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Internet Access Review

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Acknowledgements

This report into the ways that organisations can support others to learn more about the internet and technologies that interest them is very much a product of its theme. By this, we mean that it is nearly impossible to acknowledge or thank everybody whose thoughts, ideas and contributions were part of forming the report's contents. So, in the first instance we would like to thank contributors to the World Wide Web and the many people who are committed to documenting the outcomes and experiences of their internet access initiatives.

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Contents

Foreword

Social exclusion and digital exclusion are inextricably linked[1]. Ironically, those who have the greatest need tend to be excluded from the very technologies that are designed to help. For instance, people in poverty are least likely to have access to online-only deals or price comparison tools to find the best energy suppliers. Meanwhile, those in social isolation are least likely to benefit from the 'connecting and communicating' facets of the internet such as social networking or email.

These exclusions are consistent with the view that "*it costs more to be poor*"[2]. In 2012[3], the United Nations' Human Rights Council backed the notion that internet access should be a basic human right. For some, it is hard to compare internet access rights with basic human physical needs such as access to clean water. Nevertheless, according to a poll by the BBC World Service, four out of five adults regard internet access as their 'fundamental right'[4].

This is a question which will certainly be revisited in the coming years. For now, we believe that internet access is a (non-absolute) civil right as it is the gateway to other freedoms.

In 2012[5], the Sheffield Community Network's Digital Media Centre Grant Fund provided support and funding to ten organisations operating or establishing neighbourhood-based community centres in deprived areas of Sheffield. Each grant contributed to the digital enablement or digital enhancement of these venues, with an expectation that the new tools and technologies would enable digital participation, leading to employment and enterprise opportunities within the communities they served.

The report which follows is an opportunity for the Digital Media Centres and others working in this field to learn from past experiences of community action and discover new approaches to internet access for disadvantaged groups. Moreover, many of the ideas can be realised using simple or low-cost methods such as seeking out new collaboration opportunities and technology partnerships.

Internet use in Yorkshire & the Humber is below the U.K. average[6]. The Sheffield Community Network and its partners advocate the need for more internet access initiatives and hope that community networks like our own embrace the existing and emergent digital exclusion challenges of a more connected and digitally inclusive society.

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[1] DCLG (2008): Digital Inclusion: An Analysis of Social Disadvantage and the Information Society
[2] Beynon, R. (2011) The Xmas Poverty Premium: How the poor pay more to celebrate Christmas
[3] Human Rights Council (2012): The promotion, protection and enjoyment of human rights on the Internet
[4] BBC World Service Poll (2010): http://news.bbc.co.uk/1/shared/bsp/hi/pdfs/08_03_10_BBC_internet_poll.pdf
[5] Sheffield Community Network (2012): Digital Media Centres
[6] Office for National Statistics (2012) Internet Access Quarterly Update, Quarter 4

Why intervene?

Digital inclusion is hinged around internet access and it is increasingly apparent that there is a correlation between internet access and quality of life, be it through improved educational opportunities, savings from online commerce or simply access to information.

Digital inequalities are rife and manifest in a number of ways. During hard economic times, the corporate lure of savings enabled by policies such as 'digital by default' means that increasingly those unwilling or unable to 'channel-shift' are in some way disadvantaged.

The internet revolution has been more select than many people think. In-fact, it is estimated that more than seven million adults in the U.K. have still never used the Internet[7]. Three and a half million of these people are among the most disadvantaged in society, almost 40% of which are over the age of 65 and a similar proportion are out of work.

When it comes to internet access there are a number of socio-economic and demographic characteristics at play. This might include age, sex, location and earnings. For example, nearly half of those living in households earning less than £11,500 a year do not use the internet compared to just 4% of households with an income of over £30k[8].

Men are more likely to be internet users compared to women particularly amongst the over 60s. Individuals with a disability are three times more likely never to have used the Internet than individuals with no disability[9].

There is also a widening skills gap among those *with* regular internet access. Analysts[10] estimate that some 16 million people in the U.K. lack basic online skills such as using a search engine, sending and receiving emails, completing online applications and accessing information online.

Today, laggards are experiencing a double whammy effect as a result of de-prioritised internet access initiatives and the withdrawal of traditional access channels. While there is a temptation to ignore those who do not help themselves, helping the 'have-nots' get online has universal benefit. Imagine the intergenerational possibilities of universal email access for the elderly, consultation opportunities with hard to reach groups or cashable savings to health providers as a result of telemedicine.

We think that tackling these problems at a local level, where there is a deep appreciation for the local context, is a vital contribution for national resolve.

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[7] Office for National Statistics (2012) Internet Access Quarterly Update, Quarter 4
[8] Internet Advertising Bureau (2012): A race online (http://www.iabuk.net/sites/default/files/legacy/raceonline.pdf)
[9] Office for National Statistics (2012) : Internet Access Quarterly Update, Quarter 4
[10] Booz & Co (2012): This is for everyone (http://www.go-on.co.uk/files/2113/5237/0908/The_Booz_Report_Nov2012.pdf)

Scope

In accordance with the aim of delivering societal benefits, this study explores a range of initiatives which are focused on providing access as opposed to the underlying technology or development of it. Fundamentally, this study asks '*what are the most effective interventions and what have we learned from prior internet access initiatives*'?

It focuses on the theme of inclusion in terms of improving internet access among deprived communities, embodied by unmet needs caused by a lack of resources in one or more areas such as income, employment, health, education and skills, crime or environment.

We have been pragmatic about the approach – taking on board the various research and evaluation findings from internet access initiatives of past, extracting examples of 'what works' and assessing the various facets such as strengths and weaknesses.

In recognition that digital media centres are centres of gravity in terms of facilitating internet access initiatives, we have provided a number of examples which have special relevance to the Yorkshire and Humber region. These are intermixed with case studies from across the globe in an attempt to provide a common appreciation for any given issue.

Readers are always encouraged to think about their own community setting and the appropriateness of methods in this report based on stakeholders that are[11]:-

- Actively disengaged
    - Negative perceptions of the internet, low or no computer skills.
- Reluctantly online
    - Resentful of the internet, only basic skills, disinclined to transact.
- Destination users
    - Love what they know but fear the rest, lack wider skills.
- Willing but unable
    - Positive attitude towards the possibilities, lack skills but willing to learn.
- Learning the ropes
    - Positive about benefits, committed to learning.
- Confident explorers
    - Highly skilled, evangelical about the internet.

[11] Categories mirrored from the Cabinet Office (2012) Digital Landscape Research (http://publications.cabinetoffice.gov.uk/digital/research/)

Orientation

This report is separated into a number of thematic chapters based on a number of key internet access layers (represented in the 'onion model' below).

A recurring theme is web content and how it affects the access dynamic for disadvantaged groups. For example, with an internet geared towards commerce, how can hard to reach audiences relate to it?

The first chapter on Community Media explores how the development of content, including its collection and preservation, is contributing to a renewed sense of ownership and subsequent access. Likewise, we explore how communities of interest are incentivising people to access the internet through locally orientated content.

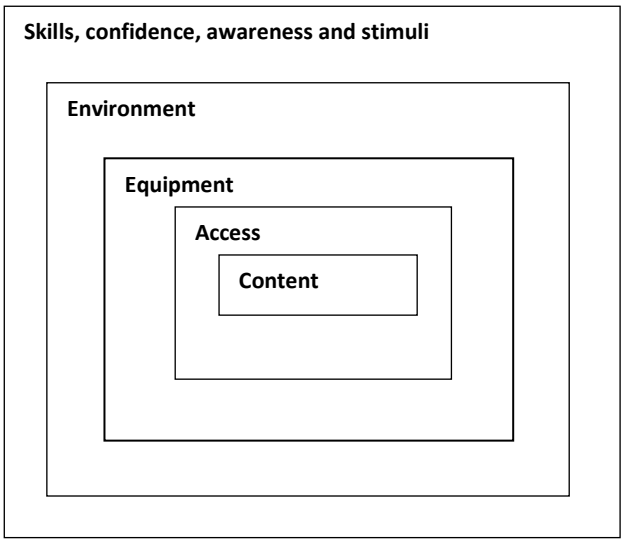
Content producers also need facilities, tools and skills for carrying out their work. We explore the role of community champions and public access in the chapter on Neighbourhood ICT Centres, including new forms of community hub such as hackspaces.

The chapter on 'Low cost re-use of computers and other ICTs' considers the relationship between poverty and access. Principally, how enabling technologies can be made more affordable and what affect ICT ownership (or the lack of it) has on deprived communities.

The 'Public and Neighbourhood WiFi access' chapter is more specifically geared towards examining how wireless access technologies are being used to build open and low-cost networks for community benefit. In other words, how communities can establish and maintain their own access initiatives.

Multi-faceted approaches are explored in the chapter on 'Combined access initiatives'. These are internet access initiatives designed to address multiple deficits such as skills, equipment and affordability. Finally we consider the novel approaches and emerging trends that will help community organisations remain relevant and mindful of internet access futures.

Introducing the internet access onion model



We have created a simple onion model (left) to represent the various facets of the topic.

The layers represent the various areas of influence for community organisations.

The outer layers have the most dependencies but are typically easier to tackle whereas the inner ones are root causes which require more effort to change yet are less resistant to it.

1. Community Media

What is 'Community Media'?

Community Media is an independent, civil society based media that operates for social benefit and is not for profit[12]. As an alternative to mainstream media, Community Media has an important role in rebalancing content and is unequivocally linked to positive social impact.

The key difference between traditional media and Community Media is in *who* the content is created and controlled-by. In traditional media a corporation or individual sets the agenda in terms of the political position, relationship to advertising and what is considered newsworthy. In Community Media, these are set by and *for* a community; these may be either a geographic community or a community of identity/interest.

In the U.K., Community Media activities became prominent in the 1970s. Most stations are located in EU member countries - particularly in France, Netherlands, Italy, United Kingdom, Denmark, Spain, Germany and Sweden.

In January 2012[13], the Community Media Forum Europe (CMFE) mapped the provision of community radio and community television in European countries. They found 2237 community radio stations and 521 community television stations in Europe.

Worldwide, take-up and an ability to organise activities is dependent on the political environment organisations operate in. For example in Africa or Chile radio (community and commercial) are fast growing however the political interference and regulations they face are vastly different to those U.K. stations work within. This inevitably affects both the content they produce and the individuals who produce content for the stations.

Governance

For reasons of cost, many organisations and groups are unable to fund employees and as such depend on volunteers and freelancers to supply content and information. Volunteers cannot be depended on to the same extent as employees as they have to be able to be flexible in their choices about when they work, what they work on and how long for in order to encourage their participation.

Freelancers are able to work alongside Community Media organisations supporting their work.

[12] United Nations (2011): Good practice handbook (http://unesdoc.unesco.org/images/0021/002150/215097e.pdf)
[13] Community Media Forum Europe (2012) First Mapping of Community Media in Europe (http://www.cmfe.eu/policy/first-mapping-of-community-media-in-europe)

Why is Community Media useful?

Community Media purposefully engages with and recruits from groups that are not represented (or represented positively) in the mainstream media. Most Community Media organisations operate or aim to operate independently of state-run media, public broadcasting and commercial media (although some do incorporate advertising within their funding models). Whilst their independent status promotes a more open editorial policy and an ability to focus on developing skills or participation beyond the mainstream, they are still bound by legal compliance with laws created for traditional media outlets.

Empirical research[14] suggests that there is a strong correlation between the development of network infrastructure and the growth of local content. There is enormous potential in largest network of all, the internet, to unlock the potential of media organisations and the communities they serve if organisations are able to access it and one another.

The internet has lowered many of the barriers to entry for creative individuals and organisations - providing widespread benefits such as low cost distribution and content collaboration. As the internet becomes a core media platform for consumers, Community Media has an opportunity to broaden their reach to ensure that all members of society's voices are heard.

Importantly, Community Media organisations serve only their communities. Communities that do not have active Community Media groups and organisations, ultimately also have weaker and fewer networks through which they can be represented. Conversely, individuals that support local radio through taking part, suggesting content or even passive listening are directly and indirectly contributing to enhanced community cohesion.

Community Media is agile and able to focus on very specific issues, often providing more detail than local news coverage can apportion. They are also able to achieve more diverse audience feedback by engaging groups that reflect the local community's diversity.

[14] United Nations (2011): The relationship between local content, internet development and access prices (http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/local_content_study.pdf)

Types of Initiative

There are a number of mainstream forms to Community Media: Radio Content Providers, Audio/ Visual content Providers, Communities of Interest and Multimedia Content Providers.

Radio Content Providers are the most traditional form of organised Community Media production. In 2012, Ofcom[15] and the Community Media Association[16] report that there are almost 200 organisations in the U.K. providing radio content to specific communities. These organisations tend to have capacity to deliver specific learning to new audiences.

There are fewer **Audio/ Visual Content Providers** operating in the U.K. Their primary activities are in public broadcast (such as community TV) and bespoke content creation (such as community film).

Communities of Interest represents the section of Community Media who have a limited and specific focus for their content. They do not necessarily seek a strong community cohesion element or diversity amongst content producers. More often groups are goal focused and as such can have short but successful project lifetimes. Others are created with the intention of longevity and draw in volunteers or funding to support their sustainability.

Finally, **Multimedia Content Providers**. These are difficult to quantify as they are not frequently categorised as being 'multimedia' as their defining feature. For example, the description incorporates individuals or small groups producing and sharing content sporadically or without identified purpose as well as including large, focused content providers. Frequently, Radio, Audio/ Visual and Communities of Interest could accurately be described as Multimedia Content Providers.

Amongst organisations producing Community Media there tends to be an appreciation of the need to use the most relevant technology for the audience and as such few organisations produce content that neatly fits within just one of the categories.

We have used this categorisation as a means for the reader to identify key methods for reaching, representing and working with communities - especially those that are currently disengaged from technology.

[15] Ofcom (2012) Community Radio Stations (http://www.ofcom.org.uk/static/radiolicensing/Community/community-main.html)
[16] Community Media Association (2012) Community Media Map (http://www.commedia.org.uk/map/)

Reach

Most people consume and are influenced by some sort of media. Radio is one of the best known means of accessing entertainment and information in the U.K. In terms of popularity, the Radio Joint Audience Research (RAJAR) report suggests that 89% of the U.K. population tune in to radio every week[17] Similarly worldwide, its spread is near-universal reaching an estimated 95% of the world population[18]. As such it was one of the first methods that early Community Media groups adopted for producing and distributing content.

In every area of media distribution, digital consumption is increasing. RAJAR report that despite a 5% year on year decrease in the number of hours people are listening to the radio, there has been a year on year increase to the number of adults listening to the radio via digital devices[19]. For example, in Quarter 3 (June-September) of 2012[20]:

- 18% of adults listen to radio via their mobile phone (a 12% year on year increase).
- Adults in the U.K. now listen to 43 million hours of radio content online per week (an 8% year on year increase).
- Including Digital TV and DAB, digital devices account for a 31.3% share of all radio listening (a 6% year on year increase).

The appetite for televised media is equally as strong as radio; according to Ofcom[21], on average British people (aged 4+) watch four hours and three minutes of television every day.

There are 60 million TVs in the U.K., 96.2% of households have a digital television and 37% have Freeview on their main set[22]. In 2012, TV Licensing[23] reported that there were 25 million TV licences in force in the U.K. They also found that since 2004, U.K. households have bought more flat-screen TVs than any other EU country.

[17] Radio Joint Audience Research (2012) Key Quarter Stats, Quarter 3
[18] United Nations Educational, Scientific and Cultural Organization (2012) World Radio Day
[19] Radio Joint Audience Research (2012) Key Quarter Stats, Quarter 3
[20] Radio Joint Audience Research (2012) Key Quarter Stats, Quarter 3
[21] Broadcasters Audience Research Board (2012) Reported in: Ofcom (2012) Communications Market Report, p6 (http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr12/CMR_UK_2012.pdf)
[22] Ofcom (2012) Facts and Figures page (accessed December 2012) (http://media.ofcom.org.uk/facts/)
[23] TV Licensing (2012) Telescope (http://www.tvlicensing.co.uk/resources/library/BBC/MEDIA_CENTRE/TV_Licensing_Telescope_Report_2012.pdf)

Digital is also changing our audio-visual consumption habits. For example, Ofcom[24] and TV Licensing[25] report growing trends in accessing audio/visual content online, reporting that:

- 15% of U.K. adults own a Smart TV.
- Over 37% of U.K. adults with home internet watch online catch-up TV and 23% of U.K. internet users claim to do so every week (USA ranked second with 17%, Spain third with 16%).
- BBC iPlayer daily users increased in 2011 to 1.78m, up from 1.39m in 2010.
- Over 26% of U.K. adults 'Chatterbox' - Watching a programme on the television (colloquially known as 'the box') whilst talking to others about that programme online, normally via a social media platform.
- Over half (57%) of the country's adult social media users aged under the age of 35 say social media buzz around a TV programme can affect whether they watch a programme live or not.

Sustainability

Despite the good intentions that community radio stations have with regards to their role in representing and vocalising minority communities locally, they operate in a market that places commercial value on mass appeal. The majority of community radio stations are established to provide content that is not available elsewhere and as such expectations are that audience reach may be smaller for many of their broadcasts.

This inevitably impacts on the levels of finance that community radio stations are able to draw through commercial routes (for example to advertise local businesses during breaks). However, even if this were not the case, within the U.K. community radio stations are limited by law to receiving less funds through commercial routes than commercial radio stations[26].

This highlights the vulnerability of community radio stations and their need to continually adapt in order to extend their reach and convince funding organisations that they are providing significant value to the communities that they serve.

The sustainability of televised Community Media is an on-going debate. In 2011, the U.K. government pledged their support for one interpretation of this medium, local TV[27]. Citing successes in the U.S.A., these new channels have been allocated a high electronic programme guide position (Channel 8) and funds have been set aside to support new stations.

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[24] Ofcom (2012) Communications Market Report: (http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr12/CMR_UK_2012.pdf)
[25] TV Licensing (2012) Telescope (as above).
[26] Department for Culture, Media and Sport (2003) The Community Radio Order 2003
[27] Department for Culture, Media and Sport (2011) New framework for local television (https://www.gov.uk/government/news/new-framework-for-local-television--2)

Currently there is a commitment to support 21 licences with a potential 44 more[28]. However, this commitment to local TV has been given seemingly without serious indication as to how this will be financially viable in areas with low population and insufficient local business to support an advertising revenue stream.

For communities of interest, sustainability is often not the most important issue. They are more resilient to lack of financial support as they often set out to produce content through volunteer effort.

Some communities of interest may become more successful or require financial resources to support their volunteers' training or expenses. For these groups, there may eventually become a point at which the nature of their activity changes from 'community of interest' to something that closer resembles a charity, small business or perhaps even social enterprise.

[28] Ofcom (2012) Local TV licensing (http://licensing.ofcom.org.uk/tv-broadcast-licences/local/)

Radio Content Providers

As with mainstream radio, the majority of community radio programmes are transmitting FM broadcasts. Stations are often dependent on volunteers and external funding agencies to support the purchase and maintenance of equipment, as well as the growth of the organisation.

Advertising can provide revenue for some organisations, however stations are restricted by law to receiving no more than 50% of their income through this route[29]. Schemes such as the Community Media Association's National Advertising pilot project[30] have been established to collectively organise and sell radio advertising airtime across all stations in the U.K. in an attempt to reduce pressures on station managers.

In terms of their societal benefit, community radio stations provide training and volunteer opportunities for individuals from their local communities. This helps local communities to develop skills that mainstream and commercial media radio stations keep 'in-house'. Additionally, this training can overlap with educational establishments, such as universities, providing valuable work experience for students and opportunities for cross-collaboration in other projects. The limitations of this training depend on the size, reach and equipment available to the organisation.

In the context of Community Media, radio content providers aim to:

- Facilitate citizen participation in their programming schedule.
- Engage with their local communities to understand their content needs.
- Actively encourage balance in content attempting to represent all viewpoints, including those of minority groups.
- Provide coverage of local interest subjects including events and political debates.
- Reflect diversity in communities through providing content in languages other than the mother tongue.

Community radio is effective as a method for reaching people who are not comfortable with learning about new technologies. It provides opportunities to learn that are mixed in with opportunities to create content. More advanced learners or workers can be responsible for editing content created by new learners, so the learning process can be taken at a comfortable pace.

The excitement for an individual to create a piece that represents their voice on a subject or where they represent their community can inspire new learners or individuals who feel less confident representing themselves in other aspects of their lives.

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[29] Department for Culture, Media and Sport (2003) The Community Radio Order 2003

[30] CMA (2012) Community Radio National Advertising pilot (http://www.commedia.org.uk/news/2012/12/community-radio-national-advertising-pilot-scheme-to-launch/)

Case Study (Bradford Community Radio)

Bradford Community Broadcasting (BCB) Radio's purpose is to *'provide broadcasting and training opportunities for local people giving a voice to communities across the district.'*

BCB is a full-time community radio station, broadcasting 24 hours a day, with over 80 speech-based and music programmes produced every week. The station's main language is English but it also broadcasts in eight other community languages –Arabic, Irish, Filipino, French, Kurdish, Punjabi, Spanish and Urdu. It has built up a strong, committed base of around 200 experienced volunteers with skills and confidence to produce their own programmes.

The station was first established in 1992 and has grown over the last 20 years to a position of being a full time broadcaster with full time paid staff members. Within BCB, they have sought funding or resource to support specific underrepresented voices. One example is their 119 project[31] that assists disabled adults, staff and users in day centres in Bradford to make regular programmes and reports for BCB. The station has provided the project with its own office and specially designed studio within the radio station and project workers to help them produce broadcasts.

BCB have also increased their local relevance and opportunities for volunteers through partnerships with other organisations that have similar aims or interests. For example, in 2011[32], BCB partnered with Radio Leeds (which also covers the Bradford area), in a skill-swap exchange project.

The project culminated in the production of four, 2 hour radio programmes called "This is Bradford – BCB on the BBC". The programmes were presented live from the BBC studios at the National Media Museum and broadcast simultaneously on BCB106.6FM and BBC Radio Leeds.

Alongside improving communication between two media organisation representing the Bradford area, this project also gave both stations a better understanding of their audiences and the techniques each organisation used to reach listeners.

