic Government 3 (IEG3) Statement** sets out **seven priority areas for action** with regard to e-government and the progress that has been made to date against these, which is summarised in Table 11 below.

<b>Table 11</b> <i>Leicester City Council IEG3 Statement – Priority Areas for Action</i>	
<b>Priority Area for Action</b>	<b>Summary</b>
<b>Raising Standards Across Schools</b>	By providing <b>accessible learning platforms</b> with fast connections through a number of Government funded projects, Leicester City Council is enabling learners of all age groups in the city to study outside of the formal lesson, such as at home or in their local library. These facilities also allow for collaboration across schools, the LEA and the region. Leicester schools are also successfully using <b>e-learning to re-engage students</b> who have been disengaged from learning or excluded from schools. E-learning is also being used to allow students to continue their education and adapt it to their needs when absent due to health issues.  The implementation of <b>whole school networks</b>

**Table 11**  
**Leicester City Council IEG3 Statement – Priority Areas for Action**

	<p>also benefits both curriculum learning and presents opportunities for schools to manage information more effectively. Leicester City Council has established common data sets and integrated management information systems that enable schools to send data to the Council in electronic format. By 2006 Leicester City Council aims to be collecting all core items of data automatically. These developments aim to reduce the burden of bureaucracy on schools and benefit parents through the provision of more accurate and timely information.</p>
<p><b>Improving the Quality of Life of Children, Young People, Families at Risk and Older People</b></p>	<p><b>CareFirst</b>, Leicester City Council's Social Care case management system, stores the Council's service users' details and case histories and enables staff to readily track cases, to identify the services being delivered and to monitor the progress of assessments. This system is the first building block towards the development of an electronic social care record.</p> <p>The <b>Leicester Disabilities Information and Communication Network (LDICN)</b> was launched in July 2003 and developed in partnership with health agencies and the voluntary sector. It has created nine computer suites in social care and voluntary sector centres in Leicester. These are specially adapted for the needs of users, particularly young people, with disabilities. A web portal (<a href="http://www.ldicn.org.uk">www.ldicn.org.uk</a>) has been built to provide a central point for information and consultation on issues that affect people with disabilities and their carers as well as services that are available to them. LDICN and Leicester City Council's project to provide computing resources to foster families provides access to facilities and resources for children and needy young people.</p> <p>Through the <b>People's Network</b>, all 21 libraries in Leicester city offer the public access to Internet connected computers free of charge. This particularly benefits young people who do not have IT facilities at home, approximately 50% of the city's population.</p>
<p><b>Promoting Healthier Communities by Targeting Key Local Services, Such as Health and Housing</b></p>	<p><i>The LDICN and other projects in Leicester City to join up with Health Care agencies and agencies in the voluntary sector are contributing towards improving the health of the community by enabling those who require such services to access them seamlessly. To support this, ten <b>electronic touch screen kiosks</b> will be installed in different locations around the city including health centres as part of the LDICN project.</i></p> <p>Leicester's <b>Supporting People Programme</b> funds</p>