[31] Mitchell, C. (2009) Bradford Community Broadcasting (BCB 106.6FM) (http://www.soundconcepts.ltd.uk/managingradio/a32.html)
[32] Dowson, M. (2011) Reflections on a BBC/ CR partnership (http://www.communityradiotoolkit.net/news/reflections-on-a-bbccr-partnership/#more-3058)

Audio/Visual content providers

There are far fewer audio/ visual Community Media content providers operating in the U.K. than Radio Content Providers. The reasons for this vary but are typically rooted in the longer established tradition of producing Community Media content through community radio stations and the lower costs of entry for radio content production.

Where providers do exist, they are primarily groups who make use of lower cost equipment and stream content online (see **Multimedia Content Providers**). Alternatively, they are professional content producers who focus on representing minority communities (e.g. documentary makers).

In the context of Community Media, audio visual content providers have similar aims and motives to community radio content providers. They:

- Facilitate citizen participation in their programming schedule.
- Engage with their local communities to understand their content needs.
- Actively encourage balance in content attempting to represent all viewpoints, including those of minority groups.
- Provide coverage of local interest subjects including events and political debates.
- Reflect diversity in communities through providing content in languages other than the mother tongue.

One reason many smaller groups chose to produce content for an online audience was due to the additional burden of applying for a TV broadcast license. However, in 2011, the U.K. government pledged to support the creation of new, local television channels[33] (see Local TV section). This has increased the opportunities for Community Media groups to consider transferring their existing broadcast and content production to a new setting.

There are a number of Community Media organisations producing audio/ visual content. For example: the Community Channel, Chs TV, Southwark TV or The Community Film Unit. Among them there is significant diversity in terms of how they operate, how they are funded, their size and who they perceive to be their audience.

[33] Department for Culture, Media and Sport (2011) New framework for local television (https://www.gov.uk/government/news/new-framework-for-local-television--2)

Local TV

In 2011, the U.K. government pledged to support the creation of local TV channels[34]. Then Minister for Culture Jeremy Hunt argued that local TV was 'vital to the Conservative's localism agenda'. Specifically, they have supported it believing that it can transform local democracy, regenerate local economies and devolve more power to local communities.

Ofcom is delivering the competitive selection process to determine who the first 21 licences will be awarded to. The locations for the first licences were pre-selected following consultation on technical and local capacity to deliver services in conjunction with an assessment of local demand. The locations[35] are listed below; the successful bidders are indicated within brackets: -

Belfast (NvTV).

Birmingham (City TV Broadcasting).

Brighton and Hove (Latest TV).

Bristol (Made In Bristol).

Cardiff (Made in Cardiff).

Edinburgh (Announcement 2013)

Glasgow (Announcement 2013).

Grimsby (Lincolnshire Living).

Leeds (Announcement 2013).

Liverpool (Announcement 2103).

London (Announcement 2013).

Manchester (Announcement 2013).

Newcastle (Made in Tyne and Wear).

Norwich (Mustard).

Nottingham (Notts TV).

Oxford (That's Oxford).

Plymouth (Announcement 2013).

Preston (Announcement 2013).

Sheffield (SLTV/ Sheffield Live).

Southampton (That's Solent).

Swansea (Announcement 2013).

In December 2011, the Government indicated that a further 44 locations were 'technically feasible' and would be considered following the first round of licensing.

[34] Department for Culture, Media and Sport (2011) New framework for local television (https://www.gov.uk/government/news/new-framework-for-local-television--2

[35] Ofcom (2012) Local TV licensing (http://licensing.ofcom.org.uk/tv-broadcast-licences/local/)

Alongside the facilitation of local TV services, the BBC Trust has set aside two portions of licence fee money for local TV producers[36]. The first is £25 million to support the purchase of capital costs such as broadcast equipment.

The second is a commitment in the final three years of the BBC's current licence fee period, from 2014/15 to 2016/17, to: *"Acquire up to £5 million of content per annum from LDTPS licensees if it is 'suitable for inclusion in a U.K. public service (i.e. a BBC service) and the price represents value for money*."[37]

At present, each licensee is investigating and developing funding strategies that will be most suitable for their content production aims and the local community they are producing content with and for.

Concerns have been raised that the expectation of what it will cost to run these stations are set too low. It is likely that in future there will be competition between stations for certain grants. However, the majority of licensees are collaborative projects between a number of organisations familiar with U.K. funding and Community Media. As such the expectation from Government and Ofcom is that they will be able to cover their costs and attract the required funds at the outset.

Both the Community Channel (see Case Study) and the new local TV licensees are at the more formal end of the spectrum with regards to audio/visual Community Media content providers.

[36] BBC (2012) Acquisition of local content (http://downloads.bbc.co.uk/aboutthebbc/insidethebbc/howwework/reports/pdf/bbc_local_content_acquisition_july2012.pdf)

[37] BBC (2012) Acquisition of local content, p2.

Co-existence

For the purposes of this report into ways of engaging new audiences through digital services, these high-end producers offer opportunities for smaller content producers to showcase their work to a larger audience and to work in a more structured environment.

There remain a number of opportunities for volunteers to be involved in supporting their work, from being part of the content creation to raising audience awareness of the channel and the upcoming programmes. There may be less opportunity to focus on a specific area of interest which can be a real motivator for some new learners as outlined in **Radio** and considered further in the **Communities of Interest** section.

In **Multimedia** we discuss how more informal and local example of audio/ visual Community Media producers work to deliver content for a specific audience. Their use of online platforms to deliver this content lowers production costs and has increased capacity for local communities to be involved in content creation. There are very few (if any) community TV and film organisations operating in the U.K. who do not also provide content and services online. Going forward, closer collaborations between audio/ visual content providers and multimedia content providers will be beneficial to both parties.

It is yet to be seen how well emerging local TV organisations will work with existing smaller production groups in their area. Such groups will have an archive of content relevant to the geographical areas local TV will cover and experience of producing content on small budgets. It would be a missed opportunity if the success of a local TV channel came at the expense of smaller local producers' opportunities to develop their audiences and revenue streams.

Case Study (The Community Channel)

The Community Channel, launched in September 2000 as a national channel producing, commissioning and broadcasting Community Media content. They are *"The U.K.'s only digital television station dedicated to highlighting issues from the community, voluntary and charitable sector both locally and internationally"*[38]. The channel can be accessed at:

- Freeview channel 87, Sky channel 539, Virgin Media channel 233

Between 2000 and 2011 the channel was only broadcast for 3 hours a day, it is now available 24 hours a day. The Community Channel is owned by the Media Trust a charity that "*Work with the media industry to empower charities and communities to have a voice and be heard*"[39]. It represented 20.2% of the Trust's resource expenditure in 2011 at a cost of just over £1,100,000[40].

In the U.K. Broadcast Audience Research Board (BARB) provide the industry standard television measurement service, similar to the role of RAJAR (cited above) for the radio industry. According to BARB, in quarter 3 (July-September 2012) the Community Channel had an audience reach of 3.1%[41].

This means that during the quarter, 1,796,000 people aged four years old or more, watched content from the Community Channel. The largest reach for the channel, was to the 'Housewives' audience category (3.9%), the lowest reach was to adults aged 16-34 (2.0%).These figures are up on the previous years' quarter 3 in which 1,418,000 people aged 4+ (equivalent to 2.5%) saw Community Channel content[42].

Using BARB figures for the full year, the Media Trust reports that in 2010/11, 4.4m television viewers throughout the U.K. watched the Community Channel, an increase of 83% from 2.4m viewers in 2009/10[43]. Of these, 1.3 million more viewers watched the Community Channel due to the increase in broadcasting time (the Channel moved from broadcasting just three hours of content to 24 hours in June 2010).

One of the most effective ways the Community Channel creates and promotes its content is through creating content in mutually beneficial partnerships with community organisations and charities. For example, in 2010/11, 1,685 charities were involved with and supported by The Community Channel[44].

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[38] Media Trust (2012) Community Channel (http://www.mediatrust.org/community-channel-1/)
[39] Media Trust (2012) About (http://www.mediatrust.org/about-media-trust/)
[40] Media Trust (2012) Annual Review 2012/11 (http://www.mediatrust.org/uploads/133424078465621/original.pdf)
[41] BARB (2012) Channel Reach, Quarter 3
[42] BARB (2011) Channel Reach, Quarter 3
[43] Media Trust (2012) Annual Review 2012/11 (http://www.mediatrust.org/uploads/133424078465621/original.pdf)

[44] Media Trust (2012) Annual Review 2012/11, p20 (http://www.mediatrust.org/uploads/133424078465621/original.pdf)

Many of those will have featured in content broadcast by the channel but will also have created content that their charities could use for promoting their cause, educating the wider public or for internal training.

The Community Channel's programme regularly features themed broadcasts; these may be around seasonal events but also cover national or international campaigns (such as Fair-trade month). Using these regular events, the channel dedicates broadcast time to documentaries, dramas, interviews, and other content that aims to inform the audience more fully about the subject. Some of this content is then picked up by national broadcast channels.

For example, in 2010/11, 60 community sports organisations featured in the commissioned Your Sport programming content. A short version of the series was broadcast on Channel FIVE, reaching 1,586,000 viewers[45].

The channel also makes use of their website to attract audiences. Between 2010/11, 107,826 unique users visited their website. In October 2010, the Community Channel's website hosted a film made as part of the centenary celebrations for Girl Guiding U.K. that resulted in 9,441 views of the website and 6,603 unique visits in one day[46].

Their website is used to enhance the relationships they have with partner organisations. For example, an interactive map of all the charities they have worked with is available on the main site. They also provide factsheets[47] which contain further information on featured subjects and a 'Volunteer' form for people interested in supporting the charities they work with. More than 40,000 viewers interacted with the Community Channel in 2010/11, including:-

- 5,350 volunteering enquiries and
- 3,437 calls to the volunteering hotline.
- 22,219 red button interactions for the new Local Information Service.

The Community Channel is one of the most successful U.K. examples of audio/ visual Community Media practice. It is different to local TV in that it depends on content from diverse national and international sources in order to achieve audience reach. However, some local TV stations may take a similar approach to their own commissioning and scheduling. The station's success and future is partly dependent on its content being relevant to alternative broadcast channels in order to resource its activities. To this end, they have produced and agreement that has gained support for them as an 'external TV partner' from significant British media industry groups including the BBC, Sky, Channel Four, Five, ITV, ITN, Discovery, MTV, Disney, Turner and Joost[48].

[45] Media Trust (2012) Annual Review 2012/11, p20 (http://www.mediatrust.org/uploads/133424078465621/original.pdf)
[46] Media Trust (2012) Annual Review 2012/11, p19 (http://www.mediatrust.org/uploads/133424078465621/original.pdf)
[47] Community Channel (2012) Charities Directory map (http://www.communitychannel.org/info/charity-directory/)
[48] Community Channel (2012) Joint Declaration (http://www.communitychannel.org/info/joint-declaration/)

Communities of interest

In the context of Community Media, the term 'Communities of Interest' is used to represent content producers who produce content which is both limited and specific. For example, content that focuses on a local neighbourhood or on a particular issue such as localised crime. They may provide a forum or tutorials for likeminded individuals covering topics such as computer games or Italian recipes.

They can be likened to the Community Media equivalent of a local Neighbourhood Watch association, neighbourhood newsletter or community reporting. Given the proliferation of free technologies, many communities of interest formed in the last decade are run online with the majority of interactions or information facilitated by digital engagement.

Not all communities of interest are established for longevity, some emerge to tackle a specific issue and once it is addressed or has been taken up at an appropriate level by politicians or policy makers the original community disbands. Others begin as small projects and become businesses, whilst others are formed at the outset as businesses. What they all have in common is a relatively specific audience or goal.

Case Study (Citizens Eye)

Citizens Eye[49] was established in 2008 as a community news agency to provide: *"The people in Leicestershire an opportunity to become citizen reporters and provide a news-gathering platform for current and relevant community news".* It has grown so rapidly in the four years since its launch that it might almost be more appropriate to describe it now as a 'Community Hub for Communities of Interest in Leicester'.

Citizens Eye has a number of aims, including that they will:-

- Provide a professional media outlet for community groups to promote their events and share best practice amongst their peers.
- Present the stories and photographs received in a professional and unbiased way, and to accurately represent all communities.
- In their portrayal of the people and locations reported, we shall strive to dispel much of the ignorance that erodes community cohesion.

Although Citizens Eye have maintained their focus on local news and training others to produce content and find stories, it has also inspired many within its community to establish their own niche interest news production groups.

Local people's skills are developed through regular surgeries held at local cafes and libraries. Training and skilling citizens are a key element of Citizens Eye's work, as is partnership working. From the outset, the organisation has worked alongside Leicester Libraries producing a partnership agreement for how they would work together and establishing the Community Media Hub at Leicester's learning and information library. The Library also added the Citizen's Eye website to their homepage so that it is easily accessible to interested visitors.

Alongside the Libraries, Citizens Eye has also developed partnerships with other organisations operating across the county who want to produce positive and constructive stories about Leicester and Leicestershire.

These include traditional media organisations such as local newspaper the Leicester Mercury who use stories Citizens Eye reporters have created. They also include organisations with stories to tell such as local charities and community groups. As with Community Radio and TV, Citizens Eye have also made good connections with their local universities (Leicester and De Montfort) where good practice and knowledge can be exchanged through student support and lecturing opportunities.

[49] http://www.citizenseye.org/

Where possible, Citizens Eye participates in national and local events, these provide community reporters with an opportunity to collect local stories and are also an opportunity for Citizens Eye to promote their work and recruit interested volunteers. Examples of events include the national Get Online Week and Adult Learners Week as well as more local events such as Council cabinet meetings or the annual comedy festival.

The effects of training provided by Citizens Eye are not routinely evaluated due to the voluntary nature of the project. However, in their first year they were able to track the following outcomes[50]:

- Volunteers – over 90 volunteers involved (Nov 2008-Nov 2009).
- Hours – over 11,000 volunteer hours of added value to the service.
- 160 young people signed up to get involved with new media projects.
- Four volunteers receiving paid work since volunteering.

Additionally, their training programme and partnership working provided attendees with the confidence to develop their own Community Media outlets. Between 2008 and 2012, Citizens Eye has helped to establish 20 additional volunteer news agencies[51] such as:-

Down Not Out	A newsletter on homelessness issues and support
The 2 Young People	A news agency designed for and run by under-16s
HowRU?	A news agency producing and collecting content on the subject of mental health.
DZine	A news agency produced in-house at Citizens Eye on disability issues, evolved from the work done on DeafZine.
HAT News	Here and There News, a news agency on asylum and refugee topics.
INO Mag	Inside 'n' Out a magazine producing content to support prisoners and ex-offenders who want to avoid re-offending.
Senior Eye	A newsletter reporting on older people's issues.
Eco Eye	A newsletter reporting on ecological issues for local people.
CAPS	An agency for Community Action Photographers.
Women's News Agency	A news agency reporting on women's issues.

[50] Citizens Eye (2012) Creating Thriving and Safe Communities: Leicester Libraries' partnership work with Community News Agencies
[51] Citizens Eye (2012) 20 x Citizens Eye News Agencies (http://www.citizenseye.org/2012/02/14/20-x-citizens-eye-news-agencies/)

Multimedia Content Providers

The Oxford English Dictionary defines Multimedia as "*using more than one medium of expression or communication*"[52]. Regarding multimedia computer applications, the definition is expanded to "*incorporating audio and video, especially interactively*".

With regards to the use of Multimedia in Community Media settings, both definitions are fitting. In the Combined Access Initiatives chapter, we consider examples of organisations also described as 'Multimedia Centres' which provide multiple ways for learners to access digital skills and information through a diverse combination of services. In the context of this chapter, we are specifically discussing ways that *offline* organisations can incorporate methods of content distribution using *online* tools.

Where an organisation or individual produces content - be it radio broadcasts on folk music, documentary films about globalisation or a blog about school dinners - they have often selected their medium because it is most suited to the content they want to produce, or to the skills they have for producing content. As such, our conclusion that existing content providers would benefit from becoming more multimedia focused does not imply that their primary content distribution platform should change.

The abundance of free and low cost technology has enabled many groups producing content to incorporate some elements of another media alongside their primary output. In this section, we will consider both innovative and simple methods for Community Media organisations who want to expand their reach and audience engagement.

Why incorporate alternative methods of content distribution?

The majority of citizens are online and their opportunities to access content, information, services and be social are increasing through digital diversification. Making use of platforms that reach the digitally engaged also increases the ways to make your content accessible and relevant to people who are offline as their informal networks (family, friends, carers and colleagues) may share it with them.

There have been some significant and recent catalysts such as the 2012 digital TV switchover (which switched all U.K. households' coverage from analogue to digital transmission). This has introduced households to new channels through Freeview and interactive features such as the 'Red Button' option. The result is growing confidence around digital interactive services and new ways to access entertainment online[53].

[52] Oxford English Dictionaries (2012) Multimedia

[53] Ripper, L. (2012) Showcase, The NMSC (http://www.thensmc.com/sites/default/files/Get%20Connected%20Get%20Online.pdf)

Using digital media

There are many examples of Multimedia being used well to develop communication with an audience, extend the reach of a service and develop a community's sense of identity. We have highlighted some of the main methods that organisations can utilise alongside examples of how they have been used by other Community Media organisations.

This list is in no way exhaustive, social media for Community Media and community groups is a vast topic.

Blogs

The term is a combination of the words 'web' and 'log' and is used to refer to website where opinions and information are recorded regularly (as "posts"). A 'blogger' is the author/editor/owner of a blog. 'Blogging' is the practice of keeping a weblog.

The beauty of blogging is that anyone can do it. It requires a bare minimum of technical appreciation but a fair amount of imagination and interest in writing. At a most basic level, some people just want to say to the world with their blog, "I'm here!" Some people might start a blog to keep close friends or relatives in touch with a public-facing diary. Many blogs are like this.

Other blogs have objectives that are more definite. Some people – be they recognised experts or not – use their blogs to collect informative links that might prove useful to other experts or indeed to a non-expert audience. Increasingly, blogs are being used not to communicate with people on the other side of the world but instead as tools for communication at a much more localised community level – either among residents or between representatives and those they represent

Hence, blogs are particularly well used by communities of interest where multiple authors contribute to updates and keep content fresh. Organisations that are considering setting up a blog should consider what kind of content they want produce. Ideally, organisations should create regular updates on topics related to the organisation's work that help to inform or engage audiences. A good blogger will:-

- Link to other source of information.
- Tell stories.
- Insert photos and embed videos or slides.
- Post short and frequently instead of long and infrequently.
- Promote discussion.

Case Study (Use of blogs)

'Digbeth is Good' (DIG) and 'On The Wight' (OTW) are hyperlocal examples of groups that used a blog to document their experiences as residents. Their focus is very local although the differing sizes of their audience has affected the directions they have grown in - Digbeth an inner city area of Birmingham has a population of approximately 7,000 whilst the Isle of Wight's is estimated to be close to 140,000. Both began with similar sized teams of volunteers and have taken a similar resident viewpoint approach to the investigations and stories they have covered. However, where DIG has remained small and very local in focus, OTW has become a news source rivalling the island newspapers.

DIG produces posts about local Residents Association meetings, nightlife and local eateries, upcoming Council or Police meetings and relevant news to the local population. Their local focus means that DIG, like many other hyperlocal sites, has generated a sense of community amongst residents who previously had no connection.

For example, during the Birmingham riots in 2011, some Digbeth businesses were targeted suffering thefts as well as acts of vandalism. On the third night, a local restaurant owner who was also a blog community member contacted the site owner to let residents know that his business would be open that evening[54]. That evening a group of local residents who were also DIG members made their way to the restaurant to show their support[55]. The relationship between this business and residents remains strong, with residents associations, art exhibitions and music evenings regularly being held in the restaurant.

OTW also provide local news but the demand for content from their site grew too large to manage as volunteers (they currently report over 73,000 comments on their stories and over 45,000 unique visitors to the site a month)[56]. So, in 2011 they began the transition from volunteers to business followed by the re-launch of their site in 2012. Their re-launch moved the site away from purely blog content to become a more formally presented news site. However, they have retained some of the core elements that helped them to attract so many readers, such as providing local people with an opportunity to publish their own articles on the site.

Almost 750 people have previously written articles for the site[57], contributing to the awards and commendations they have received for Forensic reporting, New Media and overall Hyperlocal activity. They also provide the 'Armchair Auditor'[58] publishing all local Council spending data they have been given as open data for anyone to use and republish.

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[54] Digbeth is Good (2011) Bay Leaf Restaurant open for dinner tonight and jazz tomorrow night (http://digbeth.org/2011/08/bay-leaf-restaurant-open-for-dinner-tonight-and-jazz-tomorrow-night/)
[55] Digbeth is Good (2011) Digbeth residents get a warm welcome at Bay Leaf restaurant (http://digbeth.org/2011/08/digbeth-residents-get-a-warm-welcome-at-bay-leaf-restaurant/)
[56] On the Wight (2012) About (http://onthewight.com/about/)
[57] On the Wight (2012) About (http://onthewight.com/about/)
[58] On the Wight (2012) Armchair Auditor (http://armchairauditor.onthewight.com/)

Podcasts

A Podcast is an audio blog made available for free or for purchase over the internet. The name is derived from the words 'iPod' and 'broadcast' but the format has become universal in terms of its compatibility with the full spectrum of digital audio players. A Podcast is normally associated with being listened-to 'on the go' via a portable device and is subsequently digitally compressed but rarely subject to digital rights management.

Podcasts often form part of a series although they can be one-off or completely unrelated. Radio shows, news bulletins and opinion pieces are regularly converted into Podcasts. It follows that Podcasts are a good way for listeners to catch up with programmes they have missed or listen again to favourite episodes.

Community Radio can make good use of Podcasts. For example, Sheffield Live! provide an entire archive dating back to November 2009 of the shows they have broadcast. Podcasting allows material to be archived indefinitely at relatively little cost or effort - which is significantly longer than the majority of commercial radio stations which tend to make archives available for just seven days, if at all.

Podcasts can also be used to supplement mainstream broadcasts. For example, they can be used to capture short interviews with people featured on the main programme or with a 'behind-the-scenes' narrative that could not be included within a main feature. There are a number of low-cost Podcasting platforms which Community Media organisations can experiment with such as AudioBoo (http://audioboo.fm/).

Video Clips

Because audio-visual content is now almost universally created in the digital domain there are similarities between online video and video content that producers release for broadcast. For example, the most significant difference between BBCs iPlayer and a live broadcast is that the options for subtitling, audio described and signed programmes are more readily available.

However, an alternative way to use online video is to provide additional or bonus material for enthusiast audiences. Sports teams are particularly committed to this approach and provide good examples of how to use videos to develop their communities' relationships to the club and the players.

Unlike most community groups and organisations, sports teams are businesses and for them their players are a key part of whether they will succeed (sell tickets, football memorabilia, TV channel sign ups and so on). As such, videos are a compelling way to build their brand and develop the relationship of the audience to players.

Case study (Use of video clips)

As an example, in 2012 Manchester City Football Club produced a 25 day advent calendar with video clips each less than three minutes in length[59]. The clips were varied, there were Christmas themed player interviews and clips that formed a series featuring all the players pulling crackers, telling jokes and wrapping gifts.

Each clip had elements of humour and there was significant subtitling due to the limited spoken English by foreign players. Some of the clips provided insights into the players' personal lives. For fans, these short pieces were in keeping with the festive period, they weren't overtly selling anything (although the players predominantly wrap MCFC branded gifts) and access to the content was free. Fans had an unprecedented opportunity to see players relating to one another off the pitch.

Community organisations can harness the power of video too. 'Tenantspin' has been producing Community Media projects via their internet TV channel since 1999. There are two editorial remits[60], the first (Ways of Seeing) is co-ordinated by the Foundation for Art and Creative Technology (FACT)[61] in Liverpool. The other (Ways of Living) is co-ordinated by Arena Housing[62]. Core to both programmes is the inclusion of and collaboration with tenants.

'Ways of Seeing' commissions leading artists, writers and thinkers to develop webcast content collaboratively with the tenants. 'Ways of Living' explores social and social housing issues such as anti-social behaviour, care, money, smart homes, the paranormal, ethical banking, regeneration, the Welsh Streets, high-rise nightmares, CCTV and healthy eating. Between 1999 and 2012, Tenantspin activities have created over 600 hours of Community TV programming which has been seen across the world as well as by the local community in Liverpool. Some of their archive footage is available online at: http://www.tenantspin.org/

The Tenantspin project has been successfully sustained through the unique partnership between a social housing organisation and a well-regarded arts and technology organisation. The connections and focus both have brought to the project plus there unswerving commitment to collaboration with tenants has meant that they have maintained connections to their communities' needs, priorities and interests. They are also in the fortunate position of having co-ordinating officers that have been involved in the project for almost its entire lifespan, generating a real sense of commitment to the tenants, the area and the project.

[59] Manchester City Football Club (2012) Advent Calendar (http://www.mcfc.co.uk/citytv/city-recommends/2012/december/2012-advent-calendar)
[60] Tenantspin (2012) About (http://www.tenantspin.org/about/)
[61] FACT: http://www.fact.co.uk/get-involved/communities/
[62] Arena Housing: http://www.arena-housing.com/content/891/tenantspin-news.aspx

In these two examples, we can see the different ways that organisations can use video content to build on their main activities and connect with their audience. These organisations are poles apart in terms of the resource they have for their activities and yet both have managed to provide warm, engaging and inclusive content that achieves their aims of connecting with their audience.

Social Networks

The Oxford English Dictionary defines social networks as *'a dedicated website or other application which enables users to communicate with each other by posting information, comments, messages, images etc.*[63]' Even if you do not use social networking sites, some of the most popular platforms are so famous that their names have become synonymous with the practice – such as Facebook and Twitter.

The most popular social networks in the U.K. (2011[64],by internet visits) are: Facebook; YouTube; Twitter; Yahoo Answers; Gumtree; LinkedIn; Tumblr; Moneysavingexpert; MySpace; and Moshi Monsters. However, of these, Facebook and YouTube alone accounted for over 70% of all traffic.

We have selected Facebook, Twitter, Pinterest, and Google+ as the sites of most relevance to Community Media organisations today. However, once an organisation understands the audience they are trying to reach and the kind of content they want to produce online, there may be other sites that are better suited to their needs (see '10 websites to visit').

The world's most popular social network, Facebook[65] allows users to connect with any other user through a request to be 'friends'. Users can update their profile with information about themselves and their day to day activities or thoughts through 'status updates', they can also share photos, videos and create pages for topics or organisations that they are associated with. Although the site is more personal network focused than business network, some companies and charities make good use of the site to develop awareness of the brand and to gain support for fundraising or campaigns. The JustGiving blog[66] frequently features highlights on the way charities are using Facebook effectively.

Twitter[67] is a micro-blogging service in theory fulfilling elements of the regular updates and information provided by blogs but limiting service users updates to 140 characters in length. The basic site offers a simple service where users can provide a short self-biography and connect with others as 'followers'.

[63] Oxford English Dictionary (2012) Social Networks
[64] New Media Trend Watch (2012) Social Networks and UGC (http://www.newmediatrendwatch.com/markets-by-country/18-uk/152-social-networks-and-ugc)
[65] Facebook: www.facebook.com
[66] JustGiving (2012) Blog (http://blog.justgiving.com/community/inspiration-community/the-10-best-ways-to-use-facebook-to-fundraise-justgiving-edition/)
[67] Twitter: http://twitter.com

One of the most popular features on Twitter is the ability to use 'hashtags'. This function allows users to include '#' before a key word or words (e.g. #communitymedia) in their message that then allows them to search for other uses of the hashtag. These are useful for making connections with other people with similar interests, finding funders or pulling together data on a topic or event that a user is discussing.

A good example of this is the weekly #lgovsm[68] discussion where anyone who is interested in local governments' use of and uses for social media can use the hashtag to connect with other users on Twitter.

In December 2012[69], Neilsen and Twitter announced that they would be working in partnership with Neilsen to create the 'Neilsen Twitter TV Rating' providing producers with metrics for measuring the impact of their programmes on Twitter.

Pinterest[70] is a virtual pin-board allowing users to collect ideas, images and information together. In the UK Pinterest visits grew 786% in just one year, from 901,761 visits in September 2011 to 7,985,316 in September 2012[71]. Organisations use the site to collect together information for themselves or information that they want an audience to see. For examples of how Community Media organisations might use the service, see Pinterest user Noland Hoshino's page where he has grouped together examples of nonprofit organisations using the site: http://pinterest.com/nolandhoshino/nonprofits-on-pinterest/

Google+[72] is relatively new social network which integrates with other Google web products (e.g. Gmail, Picasa, YouTube and Google Maps). Core features of interest to Community Media organisations include' Circles' which allow users to control who sees information they produce and video-conferencing 'Hangouts' for both individuals and groups. Google+ have produced guides for different types of user including a guide for non-profits[73] and a guide for media organisations[74]. Beth Kanter's circle of 500 non-profits[75] gives a quick overview of the variety of organisations using Google+ and how they are using it.

The information above is to provide an overview of tools that are useful to Community Media organisations. In addition to exploring these, we recommend that readers also visit the following sites for more ideas and information.

[68] #lgovsm website: http://www.lgovsm.org.uk/
[69] Neilsen (2012) Nielsen and Twitter establish social TV rating (http://www.nielsen.com/us/en/press-room/2012/nielsen-and-twitter-establish-social-tv-rating.html)
[70] Pinterest: http://pinterest.com/
[71] E-consultancy (2012) Pinterest stats: does it really drive more sales than Facebook? (http://econsultancy.com/uk/blog/10945-pinterest-stats-does-it-really-drive-more-sales-than-facebook)
[72] Google+: http://plus.google.com
[73] Google+ (2012) Guide for non-profits (https://www.google.com/+/learnmore/nonprofits/)
[74] Google+ (2012) Guide for media organisations (https://www.google.com/+/learnmore/media/)
[75] Kanter, B., (2012) Circle of 500 non-profits (https://plus.google.com/+BethKanter/posts/6om2739mstG)

10 websites to visit

1. The **Community Media Toolkit** is a combination package for people wanting to get into community reporting with low cost equipment. It combines a phone, tablet, camera and charging pack and was designed for use in countries where Community Media facilities are remote or basic. It is available for Android devices. More information can be found online at: http://digitaleconomytoolkit.org

2. **CommunityHowTo** is a website developed by the Online Centres Foundation and Nominet Trust pulling together information for community groups on social media tools that may help them. All examples are submitted by organisations using tools and include examples of how they use them: http://www.communityhowto.com/

3. **Digital Engagement Cookbook** is a website and search engine created by Consumer Focus that contains one of the most comprehensive, categorised collections of Digital Engagement methods on the web: http://www.digitalengagement.org.

4. **Knowledgebase** is website supported by Lasa. The Knowledgebase provides information for third sector organisations on technologies that can help them to achieve their goals. It offers comprehensive, independent information and help: http://www.ictknowledgebase.org.uk/

5. **LostRemote** primarily covers North American activities in social TV and social medias influence on TV. It has insights which are relevant to media producers working elsewhere and wanting to gather information on up to date changes in the industry: http://lostremote.com

6. **ICT Guides**: The National Council for Voluntary Organisations provides an archive of useful ICT guides produced by the ICT Hub between 2005-2008 at: http://www.ncvo-vol.org.uk/advice-support/ict

7. **New Media Toolkit:** Established in 2009 this project promotes low cost or free tools for people interested in Community Media and reporting. Their guides are provided for two audiences, 'basic' and 'advanced' and can be accessed online at: http://newmediatoolkit.org/

8. **Social by Social** a practical guide to the tools communities can use to make a social impact: http://www.socialbysocial.com/

9. **Social Reporters Toolbox** a work in progress WiKi for organisations and individuals interested in social reporting and the tools and skills needed for it: http://srtoolbox.wikispaces.com/

10. **Social Media wiki** was last updated in 2009, however much of the discussion and ideas made before that are relevant to people wanting to learn more about how to use social media and select the tool that is right for their organisation. The resource includes an interesting social media game: http://socialmedia.wikispaces.com/

Delivering multimedia content

Using Multimedia tools to deliver content provides organisations with an opportunity to work with new media and to report their stories to audiences that might not otherwise be able to access content.

The most important questions for community organisations to ask themselves are:-

- **What do I want this technology to do**?
  - For example is it to fundraise, audience reach, promote, inform or something else?

- **How much resource can we put into this technology?**
  - Two hours a week from a volunteer is fine but the results expected must be different to a full time funded post.

- **Who will be responsible and how familiar are they with technology?**
  - Training needs will differ depending on their expertise level and confidence.

It is worth remembering that Community Media organisations are not necessarily behind the curve. In November 2012[76], Lasa published a report with the findings of their Charity Digital Survey. They found that:-

- 7 out of 10 charity sector professionals (78%) think charities will miss fundraising and income generating opportunities if they do not engage fully with digital.

- Over half (56%) said that their charity needed training to maximise digital's potential, with 55% stating that digital must be a 'core competency for all staff'.

- Only one in five (21%) believed that they were 'fully engaged with it as an organisation, from board members to junior staff.'

- 50% of respondents described a 'lack of time to get to grips with' digital.

[76] Lasa (2012) Charities fear lack of digital skills could damage fundraising prospects (http://www.lasa.org.uk/news/detail/charities-fear-lack-of-digital-skills-could-damage-fundraising-prospects-ne/)

What works?

The case studies highlight a number of good practices for engaging volunteers, audience and funders which apply to Community Media organisations focused around communities of interest. Namely:-

- **Provide a robust support mechanism for volunteers.**
  Volunteers should be suitably networked, such as meeting regularly (e.g. once a week) within a community setting.

- **Empower participants with new skills.**
  For example, providing training on unfamiliar aspects of community reporting or equipment for collecting stories. Unlike larger organisations, smaller and more locally focused groups are able to provide training where the volunteer is given a lot of responsibility for their task. This can be a very rewarding experience for people who want to gather a lot of industry experience or understand whether they want to progress to study the subject in higher education.

- **Treat volunteers like employees.**
  Wherever possible, organisations that are dependent on volunteers should produce volunteer job descriptions and development plans to ensure that volunteers can perceive their contribution to an organisation but also have goals to work towards and projects which they know have a finite life.

- **Make it relevant.**
  Volunteers should have free choice in the activities in which they engage. This will help create personal relevance, such as matching interests, and serve to motive at sustain involvement.

- **Think big.**
  Selecting a large area to cover with a diverse population and lots of stories is more likely to attract volunteers in. Additionally, volunteers own diversity and connections to their local communities will increase opportunities to collect stories that the mainstream media will want to acquire.

- **Use insight for foresight.**
  Collate audience data whenever possible and review insights from industry bodies such as BARB, Ofcom and RAJAR. This will help Community Media organisations make more informed decision, such as the selection and likely success of alternative media.

- **Good record-keeping will pay dividends.**
  Typically there is limited time for learning or training employees and volunteers in the third sector. As such, documenting all new learning and storing resources somewhere (preferably online) that can be located by new volunteers and trainees will reduce delays and frustration for organisations.

- **Co-exist.**
  Connecting with partner organisations and providing them with support (not just expecting them to support your organisation's needs) will generate good will and closer working relationships.

- **Leverage joint events.**
  Connecting with existing events (as the Citizen's Eye case study demonstrates) can increase both an organisation's audience reach and opportunities to connect with potential partners, funders and volunteers. With specific regard to Community Media, Community Media Week is an excellent opportunity for organisations to arrange activities in their venues and promote themselves to other local organisations.

- **Make consumable and entertaining content.**
  Keep multimedia content short (less than three minutes), relevant (to the point and on subject) and engaging (humorous, controversial and insightful).

- **Target audience retention.**
  Think about audience anticipation (also known as 'stickiness'), such as releasing content regularly over a defined period.

Summary: Community Media

Strengths	Weaknesses
• Remains a powerful tool for building local confidence and engagement through giving everyone a voice. • Low costs of producing content due to volunteer effort and the use of free tools. • The audience and the communities and individuals they collect stories from trust Community Media organisations motives and interest more than they do large news organisations. • Learning experiences are rich and relevant to participants.	• It is typically under-funded and does not have enough money for new equipment or training. • Reliance on volunteer effort and low cost production methods can limit producing as much content as organisations or participants would like to or have enthusiasm within the community to make. • Organisations and groups are unable to fund all the employee posts that are needed and as such depend on volunteers and freelancers to supply content and information.
Opportunities	**Threats**
• The cultural and linguistic diversity Community Media offers is more socially inclusive for all members of the community than commercial media is often able to. • Links to education can be enhanced both in terms of creating programmes that educate the general public and also working with people in the education systems (primary to higher) to create content and improve media literacy. • They are inherently creative organisations that provide artists and entrepreneurs with a public platform for testing new ideas and concepts.	• Lack of clarity for content producers on how they are perceived in law. • Lack of central, co-ordinating support. • Competition. Community Media have limited finances compared to mainstream equivalents. • Limited appeal. There is a trade-off between niche and popular content to circumvent low audience figures.

2. Neighbourhood ICT centres

What are neighbourhood ICT centres?

A neighbourhood ICT centre or 'digital hub' is a place or community setting which provides free or low-cost internet access and/or digital support. Venues range from purpose built environments to village halls, pubs and public buildings such as libraries.

The aims of neighbourhood ICT centres are varied but typically focus on:

1. Helping and supporting people to use digital resources.
2. Giving guidance on how to find and use public services online.
3. Creating a safe and welcoming learning environment.

As such, neighbourhood ICT centres are equipped with a range of supporting ICT such as computers, printers and accessibility equipment. They might also house tools for digital photography, low-cost telephone (such as internet telephones) and video screening facilities.

They are reasonably prevalent across the U.K. The largest formal network is the UK Online Centres network which has 3,800 centre partners who can receive funding as well as an additional 500 access points who receive all learning resources[77]. It is estimated that these centres support over one million people to get online each year. Any organisation that is able to provide the general public with access to the internet can join the network. As such, many of the organisations identified elsewhere within this report can also accurately be described as neighbourhood ICT centres.

Why do we still need public access for ICT?

There remains an estimated 5.2 million households in Great Britain that do not have access to the internet; this is roughly 20 per cent of the population[78]. Although the majority of those who are offline indicate that it is because they 'did not need it' (54 per cent of a recent survey), there remain some who are offline primarily because they do not have the skills to get online (22 per cent).

Other factors cited in the survey for being offline include the high cost of equipment (15 per cent) and the costs of accessing the internet (14 per cent). For people in these households, local places with access and support could provide the stepping stone to access as they have done for many others in the past.

[77] UK Online Centres (2012) UK Online Centres: Join Us (http://www.ukonlinecentres.com/join-us-)
[78] Office for National Statistics (2012) Internet Access Quarterly Update, Quarter 4

Additionally, amongst the online population, studies by groups such as OXIS[79] and Ofcom[80] indicate that there is still a percentage of people who:

- have used the internet previously but are not confident using it now;
- currently use it for fixed activities e.g. email or searching for information but would like to learn more;
- have access at home but rarely use it as other household members dominate the devices used for access.

For these groups, local neighbourhood ICT centres present an opportunity to grow confidence and skills as well as meet new people with similar interests.

Types of Initiative

With the majority of people now having access to the internet at home, 'access only' neighbourhood ICT centres have become an increasingly unsustainable business model.

In this chapter we will consider **Enterprise models** (Traditional and Hackspaces) – the various Methods of Support (Intermediaries and Champions), Training schemes (Workshops/ Courses and eLearning) and **Mentoring Schemes** (Surgeries and Peer Support).

In **Enterprise Models**, we discuss the ways that organisations have shifted from traditional spaces - such as internet cafes and libraries - have diversified or reached out to meet the changes in customer profile and expectation. We also look at some of the new hackspaces which have emerged as a result of low-cost, open-architecture goods.

In **Methods of Support,** we consider the ways that organisations approach their audience to achieve engagement. We identify intermediaries as the people customers meet in the centres but also, as the people who may refer them to the ICT centre in the first place. Champions are – as the name implies – people who champion the activity, cause or organisation they represent. They are not usually the same person that learners will work with when they arrive at the centre but they may be the trigger for the visit.

[79] Oxford Internet Surveys (2011) OxIS 2011 Report (http://microsites.oii.ox.ac.uk/oxis/)
[80] Ofcom (2012) Communications Market Report 2012 (http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr12/CMR_UK_2012.pdf)

Enterprise models

The vast majority of households now connect to the internet using a Digital Subscriber Line (xDSL), cable or fibre optic point. Ofcom[81] reported that in 2006, 31 per cent of households used dial-up connection over a standard telephone line. In 2012, dial-up Internet has almost entirely disappeared, with just one per cent of households still connecting this way.

Citizens therefore expect that local ICT centres have made similar, if not greater transitions, in order to provide a set of technological capabilities that are not accessible or affordable at home. This expectation is not always founded in what it is reasonable to expect a local centre to be able to provide.

The differentiators are also being diminished by the spread of free access as a 'value added' commodity in an increasing variety of venues from cafes, to bookstores, to museums and even across entire city centres (See the **Public and Neighbourhood WiFi Chapter**). Traditional ICT centres are struggling to compete with these free or 'free for the price of a coffee' venues without providing additional offers that make them competitive.

While these alternatives rarely match neighbourhood ICT centres in terms of structured support (albeit there are semi-organised grassroots support networks – e.g. http://www.workatjelly.com/), they are often more convenient or simply offer more pleasant surroundings.

Most ICT neighbourhood centres have had to evolve in order to survive. For example, 'Hackspaces' are growing in popularity and have the same 'venue centric' approach to supporting digital communities of practice. They provide support and access to high technology learning and manufacturing opportunities supporting people to develop their creative ideas into physical objects.

Hackspaces provide a modern version of the learning opportunities once offered in local ICT centres although they tend not to cater to basic ICT learning needs and as such funding sources and strategies are eclectic and non-traditional.

The machinery and skills on offer through Hackspaces are high-level and provide participants with skills that will contribute to their earning potential and in some cases their ability to begin new businesses. As these spaces expand to become more widely available throughout the country, it is anticipated that more people who do not currently have a high level of knowledge on product and digital design or machine operation, will be able to also develop these skills.

[81] Ofcom (2012) Communications Market Report 2012 (http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr12/CMR_UK_2012.pdf)

Sustainability

Neighbourhood ICT centres have a number of overheads which make it difficult for them to compete with initiatives run by local businesses and privately funded access initiatives which are aimed at generating indirect revenue. The U.K. has sufficient coverage through households, businesses and public WiFi spots that those determined to get online can often accomplish it without ever visiting a neighbourhood ICT centre.

The true value of a neighbourhood ICT centre is no longer in the provision of internet access. Instead, success is about easy access to skills, knowledge and networking opportunities within a familiar and friendly setting. Home comforts such as a reasonably priced café, open meeting spaces, new business support and training materials add to the attraction.

Unfortunately, for existing centres, there are very few ways to increase revenue without initial outlay. For example, if an organisation provides new WiFi facilities then they must decide (1) whether audiences will value this and pay for it or opt to use an alternative and (2) what a reasonable charge will be in order to remain competitive while covering basic costs.

There are costs associated with the most trivial of changes. For example, setting-up a café or sub-letting a plot. Then there are the additional legal obligations to comply with such as Health & Safety certificates and public liability.

The ultimate cost of mismatching facilities with needs, especially those based within non-rural locations, is closure. Owners must continually review their capabilities alongside gaps in provision and demonstrate that they can keep abreast of technologies. They must also recognise that a satisfied customer is a returning customer.

Enterprise Models: Traditional

The U.K. is world renowned for championing locally focused ICT learning. For example, the U.K. Online Centres programme has supported the development of over 4,000 spaces through a mixture of funding, promotion, coordination and learning resources with at least one U.K. Online Centre present in 84% of deprived wards[82].

There are also a number of ICT venues operating locally in the U.K. which are not part of the U.K. Online Centres network. As these are not recorded formally anywhere it is difficult to estimate the scale of provision beyond the U.K. Online Centre network.

Part of U.K. Online Centres success comes from their collaborations with existing institutions, for example bringing all libraries under their list of organisations providing ICT support. A study by the Museums Libraries Archives Council in 2010[83] found that:

- 79% of library authorities provided free internet access.
- 98% of library authorities had service points open on weekdays, evenings and at the weekend.
- Each English Library Authority spent, on average, 75 hours per week providing one-to-one supported access for library users.
- An additional 46 hours per week were spent providing group supported access for library users.