<b>Table 11</b> <b>Leicester City Council IEG3 Statement – Priority Areas for Action</b>	
	<p>approximately £17.5 million of housing related support services to vulnerable people. Information is available on the Supporting People website (<a href="http://www.leicester.gov.uk/supportingpeople">www.leicester.gov.uk/supportingpeople</a>) including a services directory for the benefit of both existing and potential service users. Leicester City Council is now piloting the electronic transfer of data from a sample set of service providers into the central Supporting People computer system with the aim of making this facility available to all providers.</p>
<p><b>Creating Safer and Stronger Communities</b></p>	<p><i>Leicester City Council use GIS to illustrate key information (e.g. deprivation levels, crime statistics and health conditions) about areas of the city for staff and Members. This helps planning and policy making to create safer and stronger communities. Leicester City Council also uses CCTV monitoring (24x7) from control centres to deter and detect crime and prevent anti-social behaviour, enhancing security especially in the city centre and residential estates. Emergency alarms and telephones, connected to central IT systems, are used to respond to alerts from vulnerable people in approximately 6,500 homes in the city.</i></p>
<p><b>Transforming the Local Environment</b></p>	<p>Leicester has a comprehensive series of <b>air quality monitoring stations</b> around the city. The data from the monitoring stations forms part of a national network of monitoring stations and are used within the national air quality forecasting models to predict pollution levels over the next few days. The Council continues to be involved in a number of European funded projects to advance the use of computer models for forecasting air quality.</p>
<p><b>Meeting Transport Needs More Effectively</b></p>	<p>Based in Leicester, <b>Area Traffic Control</b> manages and maintains the traffic signal network throughout Leicester, Leicestershire and Rutland. Traffic flow and signal timing design are constantly refined to optimise the efficiency of the flow of traffic and to co-ordinate crossing facilities for cyclists and pedestrians using sophisticated IT systems. The main road network is monitored with CCTV cameras, which gives a real time picture of the traffic situation in and outside the city.</p> <p><b>StarTrak</b>, a real time bus passenger information system, is helping make bus travel more reliable and aims to encourage people out of their cars. Buses on many routes in the City have on-board computers linked to a satellite navigation system. Digital displays at bus stops give passengers accurate information of bus arrival times. StarTrak also gives buses priority at traffic signals, helping them to keep to their timetable (<a href="http://www.leicesterequal.co.uk/traf_trav/startrak/startrak.htm">www.leicesterequal.co.uk/traf_trav/startrak/startrak.htm</a>)</p>
<p><b>Promoting the Economic Vitality of Localities</b></p>	<p>Leicester City Council is a key partner in a number of regeneration partnerships including the <b>Leicester</b></p>

**Table 11**  
**Leicester City Council IEG3 Statement – Priority Areas for Action**

	<p><b>Regeneration Company and the Leicester Shire Economic Partnership.</b> The provision of ICT infrastructure and training are key elements of some of these projects and relevant initiatives include:</p> <ul style="list-style-type: none"> <li>• Promoting the business case for very high capacity communications links being included in regeneration schemes;</li> <li>• Researching the possibility of a Leicester Shire ISP to encourage home multilingual participation in information and communications networks and support home-based micro-businesses to use the Internet;</li> <li>• Developing skills and learning programmes around ICT in the developing business services sector.</li> </ul>
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10.26 The Leicester Regeneration Company (LRC) was established in early 2001 in response to the Government’s 2000 Urban White Paper. The LRC is led by the private sector, with a fully supportive public sector bringing to bear its statutory powers and resources. The rationale of the LRC is to concentrate on physical regeneration within a clearly defined area of the city – comprising approximately 400 hectares. The overall Masterplan for the LRC, produced by Roger Tym and Partners, proposes to progress the following five major projects – all of which will require specific ICT input in terms of infrastructure and managed services:

- **Office Core** – The plan proposes a 50,000 m<sup>2</sup> prime office core, focusing on a re-modelled Leicester Railway Station, to provide an accessible, high quality office environment at the heart of the city. This is based on a estimate of a market potential for almost 9,000 new office jobs in the city up to 2016, provided an appealing property offer can be delivered to attract them;
- **Science and Technology** – The world-class scientific output of key university departments, combined with the successful National Space Centre, creates the potential for a science and technology park in Leicester city of up to 45,000 m<sup>2</sup>. Positioned in an attractive riverside setting, this will encourage graduate retention and high-income jobs in inner-city Leicester;
- **Retail Circuit** – Although the city’s retail core is successful, and will become more so with Hammerson’s planned investment, it is very highly concentrated. As such, the plan proposes 100,000 m<sup>2</sup> of new retail and leisure development, including Hammerson’s proposals to extend the Shires retail centre;
- **A New Community** – Although the private residential market is beginning to take off in central Leicester, the plan identifies a need for more diverse residential development in the inner part of the city, which has prompted proposals for up to 3,000 new dwellings, including a major new residential area close to the retail core;

- **Waterside** – The plan identifies that Leicester’s waterfront is largely unexploited because it is severed from the city centre by the multi-lane inner ring road and the fractured and unattractive areas that surround it. The Masterplan therefore proposes to downgrade the ring road near to the city centre and create a major mixed-use development opportunity. This will be linked with the waterfront and will focus around a new canal basin and an extension of Leicester’s uniquely attractive New Walk.

## 11. Organisations in Leicestershire whose policies and strategies we have reviewed

- Leicester Shire Economic Partnership (LSEP);
- Leicestershire County Council;
- Leicestershire Learning and Skills Council (LSC);
- Business Link for Leicestershire;
- Leicestershire Chamber of Commerce;
- Leicestershire Rural Partnership;
- Leicestershire, Northamptonshire and Rutland Health Authority (LNRHA);
- Leicestershire Constabulary Police Authority;
- Leicestershire Fire and Rescue Service;
- Welland Partnership;
- Leicester City Council;
- Leicestershire's District Councils;
- Leicestershire's Universities – De Montford, the University of Leicester, Loughborough University;
- Leicester Regeneration Company (LRC).

## 12. Intelligent Landscape Consultation Aide Memoir – E-Business

12.1 As part of the Intelligent Landscape ICT Visioning Study consultation exercise, DTZ PIEDA Consulting would like to discuss the following areas with you:

### *Key Economic Opportunities and Issues Facing Businesses in the Sub-region*

- Key **sectoral strengths** and weaknesses;
- Issues surrounding indigenous **business productivity**, innovation and competitiveness;
- Issues with regard to Leicestershire's **skills base**;
- The attraction and retention of **inward investment**.

### *E-Business in Leicestershire – Benefits, Drivers and Barriers*

- **Benefits** of supporting businesses in the sub-region to take-up and effectively use ICTs;
- **Barriers** (demand-side and supply-side) which prevent business from adopting and effectively using ICTs/e-business:
  - **Demand-side** – including a lack of awareness and understanding of the benefits of ICTs/e-business; lack of 'hard' and 'soft' ICT skills; perceived costs; concerns over security, confidentiality and fraud, etc.;
  - **Supply-side** – including the use of technical 'jargon' in communicating e-business products and services as opposed to the actual business benefits and a focus on major corporates as opposed to SMEs;
- **Existing e-business projects and programmes** that you are aware of in the sub-region (both public and private sector).

### *Supporting the Targets of the Strategic Framework for Developing ICT in the East Midlands (Strategic Target 7)*

12.2 By 2005, 95% of all businesses in the East Midlands will have broadband access, use e-mail, have a marketing web-site and use ICT effectively to store, transmit and receive data as defined by their business processes and strategy. Most of their interactions with both customers and suppliers will be conducted online.

### *Potential Projects to Support Business Use of ICTs in the Sub-Region - For Example...*

- **Raising awareness** of the benefits of e-business and effective ICT use - and quantifying these where possible e.g. 20% cost savings through automation;

- **Trailing ICT/e-business applications** with SMEs – to demonstrate the benefits of ICTs/e-business in their business environment;
- **Technology demonstration** events for SMEs;
- **Supporting major corporates** in the sub-region (e.g. Next, Caterpillar, Astra Zeneca R&D) to assist SMEs both up and down their supply chain to adopt e-business processes;
- Support the development of **sub-regional content** i.e. e-business excellence in the manufacturing sector;
- The branding of a flagship employment site as a '**knowledge campus**' and the assembly of requisite hard and soft infrastructure (such as incubators and University-industry collaboration) to attract and retain flagship inward investment projects.

## 13. Intelligent Landscape Consultation Aide Memoir – E-Government

13.1 As part of the Intelligent Landscape ICT Visioning Study consultation exercise, DTZ Piedad Consulting would like to discuss the following areas with you:

### *Key Goals/Benefits of the Sub-Region's E-Government Agenda<sup>3</sup>*

- The delivery of services in a **joined-up** way that makes sense to the consumer;
- The delivery of **accessible services** – at times and places most convenient to the consumer;
- Deliver or support services **electronically**, facilitating faster, more reliable and better value services;
- Deliver services **seamlessly**, so that customers are not asked to provide the same information more than once and service providers are better able to identify, reach and meet the needs of service users;
- Deliver **open and accountable** services, so that information about the objectives, standards and performance of local service providers will be freely and easily available;
- Deliver services that are **used by e-citizens** through the effective promotion of available and accessible new technologies.