In order to provide this support, libraries have partnered with training providers, community partners and specialist organisations as well as producing their own learning resources. They typically work with organisations supporting older people, unemployed people and other disadvantaged groups who might be digitally excluded. Research by BAE Systems Detica on behalf of Race Online[84], confirmed that people who are unemployed still find libraries a valuable way to search for jobs and information, however they have concerns relating to security and its wider relevance to their lives.

In 2011, a report published by the Arts Council[85] detailed a scheme that two libraries in Birmingham and Devon took part in. Working in partnership their mobile library services team and Digital Unite[86] provided people who were aged 65+ and housebound, with ICT training in their own homes.

[82] Online Centres Foundation (2011) Online Centres Foundation: Developing communities through technology
[83] Museums Libraries Archives Council (2010) Public libraries and digital participation (http://www.cfe.org.uk/uploaded/files/CFE-mla-public-libraries-and-digital-participation.pdf)
[84] BAE Systems Detica (2012) Race Online interactive presentation (https://www.baesystemsdetica.com/raceonline2012/)
[85] Pask, R., and Wilkie, S. (2012) Opening up a new world (http://www.artscouncil.org.uk/advice-and-guidance/browse-advice-and-guidance/opening-new-world-public-libraries-connecting-housebound-people-networked-nation)
[86] Digital Unite: http://digitalunite.com/

Rather than establishing an entirely new service, the project developed existing trust networks, working with people who already used the mobile library service and knew the staff.

The training delivered was context specific and relevant to the learner, providing them with the learning they had identified needing and progressing at a pace they were comfortable with.

It is crucial that local ICT centres find methods of providing this kind of 'embedded outreach'[87] reaching people where they are most comfortable or most likely to engage if they are to meet the needs of some of the most vulnerable people who are digitally excluded.

Many of those who remain offline are not mobile or confident enough to use local ICT centre services without initial contact being in a more familiar setting[88]. Working in partnership with organisations that provide outreach support or have more local bases can improve the quality of interactions with new users, as well as helping organisations to develop more relevant learning content. We will revisit methods of engaging new learners in the 'Methods of Support' section.

[87] Agnew, I. and Ripper, L. (2011) Embedded Outreach Model

[88] See also Goraya, H. and Light, A., (2011) Digital Inclusion in South Yorkshire (http://www3.shu.ac.uk/c3ri/ProjectDocuments/Digital_Inclusion_in%20S_Yorks_research_report.pdf) - specifically the 'Carers Study' chapter.

Case Study (Café cultures)

One example of the way in which some local ICT centres have diversified are the ways in which internet cafes are beginning to re-emerge. Once they could be found on most U.K. high streets but until now they had, by and large, been superseded by cafes providing WiFi access. However, this model does not support the learning which once took place in internet cafes – even if it was informal and unstructured learning.

In North America, there are examples of internet cafes re-emerging to meet new needs, such as the Newsbar Internet Café in New York. Owner Jan Balascak, said *"[In the past] People were waiting in lines, we had to take their names down on a sheet, we used to have more computers, [now] we're down to the last four. More and more people are coming in with their laptops, using their smartphones"*[89].

With easier access in multiple locations, customers are no longer compelled to use an internet cafe purely for its connection service. The solution has been to diversify, Newsbar provide WiFi at a charge and have focused more on the quality of the food and refreshments available in the café, recognising the competition locally for providing customers with WiFi and coffee. Visitors now have a choice to use the IT facilities and seek support or to behave as a customer in a café would, ordering food and drink and perhaps making use of the WiFi.

Another example of building a café's brand to emphasise quality, as well as internet access, is Jitterbug Bakery[90] founded in 2012 by Jane Wells. She raised the funds needed to begin the bakery but as a well-known member of the WordPress community, used the crowd-funding website Kickstarter[91] to fund the remaining $15,000 needed for purchasing equipment and making changes to the venue, achieving a final fund of $17,185.

The café utilises the skills built within her community by providing internet access and support with WordPress for anyone who visits. As the café grows, the intention is to start running classes some of which they will charge for and some which will be free.

[89] BBC (2012) Decline and fall of the internet café (http://www.bbc.co.uk/news/world-us-canada-20307609)
[90] Jitterbug Bakery: http://www.jitterbugontybee.com/

[91] Jitterbug bakery on Kickstarter (2012) Jitterbug Bakery: Eat. Drink. Blog. (http://www.kickstarter.com/projects/janeforshort/jitterbug-bakery-eat-drink-blog)

Enterprise Models: Hackspaces

Hackspaces are according to Hackerspaces.org: *"community-operated physical places, where people can meet and work on their projects"*[92]. Worldwide, the website has listings for 1,106 hackerspacers that exist or are planned, although they note this list also includes some spaces that have since closed[93]. They list 50 spaces operating in the U.K.

As a relatively new concept, it is still open to discussion whether 'Hackspaces' (or 'hackerspaces') and 'Makerspaces' are the same, or significantly different. For the purpose of this report, we will not be drawing a distinction between the two terms. What is most important about both terms is that they describe physical places people can go to meet or work on projects that require a level of technical skill beyond using basic office software.

These spaces are generally set up by enthusiasts, volunteers or organisations that already have a technology focus. They also typically tend to have an element of focus on social and political aspects of technology projects. For example, FabLab Jalalabad[94] have developed the FabFi open-source, city-scale, wireless mesh networking system bringing high speed internet connections to village locations in Afghanistan and Kenya.

Similarly, Tokyo Hackerspace[95] responded to the treble disaster of earthquake, tsunami and nuclear power plant explosions in March 2011 with practical 'technology learning and helping' events. Their efforts are archived at: http://quake.tokyohackerspace.org and include manipulation of the following 'hackable' technologies:-

1. Geiger Counter Network (and radiation detection equipment loans).
2. Solar Lanterns.
3. Long range WiFi/VoIP.
4. Car Battery Phone Charger.

Of the above, the Geiger Counter Network is particularly interesting. It was the foundation for understanding what the collected radiation data was showing.

Methods of support

For many people, taking the first step into learning a new subject can be intimidating. Technology, despite its prevalence in modern life through what are generally recognised to be an increasingly complex choice of devices, remains a subject that is used to ridicule the abilities of others.

[92] Hackerspaces.org (2012) Hackerspaces (http://hackerspaces.org/wiki/)
[93] Hackerspaces.org (2012) All spaces (http://hackerspaces.org/wiki/List_of_ALL_Hacker_Spaces)
[94] FabLab Jalalabad (2012) FabFi (http://www.fablab.af/)
[95] Tokyo Hackerspace (2012) Help (http://www.tokyohackerspace.org)

Their choice of device, their inability to use it, their speed of use, their understanding of our ability to navigate websites, the way they phrase the questions they ask. For anybody who is uncertain about whether they want to get online or learn more about technology, finding somebody they trust well enough to feel foolish in front of is a big obstacle to overcome.

Intermediaries

In relation to neighbourhood ICT centres, intermediaries broadly fall into two categories:-

1. People who signpost and refer others to the centres.
2. The people that customers meet in the centres.

In both cases, intermediaries provide routes to relevance helping people to identify what they would like to learn, making their learning experience accessible and supporting the learner. Initial contact with regards to local neighbourhood learning opportunities is likely to be with a relative, friend or colleague.

In 2009, U.K. Online Centres produced '*Digital Engagement – Understanding Customers*'[96]. In this report they identified the 'influencers' most likely to persuade people not using the internet or rarely using it, to learn more. They identified that sons and daughters were the most likely to influence whether a person would decide to find out more, although in terms of whose opinion was most valued survey respondents indicated it was their partner's.

However, they also found that sons and daughters identified their parents' lack of interest as a significant barrier to overcome and as such did not always promote the benefits of learning, or learning opportunities to them. Organisations should consider working with the opportunities presented by these 'informal' social networks to help engage new customers.

In Digital Inclusion in South Yorkshire, Goraya and Light[97] identified that for more vulnerable customers formal networks were more likely to influence their learning choices. This was due to vulnerable groups having social networks that were more strained through infrequent contact or dependency for health reasons.

Neighbourhood ICT centres should look to work with agencies and individuals who would like to develop learning opportunities in vulnerable groups they work with and develop activities to reach new learners through 'embedded outreach'.

[96] .UK Online Centres (2009) Digital Engagement – Understanding Customers (http://www.ukonlinecentres.com/media-centre/research-reports/item/1300-digital-engagement-understanding-customer.html)
[97] Goraya, H. and Light, A., (2011) Digital Inclusion in South Yorkshire (http://www3.shu.ac.uk/c3ri/ProjectDocuments/Digital_Inclusion_in%20S_Yorks_research_report.pdf) -

Case Study (Open Age)

Open Age, began life in 1993. Since then, it has grown and developed the existing service that incorporates training needs for everyone over the age of 50 in the Kensington and Chelsea, Hammersmith and Westminster boroughs of London. The Kensington and Chelsea borough contains a mixture within its population of the most deprived and least deprived households in the U.K.[98]

Working with other organisations so that their activities can be near to where their audience is important. This can be through working with organisations that are located close to residential areas but it can also be working from locations that are popular with certain older people, such as their award winning partnership with Chelsea Football Club[99].

Additionally, recognising that ill health, poor mobility and isolation are significant limiters to over 50s participating in activities Open Age also run the following programmes:

- **Link-up workers -** providing one-to-one support for isolated older people and guidance into activities. Free door to door transport is also provided where appropriate.

- **Telephone based 'conference-style' activity groups** – which provide support, contact and learning for people who are completely housebound.

- **Health programmes –** Their Steady and Stable and Healthy Lungs programmes help older people to deal with their health issues more confidently.

They also provide '**Time for Me**' a "*Local programme of fun activities and trips to give unpaid carers, over 50, time away from their caring role to ensure they themselves remain happy and healthy!"*[100]

The organisation has grown its activity levels year on year; it currently runs 270 activities, across 50 venues, reaching 1000 users every week[101]. Their target audience are anyone aged 50+ and participants' ages range all the way up to 101 years old. There are 26 employees involved in organising, promoting and delivering activities, as well as self-employed tutors delivering sessions through the organisation.

[98] London's Poverty Profile (2012) Kensington and Chelsea (http://www.londonspovertyprofile.org.uk/indicators/boroughs/kensington-and-chelsea/)
[99] Chelsea Football Club (2008) : Win for Chelsea Seniors, U.K., Chelsea Football Club, accessed 2012 online at: http://origin-www.chelseafc.com/page/LatestNews/0,,10268~1318518,00.html).
[100] Open Age (2012) Carers (http://www.openage.org.uk/carers)
[101] Open Age (2012) Activities (http://www.openage.org.uk/activities)

Specifically for digital engagement activities, the organisation runs 30 learning sessions per week. The most popular sessions include: using computers for employment, basic internet and email, digital photography and mobile phone basics. They offer support and sessions using UK Online Centres Online Basics as well as BBC content. Their new programme is an iPad training project and this has proved extremely popular. They have been delivering computer courses since 2000, beginning with two computers and a waiting list of 250 people interested in learning more.

Learners use the sessions and the equipment for a variety of purposes such as:- work (producing quotes for work, job hunting and application forms); researching family history; writing books; Skype and email; producing artwork; learning how to use the computer in languages other than English; watching films; and listening to radio programs. Open Age tutors encourage learners to follow their interest until they are comfortable and then move on from there. A core purpose of Open Age existing is to '*open doors to an active life for people over 50*', this is reflected in their user led approach and encouragement of learners to learn what they want to learn.

Open Age further commit to being user led by determining what their learners need through annual surveys on what they have enjoyed and what they would like to know more about. This is core to their business growth and retaining membership. For example, their mobile phone course began as it was identified as a concern and on-going issue for many of their customers in the 2007/08 user satisfaction survey.

This course is now in its fourth year of delivery and remains popular with new learners. Open Age partners with a local college to deliver this course pairing young people from the college with an older learner and providing one-to-one support as they learn about their mobile phone.

Another core element to the organisation’s continued success is the diversity of funding they attract for their activities. Membership of Open Age is free so they do not generate revenue through this. Courses charge a nominal £1 per hour (maximum £2) and the funds raised through these charges are used towards maintenance of equipment (not generally something funding bodies will entertain).

For their activities, the organisation receives funding from over 50 different sources including the Skills Funding Agency (do you mean the Skills Funding Agency, LSC closed in 2010), the Local Authority, Big Lottery, Sheltered Housing schemes, U.K. Online Centres and others.

Champions or ambassadors

The purpose of a champion or ambassador is to generate enthusiasm, awareness and understanding for a specific service or cause. In the context of this report we will consider digital champions, however examples can be found in other services such as education, health and policy organisations.[102]

Whilst being a champion is in most cases a specific role, the majority of champions are not required to carry out the role full time. The role is frequently voluntary and used as an opportunity to develop skills communicating with others and working with new people building on existing specialist knowledge. In some cases the role is funded or a paid role.

In the U.K., one of the most high-profile examples of digital champions is Martha Lane Fox. Appointed in 2010 by the U.K. Government she led the national digital inclusion strategy 'Race Online 2012'. This has now concluded and the work of the team has been taken up by various departments (such as the Government Digital Service[103]) and non-governmental organisations (such as 'Go ON'[104]).

During the project, Lane Fox and her team developed a national network of 1300[105] organisations who were involved in helping others to get online sharing information, research and news. They established the low cost Get Online At Home[106] computer access scheme (see Recycling Chapter) and they also recruited volunteer digital champions through their partnership networks with organisations such as the U.K. Online Centres network[107].

In their evaluation of the U.K. Digital Champion and Race Online 2012, Capgemini Consulting report that[108]

"*Over 11,000 members of the online public have signed up to the digital champions database, an estimated 300,000+ people said they would help someone online as a result of the Go ON Give an Hour campaign and over half of the 100,000 digital champions that Partners committed to recruit have been created*."

[102] (Johnstone, D. & Campbell-Jones, C. (2003) Skills for Regeneration: Learning by Community Champions, Research Report RR441, U.K., Department for Education and Skills (https://www.education.gov.uk/publications/eOrderingDownload/RR441.pdf)
[103] Government Digital Service:
[104] Go ON: http://champions.go-on.co.uk/
[105](Capgemini Consulting (2012) Evaluating the work of the U.K. Digital champion and Race Online 2012: An independent review by Capgemini Consulting, U.K., Capgemini Consulting, p4 (http://ukdigitalchampionmodel.com/wp-content/uploads/2012/04/Evaluation-of-U.K.-Digital-Champion-and-Race-Online-2012-vFINAL.pdf)
[106] Get Online at Home: http://www.getonlineathome.org/
[107] UK Online Centres network: http://www.ukonlinecentres.com/
[108] (Capgemini Consulting (2012) Evaluating the work of the U.K. Digital champion and Race Online 2012: An independent review by Capgemini Consulting, U.K., Capgemini Consulting, p42, accessed 2012 online at: http://ukdigitalchampionmodel.com/wp-content/uploads/2012/04/Evaluation-of-U.K.-Digital-Champion-and-Race-Online-2012-vFINAL.pdf)

The digital champions' network established by Race Online 2012 has continued as 'Go ON'. Digital Unite have also continued to provide a course which help to build the skills of digital champions so that they can become more comfortable supporting others' learning[109].

The BT digital champions' network is a partnership between BT and The Transformation Trust that aims to recruit 5,000 young people through their schools. The young people will then provide support to family members, friends and elderly members of their local communities, helping them to learn about digital technologies. At the time of writing, 12,061 students had pledged their support to the campaign[110].

Some are sceptical of champions suggesting they are used to supplement support that would have previously been given through paid roles. Although examples of this can be found, it can be argued that where champions are used correctly and effectively, they do not provide services or replace services. Instead, they develop trust and meet people where they need to without the need to ensure they use a particular service or start contacting a public service through a particular route.

In the case of digital champions within local ICT centres, they can provide a nominated person who newcomers are able to meet with and feel comfortable learning from. They can also perform an outreach service, providing a public face to organisations' activities at events such as Get Online Week[111].

Surgeries

An alternative method for attracting new learners or people that are unsure how to make initial contact with a learning centre, is to offer a regular surgery event. These are typically held once a month for free and are open to anyone who would like advice on a particular topic.

An excellent example of these activities is the Social Media Surgery[112] volunteer network, established in 2008. These provide support to charities and social enterprises who would like to learn more about how their organisations can use social media but can't afford to hire in a consultant.

Surgeries are tried and tested methods of supporting new learners. They help to educate attendees in a way that is directly relevant to their interests or what has motivated them to attend. Repair Cafés are an alternative example of these surgery events.[113] The Repair Café Foundation supports 30 regular meetings across The Netherlands where the general public can bring in household items that no longer work and experts will fix them or strip them to re-use their components (refer to the 'Low-cost re-use of computers and other ICTs' chapter for more examples).

[109] Digital Unite (2012) Digital Champion ITQ (http://digitalunite.com/online-courses)
[110] BT (2012) BT Digital Champions (http://btdigitalchampions.com/what/what_do_students_have_to_do)
[111] Get Online Week EU runs in March each year (http://www.getonlineweek.eu/). In the U.K., an additional event is usually held in October by U.K. Online Centres and their partners.
[112] Social Media Surgery: http://socialmediasurgery.com/
[113] New York Times (2012) An Effort to Bury a Throwaway Culture One Repair at a Time (http://www.nytimes.com/2012/05/09/world/europe/amsterdam-tries-to-change-culture-with-repair-cafes.html?pagewanted=all&_r=0)

Implementing Hackspaces

Traditional internet access environments often need adapting to accommodate the kinds of technology that Hackspaces make use of - such as 3-D printers, laser cutters, CNC machines and digital sewing machines. The total cost of ownership can also be prohibitive when maintenance and working materials are factored-in. Hobbyist equivalents (such as RepRaps or Makerbots[114]) are cheaper but the skills required to set-up and operate devices are specialist and require training.

Most hackspaces use closed source laser cutting and CNC machines. These can be purchased at hobbyist level prices (under £1,000) however they will not usually produce the quality or work with larger sized materials as will be needed in most hackspaces. The FabLab referred to above (**Fab Lab Jalalabad**) is one of many supported by the Massachusetts Institute of Technology. Typically these are high-end style hackspace and they require an investment of up to £50,000 for a complete suite of machinery and tools[115]. On-going specialist maintenance of this equipment must also be factored in.

Depending on your community's needs, interests and abilities, this is not necessarily the level of investment you need to consider. Additionally, many universities are becoming interested in the impact of hackspaces locally and may be willing to work with your centre on purchasing, loaning or using equipment.

Hackspaces highlight the most extreme example of the weaknesses in changing existing ICT centres to incorporate new activities. However, these are issues that all other changes in a centre will need to address too:

1. Financing the change.
2. Supporting the skill development to sustain the change.

Financing the change - all service changes require some investment in terms of staff time and creativity, as well as preparing funding bids, fundraisers or loan applications. Once the change is agreed, be it incorporating new workshops or establishing a peer mentoring scheme, someone will need to be responsible for organising it.

They will need to recruit any new staff required, negotiate tutor rates and what contribution there will be for the organisation (for example for room hire), prepare publicity for the event, recruit participants and preferably arrange the methods of evaluation and feedback in advance of the event to test how effective it has been. All of this requires time away from the service/s organisations are currently offering, and with that comes a cost.

[114] Low-cost 3D printer manufacturers : http://www.makerbot.com

[115] Fab Lab (2012) Fab Lab FAQ (http://fab.cba.mit.edu/about/faq/)

Supporting the skill development to sustain the change – If, for example, an organisation incorporates workshops on recycling and repairing computers into their delivery offer, they can (in the short term) offer these by employing freelance tutors or working in partnership with a local training provider. However, in the long term it may be that regular customers using the space would like specific information or to continue their education beyond the workshop.

In this instance, the service can refer them on to whoever delivered the original training or to an alternative training provider. However, it may be better in terms of sustainable revenue and customer retention to incorporate training for their own employees and volunteers so that they are confident responding to queries.

What Works?

In all of the examples given, the effective practices identified are:

- **Be responsive to requirements, needs and demands.**
  The organisations that survive and thrive do so with their customers, not in ignorance of what their customers or audience want to access or learn about. This might be captured through interviews, discussion, statistical analysis, observation and customer surveys.

- **Diversify revenue streams.**
  A healthy balance of income from funding organisations and self-organised activities (such as special events) will create unrestricted opportunities for growth.

- **Recognise diversity.**
  Catering for a specific audience does not mean that there is a universal approach. For example, the needs of somebody who is 50 years old and looking for work are very different to those of someone who is near housebound and in their 80s.

- **The centre is bigger than one building.**
  Having a dedicated community space does not mean that you should always use it. Make use of resources owned by partner organisations to reach alternative local audiences.

- **Relevance and Validation**
  Open Age validate their course offers through regular collection of feedback and assessment of usage figures. This helps to keep their offers to members relevant and with such a diverse range of activities learner can progress through the various activities, keeping their interest and motivation high.

Summary: Neighbourhood ICT centres

Strengths	Weaknesses
• Familiarity – many citizens are familiar with the format and are comfortable participating in learning activities in ICT centre setting. • Continuity – despite changing technologies, neighbourhood ICT centres are well established having been present in some form within communities for many years. • Local connections – often the people who work in ICT centres have local connections which draw in new learners and existing learners for new activities. They also often have strong connections with other local groups such as childcare groups, mental health groups or arts activities.	• Over-dependency on funders - Some organisations are stuck in a rut due to an over-reliance on funding agencies for supporting projects, losing focus on their actual community's needs. • Equipment costs – Every new technology brings with it an associated cost of purchase and maintenance. • Technology curve – continual refreshes are needed to stay current. • Legal obligations – ICT centres depend on volunteers to support activities; however they are legally obliged to ensure that interactions comply with different laws around health and safety, public safety, criminal records checks and so on. This can be costly, time consuming and if nothing else, confusing. It can also be off putting to under-confident volunteers. • Venues – Some venues (e.g. repurposed schools) can be off-putting to potential learners as they hold bad memories or just simply don't *look like* somewhere that people associate with learning.
Opportunities	**Threats**
• New technologies offer ICT centres a wealth of opportunities to engage their existing audiences as well as develop learning activities for new audiences. • New funding streams – Incorporating new ways of engaging audiences such as paid for workshops and varied levels for students to learn at can provide new sources of income. • Cuts to funding for adults - Across the U.K. the focus of colleges and further education facilities has switched to 16-19 year olds as the government has cut funding for learners above this age. This provides neighbourhood ICT centres with a massive opportunity to step in and become the learning provider for this age group. • Educational discounts.	• Private sector sponsored WiFi - Centres who encourage 'drop in' access but do not provide WiFi are putting off a large section of their potential audience. • The increasing reach of internet access through alternative technologies such as 4G or in communal settings such as sheltered accommodation reduces the need for customers to access the internet from neighbourhood ICT centres.

3. Low cost re-use of computers and other ICTs

Why is it worthwhile?

The case for low-cost re-use of computers and other ICTs is underpinned by a number of benefits. Foremost, end-of-life ICT equipment forms part of an exponentially-growing pile of global e-waste. Europeans generate some 20 kg of e-waste per year and according to the UN, 200 million computers and 550 million mobile phones reached the end of their life in 2008. The positive environmental impact of ICT re-use is therefore significant.

Secondly, the low cost re-use of computers and other ICTs presents an opportunity to address some of the fiscal barriers to access among the digitally excluded while helping to reduce the cost of ICTs for everybody else. This is because the re-use potential is diverse. For example, Fonesforsafety® is a mobile phone recycling scheme which turns used mobile phones into reconfigured "999 only" phone alarms for victims and survivors of domestic violence.

The process of ICT *refurbishment*, even if the end product makes no profit, is one of the most valuable in terms of societal benefit. For example, a number of charities operate alternative education programs for disadvantaged groups who can earn vocational qualifications in computer maintenance and repair. This helps the long term unemployed return to the job market and can provide work experience for children of school age.

Finding a *local* re-use organisation is not likely to be problematic. There are upwards of eight[116] computer re-use organisations across Yorkshire (U.K.). However, compared to worldwide sales of around 350 million new computer devices each year (Gartner, 2012), potential demand is still thought to outstrip supply.

One such operation in Airdale provides safe and secure I.T. refurbishing, recycling and ethical disposal service free of charge to three Local Authorities, most of West Yorkshires Emergency Services, several NHS Trusts, PCT's and many businesses throughout the region. This helps organisations meet their legal and social responsibilities within the framework of the European (Waste Electrical & Electronic Equipment) WEEE Directives. They also offer a drop-in repair service.

In summary, re-use schemes:-

- Prevent goods and materials from entering the waste stream.
- Contribute to tackling climate change and over-consumption, as demand for new products falls.
- Ensure that less new products are produced. Less manufacturing/production means less CO2 emissions.
- Help promote social inclusivity, entry-level and local employment, training, volunteering and accreditation opportunities.

[116] Waste Watch: http://www.wastewatch.org.uk/

Affordability as a barrier to take-up

The affordability of ICT has always been a factor for digital inclusion among low income families, both in terms of the haves and the have-nots but also characterised by the widening gap between digital laggards and early adopters. According to the Office of National Statistics it is estimated that on average people have a disposable income of £273 a week (summer 2012[117]). With the cost of an average laptop currently hovering at around the £400 mark, many ICTs are still a luxury item.

In 2010/11, 15 per cent of working-age adults (5.5 million) were in households in the U.K. with incomes below 60 per cent of contemporary median net disposable household income before housing cost. Currently, those on low incomes account for approximately one third of all people who are digitally excluded.

However, despite falls in GDP and employment, average take-home incomes continued to grow. In the latest year of data (2010–11), the number of individuals living below this poverty line fell by 200,000. To put this into perspective, analysts[118] predict that if this trend continues then it is estimated that the proportion of the digitally excluded that are on low incomes in the U.K. would fall to 25% by 2025.

In context, therefore, it is likely that digital inclusion issues around engagement will be more important than affordability in the future. Technology is likely to become more affordable to low income groups and the greater challenge will be to persuade those on low incomes that the technology is useful.

It is reasonable to expect that commercial pressure will encourage technology providers to continue to offer the latest technology at premium prices to wealthy early-adopter consumers. This 'segmenting' of the market place, targeting the latest technology at those who can most afford it or who are most 'engaged' will help to maintain the digital divide. In other words, differential pricing for premium products and the latest technology are likely to remain as a force of differentiation in terms of levels of technology access.

The poverty argument in terms of ICT take-up is weakened by the relentless reduction in cost of entry-level consumer electronics as a result of advances in manufacturing and economies of scale. For example, it is possible to buy a new and fully functioning mobile phone for just £10. However, the shift towards digital by default means that household ICT is now regarded as a 'necessity' by wider society and technology ownership is contributing to the definition of poverty.

Financial hardship, low levels of support, low confidence with technology and low motivation to the benefits of digital characterise consumers most at risk of negative impacts as a result of digital-only policies.

[117] http://www.ifs.org.uk/comms/comm118.pdf

[118] BT

Types of re-use initiatives

The term 'reuse' can symbolise a number of different meanings, from repair to refurbishment. A useful definition of re-use by the Greater London Authority is:-

"*An item or material which becomes unwanted by the current owner but it is still considered to be useable and have an economic value. The owner has however decided to write off its value to expedite its removal and in doing so the item or materials has the potential to enter the waste stream or alternatively be offered for reuse to a reuse organisation*."

Schemes for the re-use of ICT tend to come in a number of different guises. For example:-

1. Those that re-distribute ICT to worthwhile beneficiaries,
2. Those that refurbish donated ICT and re-distribute it to worthwhile beneficiaries,
3. Those that provide subsidies for the total ownership cost of ICTs,
4. Those that allow for the trial or rental of ICTs (typically state-of-the-art),
5. Those that facilitate and encourage the swapping or exchange of used ICT,
6. Those that disassemble ICT to salvage of parts or repair and re-sell,
7. Those that recycle ICTs for material value (cash),
8. Those that recycle ICTs for re-purposing (possibly in an attempt to add value),
9. A combination of any of the above.

There are many subtle variations of the above. For example, re-purposing could mean turning old or discarded ICT into fashion items or it could simply mean using it for its intended purpose yet in an unintended way. For example, consider that an ageing but functioning computer system might be obsolete in terms of its ability to run the latest software but work as an excellent substitute for a print or multimedia file server.

ICT re-use can involve a wide range of commodities such as software licences, consumables (e.g. inks and toner) or services and applications associated with them. For example, donating idle computing capacity or providing out-of-hours access to corporately licensed software applications.

The re-use of ICT may even help us safeguard against supply uncertainly and the sustainability of low-cost consumer electronic supply.

Re-use initiatives are made attractive by the built-in sustainability provided by the value added to ICTs. However, they are still dependent on a number of commodities such as:-

1. Initial capital funding.
2. A supply chain of end-of-life ICT.
3. Consumer demand.
4. Volunteers or low-paid workers with ICT skills.
5. Premises (e.g. for operations and storage).

The supply chain

Due to the short innovation cycle, the norm is to replace ICTs with a new generation product years before their natural failure date. The biggest culprits of premature replacement are businesses that have fast changing requirements and opt for time-bound (not usage based) ICT refreshes. This wasted potential is part of the attraction for re-use schemes but despite a culture of premature replacement by big corporations, the supply of ICT for re-use is increasingly in short supply.

In past years the re-use industry has boomed as innovation cycles have accelerated. For example, some established phone re-use companies are processing in excess of 95,000 mobile phones per month from across Europe. The global recession has put the brakes on wasteful ICT spending and led to longer ownership cycles for ICTs among consumers and businesses alike.

However, opportunity is not the only consideration for ICT donors. According to a 2011 survey of 100 IT managers in large U.K. companies by Computer Aid International, only 14 % follow best practice IT disposal and send their working IT for reuse. However, 83% of those who don't reuse stated that they would like to do so if possible and the average number of computer terminals disposed-of per large company, per year was 542. The main reasons for not considering re-use were cited as data security and supplier leasing arrangements.

To put this in perspective, refurbishing company Remploy E-cycle reported that 80 per cent of IT directors do not take advantage of selling their old equipment. It estimates that 100 end-of-life computers could provide £7,500 revenue, which could fund extra training or part-time employees.

Enterprise supply chains are highly sought after. It is widely thought that 'business class' computers are well suited to re-use thanks to their longevity. This is partly down to the original build quality but also a function of their use patterns and operation within temperature-regulated environments.

There is no reliable data on average life time of personal computers but literature data suggests that a common time line for PC replacement is four years. The table below provides data on the typical refresh cycles for common office ICT.

Average lifecycle of common hardware[119]	
ICT	**Years**
Mobile phone	2
Laptop computer	3
Desktop computer	4
Server	5
Monitor	8

[119] Redemtech Enterprise IT Asset Disposition solutions: http://www.redemtech.com/

Demand for re-used ICT

The secondary market (sometimes dubbed the "IT aftermarket") actually constitutes a complex ecosystem of tech resellers and active consumers that are buying and selling IT equipment outside of the channel endorsed by manufacturers.

The key beneficiaries for re-used ICT are small organisations with tiny budgets and resources, often staffed by volunteers and addressing issues at the grass roots. Computer equipment such as laptops, desktops, printers, servers and peripherals are absolute essentials for a lot of these groups who find these items too expensive to obtain. Paying high street prices diverts valuable funds from core activities, or simply means essential equipment is entirely out of reach.

To put demand into context, a computer re-use scheme which was launched by Bristol City Council in 2011 handed out a total of 521 devices to the local community within its first operating year. This has been estimated as having a total value of £104,200 (521 PCs X £200 real term value).

In Kind Direct, one of The Prince's Charities, helps U.K. charities and not for profit groups to access the consumer supplies they require to deliver their work for people in need. Since being founded in 1996, the charity has redistributed over £115 million in value of products from 850 different companies. More than 6,000 charities working at home and abroad are registered to benefit from the service, helping millions of people in need every year.

Well established, global re-use scheme 'Computers for Charities' have handled in excess of 250,000 computer systems since 1994, benefitting projects and organisations across the U.K. and 105 countries worldwide.

There is also a buoyant second hand market for peripherals and consumables such as half empty toner cartridges (commonly listed on eBay) and otherwise expensive software applications. The high street chain 'Computer Exchange' deals with consumer tech trade-in and made a gross profit of nearly £22m in 2011 which demonstrates that ICT redistribution has the potential to be big business.

There are significantly fewer re-use schemes that focus on the supply of components and *local* schemes which deal solely with the re-use of consumables such as ink cartridges. Opportunities around the redistribution of ICT software, re-use of ICT capacity and micro lending remain largely untapped.

Redistribution

According to research by Computer Aid International[120], reusing working computers is up to 20 times more energy efficient than recycling them. Also, reuse has lower resource depletion costs than recycling.

It should not be assumed, however, that it is economical to redistribute everything. Certain ICTs, such as cathode ray rube monitors (i.e. not flat screens) have now become largely obsolete and the transportation costs mean that they are often uneconomical to handle. As such, some re-use organisations have started to reject ICT that does not meet a minimum set of specifications. For example, working computer systems with a Pentium 4 CPU rated at 1.8 GHz as a minimum (Computer Aid International, 2013).

Even when working ICT is beyond its shelf life in the developed world, it is often considered as valuable in developing nations. In such developing markets, reuse is highly beneficial practice as it helps to expand technology and economy in areas that are not perhaps as financially thriving as normal.

For example, the number of mobile phone users in developing countries has grown at a phenomenal rate over the last few years (from 30.2% of people in 2006 to 78.8% in 2011[121]). Often these economies do not have access to landline telephones or such systems, so a simple process of mobile phone recycling can help to heavily enhance communication systems across the planet.

Recycling

The recycling process involves transporting, sorting, dismantling and separating ICTs into various parts and material categories. Certain elements, when removed, can be re-used.

Recycling is a lucrative business as electronic components can retain or increase their intrinsic value over time. For example, older ICTs often contain more precious metal than newer ICTs and as such the idea of recycling old equipment is more viable. For example, a central processing unit in a modern computer contains about 0.5g of gold whereas in a ten year old CPU this can be as much as 1 gram.

Copper is relatively valuable, but can be difficult to recover from coated wires and circuit boards. Even circuit boards contain small amounts of gold, silver and platinum, which can be recovered.

Recycling can also lead to re-purposing. For example, U.K. based company 'revolve'[122] create promotional designs and products from re-shaped printed circuit boards.

[120] Computer Aid International special reports series: http://www.computeraid.org/uploads/ICTs-and-the-Environment---Special-Report-1---Reuse-%28Aug10%29.pdf
[121] International Communication Union (2011) *Key ICT indicators for developed and developing countries and the world* [internet]. Available at: http://www.itu.int/ITU-D/ict/statistics/at_glance/KeyTelecom.html
[122] http://www.revolve-uk.com

Refurbishment

Refurbishment is the process of repair, modernisation of improvement in order to extend the life or add value to ICT. This may be as simple as refreshing a PC's operating system or upgrading its parts in order to meet a more modern standard. The process of refurbishment normally involves some sort of disassembly, cleaning, investigatory work, upgrading, configuring, testing and packaging for re-sale.

Recipients of refurbished ICTs stand to make significant savings compared to retail values. For example, a computer re-use scheme in Bristol allows city residents to get a fully refurbished personal computer which has an estimated value of £235, for £35. This includes an energy efficient flat screen and a pre-installed version of both Microsoft Windows and Microsoft Office.

This is made possible by a combination of donated, redundant ICT equipment by Bristol City Council and the heavily discounted licensing fees negotiated with Microsoft.

Micro Rentals

Sharing and ICT 'micro-rental' is an increasingly popular type of ICT re-use. Typically, lending and loaning schemes revolve around two different types of ICTs:-

- Portable equipment such as laptops and projectors which are needed for short periods of time or at temporary venues.
- State of the art equipment which is otherwise hard to acquire or buy outright.

An interesting example of micro-lending can be found at ecomodo.com. This website provides a platform for the exchange of goods among trusted 'circles'. Participants can set the amount of daily rent that they require and choose to offset insurance costs (for loss or damage to their items) against an overall income.

Internet Exchanges

A number of dedicated websites encourage and promote re-distribution and re-use such as Freecyle and Freebay. Online trading of ICTs is similarly accelerated by *re-sale* websites such as Gumtree and eBay.

However, the number of contributors and ICT items for exchange is underwhelming. For example, there are only 2,200 messages in the Sheffield City Freecycle group relating to the trade of computer items since March 2009.

The internet is more likely to be harnessed for acquiring and selling second hand or refurbished ICT. Online auction site eBay is awash with redundant and refurbished ICT including sellers who list items 'for spares or repair'.

Evidence of positive impact

The government's £300m 'Home Access' programme was a wide-scale initiative design to ensure that all pupils aged between 5 to 19 in state maintained education in England had the opportunity to have access to computers and internet connectivity for education within a home setting.

In terms of impact on reducing the digital divide, estimates suggest that this initiative accounted for a net increase in home access of approximately 167,000 households – equivalent to about 2.8% of England's households with dependent children. As such, it is now estimated that penetration levels for households with learners between the ages of 6 and 19 is now in excess of 95%[123].

According to evaluation of the Home Access Project, among those households that did not previously have home access, the estimate was that on average households obtained home access about 2.8 years sooner than they would have otherwise. In other words, there is a strong argument to suggest that the supply of low cost ICT is accelerating take-up.

The other consideration is that as the amount of ICT in a household rises, the less reliance there is on communal or shared access. This means that individuals have the opportunity to spend more time accessing digital content.

The economic case for Digital Inclusion prepared by the U.K.'s Digital Champion shows that home access to a computer and the internet can improve children's educational performance and subsequently their foreseeable lifetime earnings.

The environmental benefits of redistribution and recycling can also be quantified. The power consumption of an average 2003 PC is about one-third higher than that of a 1999 PC, despite the improvement of power saving features of new PCs[124].

Secondary-market resellers are also helping to satisfy demand. Typically they can ship available ICT products in 24 to 72 hours, compared with three-to five-week waits (or longer) for a manufacturer's built-to-order product.

The supply of low-cost ICT makes it more attainable. In economic terms, evidence suggests that the price of a three-year-old computer can fluctuate between one half to one third of that of new computer. In most cases, refurbished computers are more than a third of the price of new models, and perform the essential functions that are required of home users, including the need of web browsing, email, office applications, social networking and accounting.

[123] https://www.education.gov.uk/publications/eOrderingDownload/DFE-RR132.pdf
[124] http://reuse.besser-nutzen.net/fileadmin/user_upload/documents/Veroeffentlichungen/LifeCyclePC.pdf

Drawbacks

The risk of buying stolen or counterfeit goods is heightened in the secondary market. In terms of pure economics, a used computer might be worth only £100 or less to buy but a new operating system licence is considerably more than this, which in many cases negates the cost viability of refurbishment. According to Microsoft, counterfeit software is a serious and growing problem for the 35 million PCs that are refurbished and resold globally each year.

Reputable secondary-market resellers have a number of safeguards to protect against counterfeit goods This may include checking label colours, comparing internal and external serial numbers, inspecting solder points, and sometimes even comparing a product against a "known genuine" product bought from a manufacturer.

As well as limited warranties, secondary-market resellers typically do not have any kind of formal relationship with equipment manufacturers. While this does not prohibit direct support from the manufacturer, direct support can be problematic at best. Moreover, ICT in the re-use chain is, by definition, used and is therefore more likely to fail during ownership. That said, the risk of 'early failure' associated with new products is averted.

Refurbishment, recycling and redistribution are all labour intensive. ICT equipment sent for reuse will have to pass examinations, electrical safety tests, functionality tests, eradication of confidential data, and a warranty by the reuse organisation. The governing legislation for re-use organisations can be extensive. For example:-

- Data Protection Directive.
- Waste and Electrical and Electronic Equipment (WEEE Directive).
- Hazardous Waste Directive.
- Electrical Safety Directive and IEE Guidelines.
- Environmental Protection.
- Licensing waste carriers, recyclers and waste management facilities.
- Health & Safety Directive.

Older technology can also be less efficient and more polluting. For example, newer ICT tends to conform to stricter standards on a range of matters from electrical safety to emissions. A point in question relates to the recent reduction in permissible Specific Absorption Rates (SAR) of mobile phones, a measure for the rate at which the body absorbs energy when exposed to a radio frequency electromagnetic field or electronic device.

Reputable organisations in developed countries make phones and computers available for re-use in developing countries. However, some schemes use these programs to simply dump largely worthless equipment. For example, between 25 per cent and 75 per cent of the equipment arriving for re-use in Nigeria is reported to be incinerated or dumped. Regulators in developing countries can help this situation by issuing lists of reputable organisations that distribute equipment that adheres to performance standards and limits on hazardous content. A lot of electronic waste is taken to African countries where the equipment is sold at auction, but the majority of equipment is defective, and is often dumped.

Case study (Get Online @ Home)

Get Online @ Home is a government backed schemes launched in summer 2012, aimed at reaching the remaining 8 million U.K. residents who are not yet internet enabled. The scheme wants companies to donate 25 or more computers that are three or four years old. Free collection or central collection points are provided for companies donating equipment. The PCs are also data-wiped to government standards as part of the refurbishment.

Beneficiaries are being offered a range of computer devices at sub-£200 price points with further reductions if recipients are also on state benefits. Incentives are offered for recipients who also take-up broadband packages and the scheme actively signposts a number of introductory deals. It is effectively a brokerage service for a wider network of accredited refurbishers who prepare the PCs for sale.

All PCs come with 30 days of telephone support and warranties and the option to extend this to one year, if preferred. The PCs come with a set of up-to-date applications too, such as Windows 7 Pro and Office 2010 Starter.

The Get IT Together programme promotes digital inclusion amongst disadvantaged communities. The approach involves a 3-year community development process, managed by a full time coordinator, who works with the local community.

Get IT Together has been established in 14 locations across the U.K., with more in the planning, through a national partnership involving BT, Citizens Online and the Nominet Trust, along with key local partners. 24 further national partners support the programme with their complimentary offerings, such as free software, internet safety trainings or specific routes to engagement with those who are offline.

What works?

- **Take a sensible approach to supply logistics.**
  The collection of used ICT, other than in bulk, is not always economically viable due to the way it is often dispersed. Re-use organisations need to be clever about offsetting collection costs. Some impose a cost-neutral collection fee on the donor whereas others have resorted to using the postal service. However, centralised or delegated collection sites and diarised amnesties are some of the most effective and low-costs methods for attaining used ICT.

- **Target the needy through intermediaries.**
  Evidence suggests that TV, national press and posters play very little part in awareness in the target group for low cost ICT. Local authorities are well placed to identify families or individuals which stand to benefit the most from ICT re-use schemes.

- **Know your worth.**
  In terms of pricing, online trading websites such as eBay or CeX (Computer Exchange) can help buyers and sellers form an expectation of the likely availability and selling price of re-used ICTs.

- **Get organised by leveraging partnerships.**
  The local authority model of delivery tends to be too resource intensive for the public sector to consider. However, a number of authorities support re-use schemes in one form or another, particularly with clerical and administrative tasks. Community groups are central to the supporting activities of re-use initiatives.

- **Support is as important as supply.**
  Consumers demand that there is some sort of support mechanism, at least during the first month of ownership. Self-service is the cheapest way to do this – consider setting up a support website which contains downloadable guides and information to help beneficiaries get their ICT set up or to help with any pre-loaded software.

- **Meet the demands of modern society.**
  Research from the BECTA Home Access project suggests that warranty, virus protection and hardware were the most important provisions for those in receipt of subsidised computer equipment. Broadband was considered least important. Where a number of different types of devices were offered to young people under the scheme, the overwhelming majority (93.6%, 74,653 of 79,779) chose notebooks, with desktops and netbooks attracting only very limited interest.