### *E-Government in the Sub-Region – Progress To Date*

13.2 Progress of your individual organisation to date and your views on progress in the sub-region more generally.

### *E-Government in the Sub-Region – Key Barriers*

13.3 Barriers (demand-side and supply-side) that may prevent the optimal implementation and take-up of e-government services:

- **Demand-side** – including a lack of awareness and understanding of the e-services offered; lack of access to the appropriate ICTs and ICT skills; negative first impressions; and concerns over security and confidentiality;
- **Supply-side** – infrastructure constraints (broadband, contact centres, etc.); technical constraints (persistence of legacy systems, knowledge and data management, security and authentication); a focus on meeting short-term BVPI targets; funding constraints; lack of effective collaboration between private and public sector partners; institutional barriers associated with cross-agency working; cultural barriers associated with change management;

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<sup>3</sup> As defined in [e-gov@local](#).

leadership issues; and a lack of engaging content and poor interactivity of many government sites.

***Supporting the Targets of the Strategic Framework for Developing ICT in the East Midlands (Strategic Target 5)***

13.4 By 2005, all interactions with local authorities in the region should be capable of being carried out electronically.

***Potential Projects to Support e-Government in the Sub-Region, For Example ...***

- **Raising awareness** of the benefits of e-government amongst e-citizens, the community and voluntary sector and businesses;
- Supporting the **dissemination of e-government activities** in the sub-region and to signpost international, national, regional and sub-regional best practice in the e-government arena;
- **Demand aggregation** – at either the infrastructure (e.g. shared data centre) or service (e.g. council tax) levels.

## 14. Intelligent Landscape Consultation Aide Memoir – E-Learning

14.1 As part of the Intelligent Landscape ICT Visioning Study consultation exercise, DTZ PIEDA Consulting would like to discuss the following areas with you:

### *National/Regional/Sub-Regional E-Learning Policy Context*

- **National** strategy – Getting on With IT, the Post-16 E-Learning Strategy;
- **Regional** strategy – ICT Strategic Framework and Destination 2010;
- Key **E-Learning Goals and Objectives** for the sub-region – both pre- and post-16.

### *E-Learning in the Sub-Region – Benefits, Drivers and Barriers*

- **Benefits of e-Learning** – including flexibility, accessibility, the enrichment of the learning process, up-to-date content, empowering learners and supporting community building;
- **Barriers** (demand-side and supply-side) that may prevent the optimal implementation and take-up of e-learning services in the sub-region:
  - **Demand-Side** – including generic learning barriers (disenchantment and social exclusion, low literacy and numeracy, cost – financial and time, language and a lack of awareness and understanding of the benefits of learning) and those specific to e-learning (lack of access to the appropriate ICTs, cost of access to ICTs, lack of appropriate ICT skills and confidence, and personal interface barriers – e.g. for disabled users);
  - **Supply-Side** – including a lack of co-ordination of initiatives and courses, courses offered on a passive model ('chalk and talk'), over-reliance on qualifications-based courses and lack of ICT skills amongst front-line providers in some instances.
- **Key developments with regard** to e-learning in the region/sub-region – for example the searchable map of e-learning initiatives in the region and the activities of the e-learning working group.

### *Supporting the Targets of the Strategic Framework for Developing ICT in the East Midlands (Strategic Target 6)*

14.2 By 2010, 90% of citizens in the East Midlands will have basic IT skills and high-quality e-based learning material will be readily accessible to them.

***Potential Projects to Support e-Learning in the Sub-Region, for example...***

- **Raising awareness** of the benefits of e-Learning to both individuals and businesses and signposting relevant sources of information and courses;
- The development of **e-Learning centres/resources in the community** to assist e-learners to overcome barriers such as disenchantment and social exclusion, lack of confidence and lack of appropriate ICT skills and or issues with regard to wider literacy and numeracy skills;
- Support the **development of non-qualifications-based e-learning courses**, based on an audit/assessment of learners' needs in the sub-region;
- Other activities that LSEP can undertake to support the development of e-learning in the sub-region.