Summary: Low cost re-use of computers and other ICTs

Strengths	Weaknesses
• Re-use of ICTs can protect against supply sustainability and uncertainty. • Re-use mean that ICT is becoming more attainable. • There are significant environmental benefits. • Improved affordability of ICT means that disadvantaged groups can benefit from increased access. • Schemes can help promote social inclusivity, provide entry-level and local employment as well as training, volunteering and accreditation opportunities.	• There is a black market in stolen and counterfeit goods, including illegitimate software licensing. • There is often limited support and warranties offered against re-used ICT. • The process of re-use is labour intensive and requires volunteers with the right mix of skills. For example, rigorous testing. • Older ICT is typically less healthy for the consumer (e.g. higher emissions). • Unregulated re-use can cause more problems than it solves. • Re-used ICT is quickly out of date.
Opportunities	**Threats**
• Re-purposing of ICT for craft and artistic reasons, subsequently adding value to what is currently 'waste'. • Recycling at the 'component' level. In other words, the 'breaking' of ICT into component form. • Legislation against ICT landfill. • Software and software license re-use. • Using eBay to source low-cost ICT for repair or refurbishment. This is particularly lucrative when there is a common fault with a particular ICT which is easy to fix (e.g. replacing dirty game cartridge contacts on the 1st generation Nintendo game console which may be mistaken as a total system failure to the unwitting consumer).	• The cost of new ICT is reducing and affordability is becoming less of an issue at the entry level whereas pioneering technology is priced at a premium. • New technologies are more integrated and subsequently less suitable for re-use or refurbishment. • The refresh cycle for ICTs are getting shorter as technology advances accelerate. Subsequently there is a risk that older technologies are obsolete faster. • As a result of the recession, corporations are 'sweating their ICT assets' and the supply chain of workable ICT is therefore dwindling. • There is a growing social snobbery associated with having the 'latest' technology. This affects the demand for second hand ICT and further stigmatises recipients.

4. Public and neighbourhood WiFi access

Introduction

Demand for WiFi internet access is apparent wherever there is a population. For example, 600,000 users registered to use WiFi in the London Underground within the first four months of it being introduced. A staggering 40 million sessions were generated during this time, the equivalent of 90,000 sessions per day.

The prevalence of convenient, data enabled apps and mobile optimised websites has result in a sharp rise in internet services accessed on the move. This is causing new levels of economic exclusion, particularly as roaming access is commonly priced at premium levels.

WiFi has a number of advantages over current generation cellular access which makes it the preferred choice for consumers:-

I. Near-broadband speeds can be achieved; this makes video or audio streaming possible.
II. WiFi zones can be created at low cost, in otherwise hard to reach places.
III. WiFi reception equipment is cheap and embedded as standard in mobile information devices such as tablet computers and Smartphones.

Even with the lowering cost of cellular data tariffs there are a growing number of individuals who are unable to pass a necessary credit check, withstand lengthy contracts or afford mobile broadband. Worse still, the absence of abundant and affordable WiFi in public spaces has a compounding effect on cellular internet access for those that can afford it.

The business case for publically owned WiFi is based on a number of societal and coincidental benefits. In a town centre, for example, tourists are able to avoid otherwise crippling international data charges. Secondly, the resulting connectivity can be used to bootstrap administrative applications such as internet-enabling CCTV cameras or electronic speed warning signs.

Near ubiquitous WiFi would be a boon for sharing and accessing information, potentially enhancing the way people communicate and collaborate. In the future it is not hard to imagine that data from WiFi enabled cars could help with traffic management and environmental monitoring could be based on real-time emissions data.

There are practical benefits, too. These include the flexible use of space (e.g. for accessing the internet in libraries) and providing a controlled means of out-of-hours access, such as wireless spill over from an indoors hotspot.

There are a number of wireless community networks across the county. RHBMesh is a prime example, providing a broadband wireless service to the residents and visitors of Robin Hoods Bay in North Yorkshire. For £5 a month, customers get access to a network of 30 repeaters which are spread over a 7 mile radius of the village. Tourists can also use the network on an occasional access tariff, albeit at a much higher daily rate.

All regular users are automatic shareholders and despite there being a core of 12 members who look after operations, most of the admin is done informally by email amongst the community organisers. For the most part the network runs itself with very little complaint in terms of reliability. Ultimately the connectivity is leased from a backbone internet provider but with 150 members their costs are completely covered and there are enough surpluses to keep operations afloat.

The NYCwireless is set-up a little different. It is a non-profit organisation that advocates and enables the growth of free, public wireless internet access in New York City. Each access point is run independently by volunteers with their own equipment.

This chapter explores the advantages and disadvantages of providing public and neighbourhood WiFi zones as a way of releasing the stated benefits and increasing internet access. It provides the necessary context, baseline and rationale for organisations to start building a business case and delves into the various types of initiative that can be formed.

Scale of current provision

Britons are used to finding a myriad of WiFi hotspots in public places – particularly cafes, hotels and restaurants – many of which are free. Yet the wireless ICT estate is fragmented. There are a number of competing providers and a healthy amount of choice but coverage is rarely joined-up. This is in contrast to the ideal environment which would favour dense connectivity under a set of united providers for the purposes of localised roaming. The only place where this is happening is in city centres. For example, twelve U.K. city centres operate an urban mesh of wireless provided by BT Openzone, including Sheffield.

A recent study by the Office for National Statistics showed that 4.9 million people connected through WiFi hotspots such as hotels, cafes and airports over the last year in the U.K., up from 0.7 million in 2007.

Fortunately, the number of WiFi hotspots is growing as usage increases. According to the Wireless Broadband Alliance, the number of global public internet WiFi hotspots will grow more than fourfold to 5.8 million by 2015.

In Britain, the Office of National Statistics calculated recently that 4.9 million people used a WiFi hotspot in 2010, up from 0.7 million people in 2007. Analyst[125] reports indicate that the number of 'premium' WiFi hotspots in the U.K. grew from 33,000 in 2010 to 54,000 in 2011.

The good news is that the proportion of these that were also free jumped from 40% to 45% in the same period. Similarly, access to premium hotspots is becoming more widespread as telephony providers who sell fixed-line and mobile deals start to include time-limited WiFi access bundles.

In response, private companies which have traditionally offered pay-per-use public WiFi are starting to shift towards free business models. For example, Nokia and independent Wi-Fi provider Spectrum Interactive recently piloted 26 free Wi-Fi hotspots in popular shopping areas across London. Telecoms giant O2 has announced its intention to install 15,000 free hotspots across the U.K. by 2013 and Virgin has similar aspirations.

The 'free at the point of use' business model still needs to generate revenue so the reliance is now on increasing the footfall or retention of customers who use the wireless internet services and increasing customer satisfaction in order to stave off the competition. Sophisticated marketing campaigns also create value, such as location based coupons and advertisements.

[125] Informa Telecoms and Media

WiFi versus cellular internet access

The digitally excluded are beginning to take ownership of WiFi-enabled devices as their prices drop and the technology becomes normalised. Recent figures suggest that 52% of 16-24 year olds and 23% of Socio-Economic Group C2DE now have Smartphones and that these figures are growing rapidly: in both groups, 65% obtained their phone in the last 12 months[126]. As their prices tumble, it is reasonable to assume that an increasing proportion of the 86% of C2DE individuals who already own a mobile will switch to a Smartphone[127.]

It is therefore no surprise that mobile internet access is on the rise. Nearly a third (31%) of adults in England have a Smartphone and 34% of consumers report that they use a mobile phone to access the internet[128], an increase of nine percentage points year on year.

However, a recent BBC crowd-sourcing experiment[129] suggested that the quality of 3G data services across the U.K. still varied widely and that a 3G data connection signal was only available 75% of the time. Even when there is a strong signal, connections can become badly degraded by the other factors such as the time of day, associated with the number of concurrent users. Not least, cellular data allowances can be costly and restrictive.

Ofcom Research conducted between September and December 2010[130] found that the average mobile broadband download speed achieved by consumers was 1.5Mbit/s and basic web pages took on average 8.5 seconds to download. This compares with the average fixed broadband speed of 6.2Mbit/s (Nov/Dec 2010), and average web page download times on fixed broadband networks of less than 0.5 seconds.

One solution to faster and more reliable internet access, particularly indoors, is WiFi. This overcomes various problems such as the struggle to get reliable cellular internet access inside buildings or in rural locations.

[126] OFCOM 'Communications Market Report: U.K. – Smartphone Data Tables (Adults)'
[127] Nottingham City Council, Nottingham Insight, http://www.nottinghaminsight.org.uk, 2012
[128] http://stakeholders.ofcom.org.uk/market-data-research/market-data/communications-market-reports/cmr11/england/

[129] http://www.bbc.co.uk/news/technology-14582499
[130] http://media.ofcom.org.uk/2011/05/26/mobile-broadband-speeds-revealed/

Types of initiative

There are a number of WiFi access initiatives across the U.K.; the key differentiator is *how* they are managed and *who* is collaborating. For example, some initiatives are state owned and run while others consist of a patchwork of privately owned hotspots.

The quickest and most cost effective way to start an initiative is to create a co-operative. Universities and government agencies are particularly well placed to join forces – not least they share the same values about open access and tend to occupy urban centres.

At the grass-roots level, neighbourhoods can come together to form a peer-to-peer network. Crowd-sourced WiFi networks such as SparkNet in Finland have demonstrated that there is appetite for this sort of public access. In order to join, participants must let other community members use their wireless access point. Today, SparkNet has a growing membership of over 100,000 users and upwards of 1,500 wireless access points.

The distributed model can also work on a wider scale. 'Fon' is the largest WiFi community in the world, with over seven million hotspots in more than 100 countries. In certain parts of the world, Fon can be configured to generate revenue for the hotspot owner who gets a share of fees from paying users which is seen as part of the attraction for joining the scheme. However, the reality is that most consumers still struggle to find a Fon hotspot –domestic WiFi produces low level coverage and there is simply no demand for roaming in residential areas.

The other type of initiative is based on content. Instead of opening up access to the internet, providers can serve 'wall gardened' content in web page form relative to their line of business. For example, train timetables or hotel amenities. This helps contain the running costs and reduces the risks of providing access but is ultimately too restrictive for the casual user.

Wireless community networks

Community owned and managed internet service providers are an interesting dynamic in the landscape of neighbourhood internet access. They often serve to provider or accelerate internet provision in areas which the major telcos have deemed as economically unviable.

Typically this will involve the formation of a limited company by a group of local trustees who operate and maintain internet services on behalf of the community. This arrangement works well in tight-knit, highly organised communities.

Community ownership has several advantages in terms of building a commercially viable access network. Community owners can:-

- Better negotiate consent for installations across private land, such as farmland.
- Rally together for low-cost installation of the infrastructure.
- Champion a sense of community spirit to yield better initial uptake.
- Be involved in volunteering for otherwise expensive in-home installations.
- Set competitive pricing in knowing that there is no need to create profits or short-term payback.

There are spill-over benefits too. For example, the same network can replace fixed-line voice telephony. In this instance, a regular phone can be used to dial other regular phones using an analogue voice adapter. Community organisations can effectively jump-start and run local telephony services.

Capital for establishing a community network is typically raised through state aid, fundraising and the sale of shares. On-going costs are self-financing through monthly subscription fees. However, the cost to the consumer can be significantly lower than a commercial proposition as it is often the intention of co-operatives to remain not-for-profit. Moreover, if the provision is based on wireless technology (e.g. WiFi) then beneficiaries do not need to pay rental charges for fixed line telephony.

Managed services need to take stock of these core aspects:-

- The Internet Feed – commonly a leased line or reseller account.
- The Network Services – email and web servers, bandwidth control, controlling access and security.
- Distribution – distributing the internet and services to the community.

Unfortunately, the long-term weakness of wireless transmission is reliability and the maintenance requirement of the system. Large-scale wireless networks require frequent equipment upgrades which make the running costs very marginal compared to a fixed line solution.

Public WiFi access in libraries

There are over 3,300 libraries in England, mainly operated by local authorities with some services being delivered by community groups and associations. Thanks to longstanding investment initiatives such as 'The Peoples Network', most libraries in the U.K. are now able to provide fast (fixed) internet access and basic ICT facilities to anybody who wants them. The majority of this access is free but some libraries charge for usage over a certain duration or restrict the amount of data that can be downloaded in any one session.

Library access has proved to be extremely popular. For example, in 2010, Scottish libraries recorded nearly five million public computer logins. Rationing has been necessary for some libraries when demand outstrips supply - such as at peak times or when public access is putting an undue strain on the underpinning network. The capacity of public access in libraries is very much a postcode lottery although the Welsh government's aim is to provide seven networked public access personal or laptop computers per 10,000 resident population.

To circumvent access restrictions, provide citizens more internet mobility and react to increasing Smartphone use, libraries have been introducing free WiFi. Some local authorities are going a step further and introducing free WiFi into a range of public building such as leisure centres and town halls.

Subsequently, the majority of libraries in the U.K. are now WiFi enabled and the Minister responsible for libraries in England has an ambition to create universal coverage for WiFi by 2015[131]. It follows that an increasing number of libraries are providing complimentary services such as serving digital collections of books.

Free, fixed-terminal and WiFi internet access schemes in libraries are not without their limitations. As membership organisations, access is sometimes restricted to those with a library number. Similarly, once a session has been established, content can be restricted or strictly filtered by systems which govern the underlying corporate network.

Librarians are often unable or unwilling to help people configure their own devices and connecting personal electronic devices into library power sockets is rarely permitted. To make matters worse, WiFi access can be inferior to wired access in terms of the available capabilities, such as access to networked printers.

[131] http://www.culture.gov.uk/news/ministers_speeches/9167.aspx

Municipal WiFi

The economic case for wireless internet access, particularly in city centres, has resulted in significant government investment in WiFi grids worldwide. Not least, wireless transmitters lend themselves nicely to being erected on public property, such as lampposts and other street furniture.

However, a number of free WiFi schemes backed by municipalities have failed. The London borough of Islington and Swindon Borough Council have both shut down public WiFi networks due to unsustainable operating conditions. That said, state backed projects in the City of London, Taipei, Seattle, Estonia and Bologna have been running for a number of years.

Setting-up a scheme can be expensive. For example, it cost around £30,000 to transform part of York's city centre into a free WiFi zone (2011). The business case for the York scheme was centred on boosting visitor numbers and helping local businesses. The estimated cost of rolling out the scheme across the entirety of the city centre is estimated at £1m. So far the popularity of this network is proving its worth. In the first three months to January 2012, the York city centre WiFi trial had over one million hits.

Sustainability is another issue. An internet research company (Jupiter) calculated that in 2005 the average cost of maintaining municipal wireless networks was £100,000 per square mile over four years. Furthermore, 50% of the initiatives would not break even if they charged £15 a month for access.

A more sustainable approach for Municipal WiFi is to create city-wide delivery partnerships. For example, the entire city of Oulu in Finland is covered by a partnership with a number of local universities and the city of Bristol provides open WiFi in conjunction with Bristol University campus (BOpen).

Municipal support does not have to be purely fiscal. The business case for BOpen was centred on harnessing the unused capacity of an existing fibre optic network (Bnet) which is owned by Bristol City Council. Bnet links up libraries and council buildings, so it was straightforward to WiFi enable the existing network on the basis that it would support agile working for council officers and as a facility for visitors. Bnet also links up CCTV and traffic signals in the city, so the city council explored the viability of providing public WiFi by attaching a router to CCTV masts.

In other words, Municipalities can find themselves in a position where they own under-utilised infrastructure and robust backhaul across a wide area of population. Sometimes there are some cheap and straightforward measures which can be considered to open these up to wider audiences with the support of the community or third sector organisations.

Drawbacks

The problem with Wi-Fi is that to access it, you need to be connected to a hotspot. This can be problematic when you are travelling compared to 3G. You also need to know the name of the hotspot if there are a number of options within the vicinity.

More often than not, access is conditional. This might be that you need to drink coffee to stay on the premises of a café which is providing access or that you are a Tesco Clubcard customer to get free in-store WiFi. Owners or operators of public spaces can have commercial constraints which work against universal access. For example, hotels might be tied in to a certain internet provider on the basis that they paid for the infrastructure. On this basis they may choose to purposely block foreign networks as a matter of revenue protection.

Frustratingly, overloaded access points can also lead to slow performance or dropped connections. Bear in mind that the speed on most wireless networks (typically 1-54 Mbps) is far slower than even the slowest common wired networks (100Mbps up to several Gbps).

More concerning is that public Wi-Fi networks often have no security and users can be put at risk from their data being intercepted. There is no easy solution to this as if password protected encryption is applied then there has to be some way of controlling the distribution of it. That does not mean to say that open WiFi communities such as 'Fon' put hotspot owners at risk. However, communal sharing your wireless hotspot with others means will mean that that there is a small reduction in your own bandwidth.

Wireless community networks come with their own unique set of overheads. Each new customer will typically need a site survey conducted before they are accepted onto the network and they may be limited to specific access equipment for security purposes. Community network providers also have to deal with the administration burden such as technical support, billing and providing their customers with service status information.

WiFi signals have a very limited range, hampered by most types of building structures. While sufficient for a typical home, one hotspot is unlikely to cover a public area. To obtain additional range, repeaters or additional access points are needed and subsequently the cost of optimising and installing these can add up quickly. There are also a number of evolving standards which have to be considered in terms of investment longevity such as 2.4GHz, 5 GHz or even WiMax.

Wireless signals are also prone to disruption by stray radio signals on the same or adjacent frequencies. For example, wireless alarm systems, wireless public announcement systems and even cordless phones. For indoor purposes, retail businesses like providing cellular wireless repeaters (e.g. 3G or 4G) as it allows them to use insight from customer movements and interactions throughout their stores.

Finally, the long term health effects of WiFi exposure are somewhat unknown and overspill from public networks can interfere with domestic or private WiFi networks. If there is no content control or identity assurance then WiFi provider could be liable for cases of misuse, such as illegal downloads or hacking incidents.

Securing the network

Public WiFi hotspots are rarely wrapped in tight security. The main reason is that they are intended to be a convenience, so it is in the providers' interest to make it as easy as possible for people to connect to them. This results in a number of potential perils. For example, users with a range of open WiFi networks to choose from may be lured into picking one with a familiar sounding name, when actually it is a fake (Trojan horse) used to collect and re-use login credentials.

Mobile access to company information is less of a concern as large companies often provide mobile users with VPN (virtual private network) connections, so that everything is encrypted even if employees use an unsecured WiFi hotspot.

Other than registration schemes and 'device specific' connections, user education in the form of disclaimers and warnings are a sensible precaution against the interception of information. For example, it is best to avoid using public networks for internet banking or any type of purchasing.

The physical risks should also be addressed. In a public environment it is easy for prying eyes to oversee personal information and in encouraging the use of portable information devices the likelihood of theft from a WiFi enabled zone increases.

A potential safeguard against overzealous internet users can be found in the creation of a fair access policy. While enforcement can be difficult to police, it is technically possible to block the access devices of repeat offenders.

However, smart systems to prevent misuse opportunities from manifesting are worth investigating. This could involve a range of measures such as blocking file-sharing websites, preventing simultaneous use and automatic disconnection after a set time period.

What Works?

- **Consider the long term payback carefully.**
  Success is often dependent on having a robust business model. What is free to the end-user is often at-cost to the supplier and that is before any upfront build costs are taken into consideration. Sometimes the societal benefits are justification enough.

- **Complete the package.**
  There are a number of ways to generate revenue, from running online advertisements to subscription feeds which are based on cost versus speed. However, balancing the books is only one aspect of sustainability. The Community Broadband Network has a useful set of principles that it says are needed, in equal measure, for sustainable ICT projects:-

    - A viable business model.
    - An "us" feeling.
    - A set of basic services.
    - Additional local services.
    - Community communication.
    - Customer care.
    - A quality network.

- **Be visible.**
  Generally speaking, the public need to be made aware of the fact that there are WiFi hotspots available within their vicinity. While a simple poster can achieve this at any particular venue, revealing the locations of hotspot nodes is useful for visitors or regular users looking to optimise their experience. For example, the Bristol City Council has created an open data set which provides the postcodes and locations for Bristol's WiFi hotspots on data.gov.uk.

- **Create safeguards.**
  Setting expectations in terms of any limitations (e.g. performance or availability) and creating policies for malicious or unfair use will help protect suppliers from a number of unsavoury scenarios.

- **Treat quality of service seriously.**
  Community networks are hampered by patchy reliability. Small but solid coverage is better than large and lumpy coverage. Issuing an upgraded antenna with network supplied hotspots will help users maintain strong connections.

- **Provide content in addition to access.**
  Most hotspot services are accessed through a landing page. This provides an opportunity for consumers to quickly access specialist content and self-help or troubleshooting information. Full internet access should be provided through some sort of gateway which can be unlocked in a variety of ways such as providing a valid email address or login credentials.

This helps prevent dumb devices, such as internet enabled sensors, from hijacking WiFi bandwidth and provides an added layer of identity assurance.

Summary: Public and neighbourhood WiFi access

Strengths	Weaknesses
• Can be the catalyst for improved access. • Neighbourhood WiFi access can be set-up quickly. • Potentially cheaper in the long-term than fixed access. • For public WiFi access, no contracts or pre-conditions are required. Hence universal access is achieved. • Wireless access mitigates problems around sharing computer resources or capacity restrictions as a result of limitations in a physical operating environment.	• The cost of installing and maintaining a reliable network against the potential revenue from its users. • The amount of organisation needed to operate a mesh (e.g. billing). • Security implications and subsequent fear among users. • Restrictive operating conditions, such as availability of computer charging points. • The limited range and throughput (speed) of the technology compared to wired access. • Subject to interference or rivalry from other networks.
Opportunities	**Threats**
• As well as setting-up their own meshes, we anticipate a growing number of opportunities for community organisations to run managed services for existing telecommunication providers, independent of the underpinning technology such as WiFi or 3G/cellular. • Community organisations can act as the driving force for access related investments, accelerating take-up and de-clogging infrastructure deployment. • There is a general lack of education around savvy wireless data consumption, the availability of free WiFi and the security of open networks. Community organisation can help promote awareness – such as directory websites for finding local hotspots such as MyHotspots.co.uk (There are also downloadable Smartphone apps that hep you locate WiFi networks based on GPS - such as WifiZone@U.K.)	• The growing range of ‘free WiFi’ initiatives sponsored by the private sector. • The increasing reach of internet access through alternative technologies such as 4G or in communal settings such as sheltered accommodation.

5. Combined access initiatives

What are combined access initiatives?

Combined Access Initiatives offer a variety of methods for getting online and engaging with digital content and activities. Their multi-method approach is attractive to both people who are already online, confident and capable and people who have not yet found a reason why being online is relevant to them. Additionally, through having choices about the learning content and equipment they use, learners' opportunities to progress or expand their interests are increased.

For organisations too, there are a number of benefits to combining approaches which provide access. These include:

Content that is more relevant to customer needs – Organisations are able to develop or access more learning resources and equipment through their additional access initiatives. This means they are able to offer learners more diverse learning opportunities helping them to retain existing learners and attract new learners.

Partnership working – Working with other local organisations, funders and experts in subjects that their organisations do not have builds the strength of collaborating partners.

Innovative outcomes – Combined access initiatives produce outcomes that other organisations practically cannot. Working with people who have different practical skills can produce beneficial outcomes beyond the immediate project's needs and expand an organisation's network of contacts.

How are they sustained?

Combined services are rarely planned around a single funder unless they are large schemes funded by a central government pot. Most are dependent on a collection of funds that feed into one scheme or it could be financed through unrestricted funds raised by an organisation. If they are dependent on funds then activities are run temporarily as funders rarely provide long term support to organisations for the same activity. Where possible organisations identify means of supporting the activity without funding agencies needing to provide support; for example, charging for workshops, via payments for other services or fundraising from private business.

Volunteers are central to many combined access initiatives. They are often the instigators of pilot projects that develop into core services as well as supporting the delivery of funded services through providing mentoring, technical or outreach support.

As with other access initiatives, organisations that are sustainable and provide more consistent support also tend to have organised and respected volunteer recruitment and support policies in place. Their practices can include finding tasks volunteers enjoy and excel at but they can also be simple such as making the activities volunteers are given brief and limited to a specific activity or project to avoid overwhelming, underwhelming or exhausting their energy.

Business networks and connections are important to all organisations; however combined access initiatives are often particularly good at drawing on these connections to develop new project activities. They maintain their networks through attending local meet-ups such as those hosted by local Voluntary Advice centres and also support other local organisations by attending their openings, events and conferences. They also work with other organisations providing short-term support or as a secondary partner on projects demonstrating their own value in partnerships and through this develop opportunities to work with others on larger or better funded projects.

Types of Initiative

Combined Access Initiatives emerge from circumstance, funding opportunities and local capacity, as such they are not simple to replicate and what works in one place may not be applicable in another area. In the resource rich developed world, Combined Access Initiatives are more a consequence of a diversity of skills within the workforce, multiple funding strategies or equipment donations. Whereas in resource poor developing countries, Combined Access Initiatives are typically responding to minimal local provision and using one location to meet multiple needs building on existing infrastructure.

The types of initiative which exist are not simple to define, however broadly they all feature:

- Specific equipment that learners and organisations cannot access elsewhere
- Partnerships with other delivery organisations and funding bodies, in developing countries or for especially large schemes in developed countries there is often governmental support.
- More diversity amongst learners i.e. basic, intermediary and advanced, not just basic or advanced.
- Opportunities for volunteers to take part in learning as well as supporting other learners.

Resource Rich Countries

What we refer to here as ‘resource rich’ countries, are typically also countries within the developed world. In countries with strong existing infrastructure where the general population have a high take up rate of digital services and technologies, Combined Access Initiatives are usually created to address the needs of a specific offline community. They are more bespoke services than initiatives intended for wide coverage; this reflects the rapid take up of online services and digital devices by the population.

Initiatives usually aim to address the barriers to internet take-up as well as making the internet more relevant in the lives of people who are offline and therefore motivating them to learn more about it. Some schemes are built around specific funding opportunities or digital inclusion policies.

Schemes address the primary needs of digitally excluded people through a combination of solutions, as depicted in the table below:-

Need	Solution
Skills to get online.	Outreach support and lessons in house.
Equipment costs.	Loan schemes and opportunities to gradually purchase equipment.
Costs of accessing the internet.	Providing access to the internet free of charge at a learning location or through local WiFi schemes.

These activities can be incorporated by other organisations wanting to reach audiences and inspire learners, in order of ease to integrate they are:

- Outreach support and lessons in house
- Providing access to the internet free of charge at a learning location or through local WiFi schemes.
- Loan schemes and opportunities to gradually purchase equipment

Outreach support can be provided through specific activities set up in partnership with other organisations, for example local care homes or health charities. It can be run with support from volunteers or through applying for funding to support a series of events. It can also be simplified further by providing support at events organised by other groups such as Get Online Week[132], Adult Education Week [133] or more localised events.

Lessons in house are again relatively simple to set up. If an organisation has limited staff resource or would like to offer a diverse set of basic learning information they can register to become a U.K. Online Centre[134].

If they would like to offer more bespoke sessions, they can create resources and promote them widely online using their website and social media sites [see **Multimedia**], as well as offline through local networks and in local businesses. They can also recruit in people with skills to run workshops as freelance contractors.

[132] Get Online Week EU is run in March each year, information can be found online at: http://www.getonlineweek.eu/category/national-news/uk/. UK Online Centres (now the Online Centre Foundation) also run an annual Get Online Week in the U.K. only in October each year, information on this is likely to be made available on their website in due course: https://www.ukonlinecentres.com/media-centre.html
[133] 18-24 May 2013 more information online at: http://www.alw.org.uk/
[134] UK Online Centres: http://www.ukonlinecentres.com/join-us-.html

For example, Manchester Digital Laboratory (MadLab)[135]is a hackspace [see **Neighbourhood ICT Centres: Hackspaces**] that run events under their Omniversity[136] series providing attendees with skills from short story writing, to soldering to physical computing and 'building the internet of things'[137]. Each session is delivered by someone with specialist skills, the majority of tutors do not work for MadLab.

The workshop costs are usually around £100 and the proceeds are divided 50/50 between the person running the workshop and MadLab for providing the space.

Providing access to the internet free of charge at a learning location is now expected by many customers, as discussed in the **Neighbourhood ICT Centres** chapter. Some organisations make use of free access to the internet, to also interest people using their space in other activities. For example, Access Space[138] in Sheffield (see also Sheffield Community Network funded digital media centres) provides a public access media lab, where anyone can use the computers and internet for free. Through this, users also become aware of the arts activities the organisation supports, as well as their computer recycling activities, commitments to using free, open source software, workshops and volunteer opportunities.

With regards to providing access to the internet through local schemes, there are a number of local authorities across the U.K. experimenting with providing free access to WiFi in specific areas of their towns and cities (see also **Public WiFi chapter**). Elsewhere, groups of residents are developing the technical skills to connect themselves and their neighbours affordably. Some groups such as Burngreave.net[139] in Sheffield have built on existing home connections, which they have then opened access to, giving all homes within a specific radius access. In this example, the network can only expand if households volunteer as hubs of connection, providing access from central locations which become points of connection for others nearby.

One of the most complex and ambitious schemes currently operating in the U.K. is Broadband for the Rural North (B4RN)[140]. Launched in 2012 as a community benefit society, B4RN aims to deliver *"very high speed broadband to residential and business premises located in the rural areas around Lancaster…"* [141] The service will be providing Fibre to the Home (FTTH) connections with 1 Gigabit connections; this is not only faster than any previous connection offered locally, it is faster than many standard connections elsewhere in the U.K. The cost of providing local connection is just under £2 million, which is far lower than the cost for large internet service providers to carry out similar work.

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[135] MadLab: http://madlab.org.uk/
[136] Omniversity: http://omniversity.madlab.org.uk/

[138] Access Space: http://access-space.org/doku.php
[139] Burngreave.net: http://burngreave.net
[140] Broadband for the Rural North (B4RN): http://b4rn.org.uk/
[141] B4RN (2012) Invitation to subscribe for shares in B4RN: http://b4rn.org.uk/wp-content/uploads/2011/11/Share-application-form-B4RN-V31.pdf

B4RN are keeping costs lower through: relying on volunteers to dig routes and lay cables; negotiating access with landowners for routes and paying them directly to lay fibre; hiring local equipment (e.g. diggers); and offering shares in the company as a method of funding the initiative.

The scheme originated from the existing activities of local community members who were already involved in rural connection campaigns, the local neighbourhood ICT centre and schools. Through the B4RN project the group have expanded their community connections, reaching all resident demographics from owner-occupiers, farmers, tenants, non-rural business owners and employees. The additional benefits to the local area of this scheme such as re-skilling residents are detailed on the organisation's website.

An example of the social and local financial benefits of such schemes is detailed in a blog post by one of B4RNs founding members Lindsay Annison called *B4RNs Blue Pound Goes Round and Round*[142]. In the post she describes the way that through investing locally and trading skills, time and actual money the local economy has been supported where it would not have been if a large telco were to be laying the fibre. The B4RN scheme is, as we write, still in progress laying connections and has connected only 15 homes, as such it is not possible to conclude whether or not it has been successful. However, its method of bringing together a community to tackle an issue that is beyond its residents' current technical knowledge offers opportunities for reflection on the way other groups organise their activities locally.

Equipment loan schemes, provide users with an opportunity to try out tools in settings they are comfortable in or would use the devices in, When these are tested, they are usually reported to have a positive effect on participants' future take-up of digital devices or learning. However, they are also the most complicated to fund and to deliver, as organisations find costs of purchasing equipment high and insuring devices for use away from centres by multiple individuals can be near impossible.

For example, West Dunbartonshire Libraries[143] provided a laptop loan scheme as part of their Peoples Network's broader programme of digital access events but were unable to secure insurance for loaning laptops to individuals. Their solution was to make contact with groups that worked with hard-to-reach people such as people aged 60+, people with poor health and people who were unemployed, and invite these groups to visit the library and use the equipment. They also provided some one-to-one training at home for people who were too unwell to use the library computers. Although these solutions were not ideal (the original intention was to directly loan equipment to individuals to use in their own time without supervision), the opportunity to use equipment in environments where participants felt comfortable or more confident was successful in developing their interest in learning more.

Additionally, in each session the participants were able to guide their own learning to ensure it was relevant and motivating to them as opposed to using the libraries generic learning resources, this was also found to be beneficial.

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[142] Annison, L. (2012) B4RNs Blue Pound Goes Round and Round, 5tth blog (http://5tth.blogspot.co.uk/2012/10/b4rns-blue-pound-goes-round-round.html)
[143] West Dunbartonshire Libraries (2003) LAPTOPS FOR LOAN: Critical review of the operation of the project (http://www.slainte.org.uk/files/pdf/slic/peoplesnet/gates/westdun.pdf)

West Dunbartonshire Libraries was unable to sustain their laptop loan scheme as an ongoing offer. They do now provide an eBooks loan scheme using a free download service that works with a wide range of devices *"including iPhone/iPad, Android Devices and many eReaders, excluding Kindle which is linked to Amazon."*[144]

Although this does not support the learning of customers in the same way the laptop loan scheme did, it does acknowledge and cater to the changing needs of their audience which is sadly not true of all libraries. It would be yet more inspiring to find examples of libraries being able to loan e-readers to their customers as well; however in the decade between West Dunbartonshire's scheme and 2013 there has been little progress in device loan schemes the U.K.

In January 2013, Manchester Libraries reported that four of their branches were *"Pioneering a new scheme which allows library members to borrow a laptop for use* ***within the library****."*[145] Through this scheme Manchester Libraries will provide benefits to their customers beyond being able to connect in the branch from a sofa of table of their choice; it will familiarise customers with using a laptop if they have not done so before. However, the library staff will almost certainly need to spend time supporting customers who are unsure of how to use a laptop but there is no mention of training or support and it does not address the needs of citizens who would benefit from using the devices in their own home or away from the library to develop their confidence.

Elsewhere, loan schemes have also proven problematic. For example, in Hong Kong, a network of ICT centres called the Digital Cyber Centre Alliance[146] was established in 2010 with investment from the government. Their 'Laptop Library' scheme was delivered in two parts; a mobile computer truck that visits schools and homes and an equipment loan for people to continue their computer training in their own homes rather than travel to a centre. Au and Chan[147] who evaluated the pilot stages of the scheme found that the truck worked as a form of marketing and outreach for the main ICT centres, especially reaching young people but they described the laptop loan scheme as border-lining on failure. Again, this was not due to lack of demand, it was an issue of risk with neither centres nor borrowers able to bear the cost of replacing lost or broken equipment.

Due to this many centres worried about the risk of lending the machines, centre workers were required to sign-in and register who a laptop had been loaned and were concerned about being held personally liable if equipment was returned damaged or was stolen.

Often schemes that are most successful operate in environments that reflect the "combined" aspect of combined access initiatives through diversity in partnerships, ideas and activities. For example, Sunderland Partnership's Digital Challenge Programme, outlined in our case study.

[144] West Dunbartonshire Libraries (2013) How to borrow an ebook from West Dunbartonshire Libraries (http://www.west-dunbarton.gov.uk/education-and-learning/libraries/ebooks/)
[145] Manchester City Council (2013) Laptops for Loan in Manchester Libraries, Manchester: http://www.manchester.gov.uk/news/article/6527/laptops_for_loan_in_manchester_libraries
[146] Digital Cyber Centre Alliance: http://www.dcca.hk
[147] Au, K. & Chan, V., (2010), A Review Study on the Pilot Scheme of District Cyber Centres Alliance, Community Informatics Research Network, Prato 2010.

Case Study (Sunderland Partnership's Digital Challenge Programme)

Running from 2007-2010, the Digital Challenge Programme[148] was a series of activities developed through Sunderland Partnership following an award of £3.5 million from the national Digital Challenge competition[149].

The Partnership members are: Sunderland City Council, City Hospitals Sunderland NHS Foundation Trust, City of Sunderland College, Gentoo Group, The Sunderland Community Network, The Sunderland Echo, Job Centre Plus, North East Chamber of Commerce, Northumbria Police, Sunderland arc (Area Regeneration Company), Sunderland Teaching Primary Care Trust, The University of Sunderland and Tyne and Wear Fire and Rescue Service.

The Digital Challenge Programme, aimed to address digital exclusion amongst hard-to-reach groups through a mixture of opportunities and activities. These included:

Community ICT Facilities
These were also referred to as Electronic Village Halls and were established in both traditional and non-traditional settings including: Adult Learning Centres, Village Halls, Youth Clubs, Community Associations, Schools and Nurseries, Faith Groups, Voluntary Groups, Health Centres; GP Surgeries, Libraries, Sport Centres, Public Houses, Street Kiosks, Public Service Centres, Mobile ICT, and peoples' own homes.

Community eChampions Network
Through recruiting champions from diverse backgrounds, the Digital Challenge Programme ensured that a range of local communities were represented. This helped target and engage individuals that came from what were traditionally hard to reach groups.

Community of Interest (CoI) Websites initiative
Provided a dedicated service for communities to build, own and maintain their own quality web presence.

Equipment loan & support scheme
These were aimed at community organisations and provided laptops (including Apple Macs); Projectors & Screens; Scanners; E-Voting Kits; Digital Cameras & Camcorders; Adaptive Technology; Interactive Whiteboards; Mobile Internet Connectivity.

Innovative Telephone Schemes
Worldmark provided a robust and secure 'safety net' device using standard mobile devices which was tested with carers and the people they cared for. Smart Sunderland is a 'sign-up' text alert system that provides information on current affairs & social events across the city to users of all interests and themed groups.

[148] Sunderland Digital Challenge: http://www.sunderland.gov.uk/index.aspx?articleid=2687
[149] Digital Challenge Programme and DC10+: http://www.dc10plus.net/news-and-events/news/News18677

The scheme was strong from the outset but benefitted from resourcing and then working with a number of organisations across the private, public and charitable sectors. This simultaneously strengthened the Digital Challenge Programme's network, whilst also benefitting and developing the networks of the individual organisations involved.

All activities run were developed in consultation with representatives of local groups or local residents and therefore reflected identified needs. Through working with partner organisations, routes to hard-to-reach groups were easier to make than if an activity had been set up and then marketed through more traditional routes such as flyers. Making connections with relevant people through community organisations and through the Champions' scheme helped to establish discussions that focused efforts on making activities most relevant to the audience too.

Sunderland Partnership through the Digital Challenge Programme wanted to connect with and support hard-to-reach citizens within its geographical area. Whilst partnership working supported them to make these connections, most organisations working within the charitable sector are under-resourced and do not have the capacity to become intermediaries without there being resource associated with the role.

The award fund of £3.5 million from the U.K. Government's Digital Challenge supported the development of relationships, jobs, marketing, developing appropriate technology solutions and the purchase of equipment. Without it, the partnership may have developed a strong volunteer network or information sharing system but it would have been difficult for it to provide equipment loans, telephone schemes or community of interest websites that supported community organisations.

Resource Poor Countries

As outlined previously, the examples we are focusing on here differ from Combined Access Initiatives in resource rich countries. They are primarily found in developing countries and are established to meet the digital needs of their local population where resources are minimal, in this way they are addressing problems of what is known as the digital divide. *Digital Exclusion* which we have discussed frequently within this report and the *Digital Divide* are different things in terms of the experiences of people affected by them and the solutions to them.

In the developed world, the predominant issue for people who do not use the internet is one of exclusion; they are physically able to receive the technology in their home but are unable to because they lack confidence, skills, support or finance to connect[150]. In countries where there has been less infrastructural investment and therefore there is no internet service to connect to, the issue becomes one of digital divide also commonly described as the 'haves' and 'have-nots'.

To give a sense of scale to this issue, of the 7 billion people on Earth only 2.3 billion (one third) are Internet users[151]. With regard to the digital divide between the developed and developing world, there are still significant shortfalls in access. In developing countries, the number of Internet users doubled between 2007 and 2011 yet still only 25% of their inhabitants were online by the end of 2011.

In contrast, the percentage of individuals using the Internet in the developed world reached 70% by the end of 2011[152]. Furthermore, in some countries[153] more than 90% of the population are online. At present, there are no reliable sources which indicate the global coverage levels of the various methods for households to connect to the internet. As such it is difficult to demonstrate whether the figures outlined above of subscription or usage is proportional to ability to access or not.

[150] Even within the U.K., there remains a very small proportion of households in the U.K. that can receive no internet access whatsoever (approximately 1%). However, in 2009 the BBC reported that 11% of U.K. households did not receive 2 megabytes per second (Mbps) from their internet connection. This is the minimum connection speed the U.K. government want all U.K. households to be able to receive (as stated in the Digital Britain report, 2009). In 2012 Point Topic reported that it was in fact 14% of households who could not receive 2Mbps. The majority of households that receive poor connections are in rural areas as households are further apart in some areas and as such typically further from the cabinet. Further information on this can be found online at the following links. BBC broadband speeds report: http://news.bbc.co.uk/1/hi/technology/8068676.stm SamKnows report on rural broadband connection problems: http://www.samknows.com/broadband/uploads/CRC.pdf ISP Review on Point Topic broadband speeds report: http://www.ispreview.co.uk/index.php/2012/08/new-uk-map-of-broadband-isp-speed-finds-13-percent-get-below-2mbps.html

[151] International Telecommunication Union (2012) Key statistical highlights: ITU data release June 2012 (http://www.itu.int/ITU-D/ict/statistics/material/pdf/2011%20Statistical%20highlights_June_2012.pdf)

[152] International Telecommunication Union (2012) Key statistical highlights: ITU data release June 2012 (http://www.itu.int/ITU-D/ict/statistics/material/pdf/2011%20Statistical%20highlights_June_2012.pdf)

[153] Iceland, the Netherlands, Norway and Sweden

Mobile phone technologies are one of the quickest growing in developing countries; 80% of the 660 million new mobile-cellular subscriptions worldwide in 2011 were added in developing countries[154]. Again, there are differences in take up even amongst developing countries. For example, of the 660 million mobile-cellular subscriptions in 2011, 142 million were added in India[155]. This is twice as many as in the whole of Africa and more than in the Arab States, Commonwealth of Independent States and Europe together[156].

The International Telecommunication Union (ITU) reported that by the end of 2011, there were 105 countries with more mobile-cellular subscriptions than inhabitants, including African countries such as Botswana, Gabon, Namibia, Seychelles and South Africa.[157]

Mobile-broadband subscriptions grew 45% annually between 2007 and 2011 and there are now twice as many mobile-broadband as fixed broadband subscriptions worldwide[158]. However, whereas in the Republic of Korea and Singapore there are now more mobile-broadband subscriptions than inhabitants, in Africa there are less than 5 mobile-broadband subscriptions per 100 inhabitants[159]. This divide is infrastructural as mobile-broadband penetration has only reached 4% of Africa, which although low is better than 1% for fixed-broadband penetration and also explains the low levels of subscriptions[160]. Africa is also the region with the lowest level of mobile population coverage, however over half of the population living in rural areas has access to a mobile network[161].

Where fixed-broadband is available, there are disparities in the available Internet bandwidth per Internet user, for example European users on average receive almost 90,000 bit/s of bandwidth per user, compared with 2,000 bit/s per user in Africa[162].

In 2012, ITU highlighted that fixed-broadband services remained “too expensive” in most developing countries where the price of a basic, monthly fixed-broadband package can represent over 40 per cent of monthly gross national income per, compared to 1.7 per cent in developed economies.[163]

Creating an infrastructure to support mobile networks, mobile broadband or fixed line broadband, for many developing countries is not a simple task. Geographical, socio-political and economic issues all play their part in whether or not a service provider believes there to be benefit in investing.

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[154] International Telecommunication Union (2012) Key statistical highlights: ITU data release June 2012 (http://www.itu.int/ITU-D/ict/statistics/material/pdf/2011%20Statistical%20highlights_June_2012.pdf)
[155] International Telecommunication Union (2012) Key statistical highlights: ITU data release June 2012 (http://www.itu.int/ITU-D/ict/statistics/material/pdf/2011%20Statistical%20highlights_June_2012.pdf)
[156] International Telecommunication Union (2012) Key statistical highlights: ITU data release June 2012 (http://www.itu.int/ITU-D/ict/statistics/material/pdf/2011%20Statistical%20highlights_June_2012.pdf)
[157] International Telecommunication Union (2012) Key statistical highlights: ITU data release June 2012 (http://www.itu.int/ITU-D/ict/statistics/material/pdf/2011%20Statistical%20highlights_June_2012.pdf)
[158] ITU (2011) The World in 2011: ICT Facts and Figures (http://www.itu.int/ITU-D/ict/facts/2011/material/ICTFactsFigures2011.pdf)
[159] ITU (2011) The World in 2011: ICT Facts and Figures, Switzerland (http://www.itu.int/ITU-D/ict/facts/2011/material/ICTFactsFigures2011.pdf)
[160] ITU (2011) The World in 2011: ICT Facts and Figures, Switzerland (http://www.itu.int/ITU-D/ict/facts/2011/material/ICTFactsFigures2011.pdf)
[161] ITU (2010) ITU calls for broadband Internet access for half the world’s population by 2015 (http://www.itu.int/net/itunews/issues/2010/05/12.aspx)
[162] ITU (2010) ITU calls for broadband Internet access for half the world’s population by 2015 (http://www.itu.int/net/itunews/issues/2010/05/12.aspx)
[163] UN News Centre (2012) Digital divide closing, but still significant, says United Nations telecoms agency (http://www.un.org/apps/news/story.asp?NewsID=43265&Cr=digital+divide&Cr1=#.UOs78m8j7D4)

Where they do not, governments and political organisations seek solutions with international development agencies but progress is slow if they are unable to finance it directly.