## 15. Intelligent Landscape Consultation Aide Memoir – ICT Infrastructure (Broadband)

- 15.1 As part of the Intelligent Landscape ICT Visioning Study consultation exercise, DTZ Pida Consulting would like to discuss the following areas with **telecommunications service providers** in the sub-region:
- Metropolitan area networks (MANs);
  - Fibre optic points of presence (POPs);
  - Fibre optic break out points;
  - ADSL-enabled exchanges (BT plus any unbundled exchanges);
  - Broadband fixed wireless provision;
  - Summary of 3G progress (mobile operators).
- 15.2 This analysis will be based on a typical telecommunications network typology, which comprises – backbone, metropolitan area network (MAN) and local loop (first mile/last mile access).
- 15.3 We would also like to gauge your views on levels of take-up of broadband services in the sub-region amongst both businesses and public sector organisations.

## 16. Intelligent Landscape Workshop Summaries

### INTRODUCTION

16.1 This brief document summarises the main points that were discussed at the plenary sessions of the **Intelligent Landscape workshops** held on the 19<sup>th</sup> and 26<sup>th</sup> of September 2003. The points raised at the sessions are grouped under the following four main workshop themes:

- ICT Infrastructure (broadband);
- e-government;
- e-learning;
- e-business.

16.2 We have synthesised the output of the plenary sessions into a series of 'key messages' that reflect the weight of what was said. Not all individual and specific points raised are therefore listed in this document, but all points made will be taken into account through the ICT strategy formulation process. It is also worth noting that DTZ Piedad Consulting will add to the 'key messages' summarised in this document, based on our knowledge and understanding of the subject area and the literature review and consultation exercises we are undertaking as part of this project. The key issues raised in this document summarise the discussions at the workshops and are therefore not necessarily exhaustive.

### 1. ICT INFRASTRUCTURE (BROADBAND)

16.3 The main issues surrounding broadband ICT and the ICT end-users in the sub-region can be summarised as follows:

#### ***Benefits of Broadband ICT Infrastructure***

- Broadband has the potential to deliver **enriched content** to ICT end-users (both businesses and communities);
- Availability of broadband can be used to support the attraction and retention of **inward investors** in knowledge-based businesses to an area;
- Broadband can be used to **optimise the use of applications** such as e-government, e-business, e-learning and home-working;
- The extensive deployment of broadband ICT services can be used to improve the **competitive positioning** of an area.

#### ***Demand-Side Barriers to Broadband***

- **Cost of availability** in terms of initial set-up costs and ongoing revenue costs;

- Lack of **understanding and awareness** of the benefits that broadband can offer (information failures) and therefore an unwillingness to pay for them;
- Perceived **lack of content** and/or 'killer applications' that require the adoption of broadband;
- Concerns over **confidentiality and security** with certain broadband delivery channels – e.g. broadband fixed wireless access.

### ***Supply-Side Barriers to Broadband***

- Perceived and/or actual **low-densities of demand** in some areas (particularly rural areas) leading to a **lack of absolute supply** (e.g. no ADSL service provision);
- **Legacy architecture** at the local loop level (and the associated cost of upgrade);
- **High barriers to entry** – i.e. cost of network build;
- **Limited choice of access channels** – too heavy emphasis on PCs and not enough on alternative channels such as iDTV and mobiles.

## **2. E-GOVERNMENT**

16.4 The main issues surrounding e-government and the ICT end-users in the sub-region can be summarised as follows:

### ***Benefits of e-Government***

- **Business process re-engineering** – transforms 'back-office' processing from being internally focused to being focused on the needs and requirements of citizens;
- **Electronic service delivery** – allows citizens to access services at a time and location most convenient to them;
- **Digital inclusion** – allows more time and financial resources be focused on those that need it most;
- **e-Democracy** – opens up new channels of citizen participation;
- **Joined-up service delivery** – allows governments and other service providers to deliver services in a joined-up way.

### ***Demand-Side Barriers to e-Government***

- Lack of **awareness and understanding** of the e-services offered;
- Lack of **access to appropriate ICTs and ICT skills** to use them – disproportionately amongst those social groups that are the largest users of government services;

- **Negative first impressions** – whereby citizens are put off e-services due to a poor first experience of e-service delivery;
- Concerns over security and **confidentiality**, and the use of the often sensitive information collected.

### ***Supply-Side Barriers to e-Government***

- Persistence of **legacy systems** and the problems these pose with regard to interoperability;
- Focus on meeting **short-term** Best Value Performance Indicator (BVPI) e-government targets and not necessarily on the wider modernisation agenda;
- **Funding** constraints;
- **Lack of effective collaboration** with private sector suppliers and partners;
- **Institutional barriers** associated with inter-departmental and inter-agency working;
- **Cultural barriers** associated with changing employee roles and concerns over re-deployment and/or job-losses;
- **Leadership issues** with regard to driving through change;
- **Lack of engaging content and poor interactivity** of many e-government sites and services.

### **3. E-LEARNING**

16.5 The main issues surrounding e-learning and the ICT end-users in the sub-region can be summarised as follows:

#### ***Benefits of e-Learning***

- **Flexibility** – in terms of time, place and duration;
- **Accessibility** – in terms of age, personal interface (flexible technologies), place and content;
- **Enrichment of the learning process** – including two-way learning (interactive learning), ‘accidental’ learning (in terms of breadth beyond the immediate subject area and new ICT skills);
- Access to content that is **continually updated**;
- **Empowers learners** to take control of the learning process;
- Supports **community building** – engaging whole families and stimulating interest in local content and capacity building.

### ***Demand-Side Barriers to e-Learning***

16.6 Overall, the main demand-side barriers to e-learning are the same as those to learning in general:

- Disenchantment and social exclusion;
- Low literacy and numeracy;
- Cost – financial and time;
- Language;
- Lack of awareness and understanding of the benefits of learning.

***...however, there are a number of demand-side barriers specific to e-learning...***

- Lack of access to ICTs at home and in the community – broadband, PC equipment, plug-ins, etc.;
- Cost of access to relevant ICTs and courses;
- Lack of appropriate ICT skills and confidence;
- Personal interface barriers – e.g. for disabled users.

### ***Supply-Side Barriers to e-Learning***

- Lack of co-ordination of initiatives and courses;
- Many courses offered on a passive model – e.g. ‘chalk and talk’;
- Many courses qualifications-based as opposed to being based on the needs of learners;
- Lack of up-to-date ICT skills amongst front-line providers in some instances;
- Mismatch between curriculum demands and available content.

## **4. E-BUSINESS**

16.7 The main issues surrounding e-business adoption in the sub-region can be summarised as follows:

### ***e-business Benefits***

- **Increased market reach** – companies of all sizes can use e-business to access new markets, which can be geographically distant and outside their normal lines of business;

- **Levelling the playing field** – small businesses can develop systems previously only viable for major corporates;
- **Supply chain integration** – companies can engage more effectively with their suppliers, customers and strategic partners through the development of e-business solutions (as demonstrated by Wilson Bowden);
- **More effective use of employee time** – many e-business processes can automate repetitive tasks, freeing up personnel to focus on client needs and service quality.

### *Demand-Side Barriers to e-business*

- **Lack of awareness and understanding** of the transformational opportunities presented by e-business – imperfect information and uncertainty failures;
- **Lack of technical ICT skills** within businesses (particularly micro-businesses) to implement and run e-business solutions (indeed many businesses are not using anywhere near the full functionality of the systems they already have);
- **Perceived costs** – it is difficult to measure ICT investment through conventional financial metrics and the perceived costs are often considered to be prohibitive (especially by micro-businesses) – particularly when the benefits are not fully understood;
- **Concerns over system redundancy** – many businesses are concerned that the ICT market is moving so quickly that the solution they buy into will quickly become superseded;
- Concerns over **security, confidentiality and fraud** – highly publicised incidences of security failures and ‘hacking’ stories make many companies reluctant to commit to e-based systems.

### *Supply-Side Barriers to e-business*

- Many ICT suppliers present e-business solutions using **technical ‘jargon’** as opposed to selling the benefits that they can offer to existing business processes;
- Many ICT suppliers **focus on the needs of major corporates** (as they represent highest potential returns) and not on the needs of SMEs;
- Many ICT suppliers find it **difficult to engage SMEs**.