For example, in 2003 a project began attempting to bring internet access to the 700,000 citizens of Bhutan through connecting 38 post office venues[164]. Even in 2010, Bhutan's telephone penetration was only 12.2 per cent in urban settings and 4.9 per cent in rural areas. Internet connections were present in less than 1 per cent of households in most communities. The project was managed by an in-country partnership of: the ITU, the Universal Postal Union (UPU) and the Government of India, the Royal Government of Bhutan, Bhutan Telecom and Bhutan Post. Funds were provided by the Government of India, British Telecom, Deutsche Telekom, Ericsson, INTELSAT and Telstra. The country's terrain proved problematic for the project with the team eventually opting for connection via satellite links between remote stations and a hub in the capital city Thimphu as they felt this was the only solution for the most remote links. Some sites were so remote that helicopters had to be used to transport materials; for other sites, 112 people and 26 horses were hired to carry the equipment over steep terrain.

There were on-going issue of maintenance as the stations were subjected to harsh weather which caused – or had the potential to cause - serious technical damage. Repairing and maintaining remote stations requires sufficient inventory of station parts, technical staff to cover the site 24/7 and reliable power supplies. The project was most successful with students, professionals and farmers. Alongside the initial skills and confidence developed getting equipment on location, connecting locals to information and one another it has also been used to connect the postal service and improve its efficiency.

Although infrastructure is crucial for helping inhabitants of developing countries to access the internet, once they have access the issues they face will become similar to those faced by people in developed nations who are not yet online. For example, skills, confidence, support, purpose and motivation, relevance and capacity to learn at a given time, will all have a bearing on how well a learner takes to the experience. Additionally, the ITU[165] identified that there is a lack of local content in local languages on the Internet, the majority of content remains English[166] for people trying to get online in developing nations this presents an immediate and obvious barrier.

As we shall discuss in our Case Study below, combined access initiatives are part of the process in helping people to get online once access is made available near to them. Often this can include helping learners to make sense of the world of information they are navigating through including the language used in content; this activity is somewhat similar to the activities we described in Neighbourhood ICT Centres: Methods of Support.

[164] ITU News, (2010) ICT Success stories: Reaching the remote in Bhutan (http://www.itu.int/net/itunews/issues/2010/05/22.aspx)
[165] ITU (2010) ITU calls for broadband Internet access for half the world's population by 2015 (http://www.itu.int/net/itunews/issues/2010/05/12.aspx)
[166] The ITU noted an increase in content produced in languages other than English as more internet users came online from non-English speaking countries; however it is currently disproportionately the language of internet content.

Case Study (UNESCO Community Multimedia Centres)

UNESCO's Community Multimedia Centres (CMC): *"Combine local radio by local people in local languages with a public telecentre facility offering public access to information and communication technology (ICT) applications in a wide range of social, economic and cultural areas."*[167] In 1999, 1 in 4 Africans had a radio set but only 1 in 400 used the internet[168], UNESCO identified the potential to build upon existing trusted facilities (community radio stations) and incorporate into this methods of helping local residents to get online. The project funded more than 70 centres between 1999 and 2008[169] and research in 2012[170] by Sara Vanini indicates many of these centres are still providing services in their local region.

The CMCs offer depended on the organisations UNESCO were supporting and the political context they were operating in (not all countries permit community radio on air). Basic access centres would offer *"…the simplest portable radio station, plus a single computer for Internet browsing wherever possible, e-mail and basic office, library and learning applications"*[171]. Other CMCs were part of a major infrastructure, offering a full range of multimedia facilities; these organisations were able to function at higher level in terms of the skills they could pass on but also the role they could service for the community. For example, large groups also acted as a distance learning, training and informal education centre or linked up to the local hospital for telemedicine applications[172].

For UNESCO, CMCs use of ICTs was presupposed to orientate towards collective community use foremost, although the equipment could also be available for individual access. They did not dictate the ways that CMCs earned income to support their activities as long as access to ICT facilities remained not-for-profit.

Each Community Multimedia Centre could receive support to provide as a minimum:

Radio Browsing:
Radio browsing programmes offer mass, indirect access to online resources. In these programmes, the content of selected web pages is discussed, explained and contextualised by the presenter and resource persons in the community's own languages.

Community Browser:
eNRICH is a ready-to-use, fully customisable knowledge management software tool. It enables communities to build their own gateway to the web and to multimedia resources – quickly and easily.

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[167] UNESCO (2012) What is the programme for Community Multimedia Centres? (http://portal.unesco.org/ci/en/ev.php-URL_ID=5515&URL_DO=DO_TOPIC&URL_SECTION=201.html)
[168] UNESCO (2003) Community Media Centres , publication code CMC-us.pdf (http://portal.unesco.org/pv_obj_cache/pv_obj_id_AFE3ADA85E05C6E6F6C01AFE7FA74080BB2D3800/filename/CMC-US.pdf)
[169] UNESCO (2012) Community Multimedia Centres in Africa (http://www.unesco.org/new/en/dakar/communication-information/community-multimedia-centres-cmcs/)
[170] Vannini, S. (2012) PhD candidate studying CMCs in Mozambique, presentations available at: http://www.slideshare.net/SaRaksha/
[171] UNESCO (2012) What is the programme for Community Multimedia Centres? (http://portal.unesco.org/ci/en/ev.php-URL_ID=5515&URL_DO=DO_TOPIC&URL_SECTION=201.html)
[172] UNESCO (2012) What is the programme for Community Multimedia Centres? (http://portal.unesco.org/ci/en/ev.php-URL_ID=5515&URL_DO=DO_TOPIC&URL_SECTION=201.html)

Community Database:
By developing a community database, the CMCs ensure that the whole community can access a pool of easily assimilated knowledge in local languages. Database contents can include administrative forms, official texts and other practical resources.

CMC MultiMedia Training Kit (MMTK):
UNESCO and a group of partners working in the field of community capacity building developed a complete suite of open access, multimedia workshop training materials for CMC staff.

Suitcase Radio:
CMCs often use the portable Wantok FM broadcast unit, a low-cost, easy-to-use and robust "suitcase radio" that comes in 30 Watt, 50 Watt and 100 Watt versions

Lufo Lamp:
UNESCO has piloted the use of a novel FM receiver using thermo-electricity made by Serras Technologies. Built into the base of a standard oil lamp, the AM/FM receiver is powered by the heat of the flame.

Centres were limited by the resources available to them and the fact that UNESCO tried to encourage them to run the service without being dependent on external funders – they had identified dependency issues in the early trials[173]. As such, the CMCs were frequently only able to target the most enthusiastic members of the community who were able and willing to come into the centres without significant outreach support. Some centres did receive funding to support promotion of classes and the facilities to women.

Despite not always reaching all demographics within their local population for training and ICT skill development, centres were able to mix their content to incorporate information about online resources to make their radio content more relevant. These included health status and memorial notices submitted by listeners, health advice sessions with local GPs using information sourced online and translated into the local dialect so that listeners could receive the full benefit of the advice. These services continue to the present day in some centres.

During 2012, Vannini[174] has presented on her on-going PhD study of 10 CMCs in which she has observed their activities, learners, radio content producers and people who did not use the services to learn about their responses to the provision. She found that local residents had developed a close affinity with the services and that relationships had developed and jobs had been created where they would not have been otherwise. However, she also found that participants and staff were frustrated at the technology they were working for with many aspiring to have access to faster and more capable devices. This finding indicates the remaining divides even within areas of developing countries that have access. Slow connections, reliance on out of date equipment and limited learning content can frustrate even keen learners who would most benefit from upgrades.

[173] Hughes, S. (2003) Community Multimedia Centres: Creating digital opportunities for all. In: Girard, B. ed. (2003) The One to Watch – Radio, New ICTs and Interactivity, Rome, Viale delle Terme di Caracalla (ftp://ftp.fao.org/docrep/fao/006/y4721e/y4721e00.pdf)
[174] Various presentations by Sara Vannini on her research to date, can be found online at: http://www.slideshare.net/SaRaksha

What works?

- **Work with others.**
  Using the information collected in this report and the further wealth of information available online, organisations that want to help people get online can connect to local schemes offering support. If ideas are particularly innovative, contacting local Universities to discuss potential funding collaborations for kit and other resources may be a viable option.

- **Document activities.**
  Record the project's progress working with local reporting organisations and volunteers or using online media tools (see **Community Media chapter**). Reporting does not need to be as thorough as an academic study but tracking progress and recording changes to the project or responses from learners can make future collaborations and service designs easier to plan.

- **Leverage networks for support, funding, partners and participants.**
  This is as much about online networking as offline with organisations that share similar interests to you or are running the schemes your audience need. Some Universities promote upcoming large funds that they are looking for partners on through groups on Linked In. Upcoming events locally are often advertised through local networking groups or on event promotion websites.

- **Collect and interpret customer insight.**
  This could be via surveys, interviews, asking customers informally or observing their learning patterns but without knowing what the people who use your service want to learn you cannot support them.

- **Plan your exit strategy early.**
  Organisations should run these projects wherever possible as though they have limited funds. This helps them to identify the points at which funding can be generated before the project closes such as equipment hire costs, training costs, developing content and charging for it, selling content produced or asking for consultancy fees to be paid by academic institutions wanting to study their project.

Summary: Combined access initiatives

Strengths	Weaknesses
• Diverse choices in content attract a wider audience producing opportunities for learner networks, experience and interests to develop. • Choices also provide opportunities for volunteers and employees involved with one organisation to learn about alternative practices. • Partnering with others and developing news skills strengthens employee, volunteer and organisational capacity. • Strong partner networks mean that organisations can respond more quickly to opportunities that emerge within their networks. For example, joint funding opportunities and seeking help from technical specialists.	• Funding. Schemes are often supported at pilot stage but not beyond and they are not given support during the pilot stage to help plan for or build capacity to support themselves once funding ends. • Skills. Schemes are dependent on the skills needed being available, especially for bespoke or remote activities this can be difficult to resource. • Equipment – Few funders, especially in the U.K., will fund the costs of equipment for schemes unless they have identified a need for that equipment. This limits organisations to self-funding, making an exceptional case or waiting for a funder to identify a national need for equipment.
Opportunities	**Threats**
• The recession has left many organisations vulnerable to closure, however it also presents organisations with an opportunity to reconsider the ways they are able to support other organisations locally, or vice versa. • There is significant data available on organisations operating digital inclusion support services via national groups such as Online Centres Foundation, the Workers Education Association, the Community Media Association and Ofcom. Organisations can make use of this to identify local or national groups to work with. • The tools for supporting new learning are increasingly low cost. E.g. Audioboo and Audacity (audio recordings and editing) and SketchUp (3D design). Similarly, teaching materials for many paid for applications or technologies are free such as Arduino.cc Tutorials (for arduino kits), Thingiverse.com (3D designs) or YouTube.com tutorials (on a diverse range of topics from film camera handling to editing images and more).	• Poor management of resources, projects and volunteers is a big issue for initiatives. In a similar vein, unclear hierarchies of who is leading a project or who is responsible publically can create unnecessary tensions that ultimately lead to partners not working with one another again once the project concludes. • There are limited funding opportunities arising, whilst this presents opportunities, organisations who do not invest time in understanding their role in a local context or positioning themselves within local networks risk being excluded from these potential partnerships. • Organisations need to understand the new initiatives they are offering and the audience they intend to reach or they may find they are overwhelmed by demand to learn and under-resourced to support learners.

6. New trends and novel approaches

A shifting dynamic

Internet access is being continually improved through advances in technological convergence - yet increasingly eroded for vulnerable groups by tales of manipulated trust, privacy and online exploitation. This chapter explores some of the more innovative approaches to internet access designed to maximise appeal while mitigating risks for deprived communities and disadvantaged groups.

Internet access is only one of many root causes of digital exclusion. Other than access, barriers to internet adoption are more commonly a fusion of psychological, cognitive and socio-cultural factors.

Accessibility (such as assistive technologies) is one of the most inhibiting of these factors. In the worst case, poor accessibility can be completely debilitating and at best it needs to be overcome with amplified user confidence.

However, accessibility can be tackled at the design stage of ICT and advances in human interface design (such as touch screens) have resulted in more intuitive technology. It is easy to forget that digital content is now consumed on a myriad of devices from web-enabled mobile phones to tablet computers and smart televisions.

The shaping of digital content to fit a range of digital channels means that new access routes can be created. For example, serving web pages over digital radio (DAB) or creating interactive content for digital television means that new audiences can be reached who may otherwise not be able or willing to consume content over a traditional fixed-line broadband connection.

The recent switchover to digital television in the U.K. has demonstrated that through relatively limited concessions it is possible to enact a ‘digital only’ policy. Moreover, it has provided confidence for second-layer providers to follow suit. For example, some registered social landlords in the U.K. have chosen to go ‘digital first’ for ‘choice-based letting’ services on the basis that digital technologies are now high penetration among their key audiences.

The national television switchover is a good example of what works considering that it was high risk in that disabled, older, isolated and low income consumers who are generally heavy viewers of television were most likely to be at risk of TV blackout chaos. Small scale subsidies were offered to the over 75’s and those on disability living allowance and consequently there was no significant impact on switchover day.

Finally, there is growing weight to the argument that if the market creates ‘un-missable’ experiences then the majority of the population will invest in enabling technology. For example, in the late 1990s, demand for satellite TV channels grew steadily due to the launch of pay TV. That said, the boom was also fuelled by widely available, cheap (sub £200) technology.

Reshaping content

Most content is created for the web. That is, for consumption by a web-browser and accessed by information devices such as a smartphone, tablet-PC or desktop computer. The re-shaping of content is necessary for it to exist on other digital channels. For example, the screen configuration of a digital television does not lend itself well to viewing websites and the remote control is not well suited to inputting text.

Content shaping is often automated. For example, the North Lincolnshire Virtual Town Hall+ project created a series of digital television modules that convert standard web content into digital interactive television content. This included 'live' content from popular social networking platforms such as Twitter and Flickr.

Re-shaped content can also bridge old and new technologies. For example, text to speech technologies allow web pages to be spoken and subsequently retrieved over the telephone.

The Public-i Citizenscape platform[175] is an example of content shaping for the web. Effectively this involves the aggregation and filtering of local information sources into a set of thematically arranged pages. For example, content about a particular topic (such as crime) is automatically captured across numerous official information sources to provide a single view or 'dashboard' of relevant content.

This is combined with unofficial information sources, such as Community Media and results in a mash-up of real-time information. Some local authorities have experimented with the idea of using aggregated content for the landing pages of communal and public access computers, such as those found in libraries.

Other reshaping exercises focus on accessibility. StartHere[176] is a business which has grown from taking existing content and translating it in a way that is simply presented and easy to understand. The service provides users with basic information on a broad range of social and welfare issues such as life-changing events relating to illness, bereavement, divorce or homelessness.

StartHere act as in independent 'front door' into public and charitable sector services, ensuring that content is served with the maximum possible accessibility and accuracy. In turn, the aspiration is for increased self-service.

The acid test in terms of providing appealing web content is the ability for a single information source to serve a multitude of audiences – such as back office staff, kiosks and the general public. Capturing nuances, enabling greater personalisation and customising web interfaces for specific customer groups can provide an enhanced experience which should aim to provide a user experience that out performs other channels and ultimately drives repeat usage.

[175] http://www.public-i.info/citizenscape.php
[176] http://starthere.org.uk/

New outlets for digital content

Digital Television

The television is a familiar technology for consuming content, it spans a number of generations and sets can be found in almost every type of dwelling. This makes television an attractive outlet for reaching the seldom heard. For example, just under half of all housing tenants are offline whereas most have access to a television – be it communal or individually[177].

In fact, half of the world's TV households now receive digital television signals[178] and 98% of homes in the U.K. now have digital reception[179] equipment. Moreover, internet enabled TVs represent one fifth (2.9 million sets) of all TVs sold since 2010 and 65% of their owners claim to have used the built-in connectivity.

Even if a digital television is not internet enabled it will still be able to surface *interactive* digital content 'over the air' as long as it has a return data path such as a telephone connection. Think of it as the modern day equivalent of Teletext. Today, just over half of all homes in the U.K. have access to digital interactive TV (Sky & Virgin), equivalent to approximately 14 million homes.

The public sector has been particularly proactive in embracing this opportunity. Over 120 Local Authorities, Housing Associations and Health Trusts deliver digital content through a centralised service called LookingLocal. This was a government funded project which is now operated in a commercial manner by Kirklees Council.

Local authorities subscribe to the service and are able to serve a number of TV-optimised web pages. The service has a wide range of capabilities from booking a GP appointment to requesting information from the council. In 2010, LookingLocal TV services were accessed 1.4 million times and experiencing significant year-on-year growth.

A by-product of shaping content for digital interactive television is that the outcome is often well suited to other types of information device such as kiosks, mainly as a direct result of layout simplification.

[177] MORI technology tracker (2010)
[178] Digital TV research Ltd (2012) : Digital TV World Databook -http://www.ekmpowershop4.com/ekmps/shops/broadbandtv/digital-tv-world--databook-1-5-users-98-p.asp
[179] Ofcom (2012): http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr12/CMR_UK_2012.pdf

Digital Audio Broadcasting

Digital radio coverage is already significant, with 93% of the population predicted to be able to receive BBC national stations and 66% of the population able to receive local and regional stations on digital. It is estimated that 21.8 million adults in the U.K. have access to a DAB digital radio (up 8% year on year).

The Digital Economy Act 2010 gave the Secretary of State the flexibility to set a date for digital radio switchover for national and large regional broadcasters (small commercial and community radio stations will remain on FM for the foreseeable future) and the momentum for digital radio is set to increase over the next couple of years.

Few people realise that digital radio (DAB) is also capable of delivering data services. One type of data service is known as 'broadcast websites' and involve the transmission of web pages for offline use in a web browser. Besides linked HTML pages, multimedia elements like images, animated graphics, mp3 files and videos can also be transmitted.

Of course, receivers need to have integrated web browsers or PC connectivity to benefit from this feature and the one-way characteristics mean that data services are only really useful for the purposes of providing information.

The evolution of mobile access

Today, citizens connect to the internet most frequently using laptop computers (around half of all connections) but mobile devices are rapidly becoming the primary medium to access the Internet across age groups and there is a growing trend towards the "always connected". Likewise, the vast majority of new handsets sold today are internet ready.

According to Ofcom, the proportion of people who use their mobile handset to access the internet is 39% (Q1, 2012)[180]. The access bias compared to other methods is thought to be a function of age. For example, 88% of 14-29 year olds accessed the Internet on a mobile device according to a recent survey[181].

These trends reflect wider changes in the way U.K. consumers are using digital technologies within their daily routines. For example, Ofcom report that in 2011:

- 40% of U.K. adults use their mobile phones to visit social networking sites; this is highest amongst 18-24 of whom 62% do so.

- Internet shopping is now more popular in the U.K. than any other major country, and this is increasingly driven by use of mobile devices.

[180] http://media.ofcom.org.uk/facts/
[181] Accenture: Mobile Web Watch Survey (2012): Mobile Internet—Spawning New Growth Opportunities in the Convergence Era

Other than an increase in speed, the explosion in mobile access is closely linked to a reduction in price. For example, the average price of 1GB in a European country has fallen to €7 on a home network, according to the research firm Berg Insight. In the U.K. the cost is as little as £1 a gigabyte.

The cost of 4G services are currently prohibitive due to the lack of competition in the marketplace. However, we are likely to see a reduction in data costs to rival 3G prices as the market matures.

In the not-so-near future, 4G may be sufficient as an alternative to fixed line home broadband. For the majority it will be a complimentary technology and it remains likely that rural premises will not get a strong and reliable 4G service. This is down to economics - 4G masts will more than likely be built where there is a significant population centres and a readily available backhaul connection.

In the meanwhile, optimising content for mobile devices or creating mobile specific apps will help deflect a new tranche of internet access problems. Faster and more reliable cellular data connections will mean that WiFi hotspots can be created in places that were previously unthinkable – such as inside taxi cabs[182].

[182] http://eyeteasemedia.com/cabwifi/

Demand stimulation

Rather than "mediated channel shift" whereby the reluctant or unable are gradually coaxed and helped into using previously unfamiliar ways of accessing content, demand stimulation works on the basis that the reason to channel shift is so overwhelming that people take it upon themselves to get enabled.

One approach is to simply 'switch-off' anything other than the digital channel. However, this carries a high risk of further isolating hard to reach communities. In fact, the U.K. government is committed to retaining the analogue FM spectrum for small local radio even if it does move national radio channels on to digital only.

In seeking to influence someone's behaviour there are a number of well documented approaches[183]:-

Positive exchanges – a positive exchange generally involves offering some kind of incentive to adopt a new behaviour. For example, a person could be offered a small reduction in their electricity bill for paying by direct debit. Incentives do not necessarily have to be monetary, and a positive exchange could simply be created through telling somebody that they will save time by using a different channel.

Negative exchanges – a negative exchange is when force is used to encourage a desired change in behaviour. For example, people could be charged a fee for paying their electricity bill by cheque, or the ability to pay by cheque could be stopped altogether.

Passive exchanges – a passive exchange is when little action is taken, and it is simply hoped that people will adopt new behaviours. However, defaults can be set to mitigate the chances of channel relapse. For example, when registering for a new mobile phone contract, customers could be automatically assigned to online billing. They have the option to opt out and pay by other means, however, it is hoped that most will stay with the default setting.

Despite a number of 'killer-aps' such as online car tax renewal, online banking and internet shopping the motivators for first time internet users are likely to be accessing new forms of entertainment, access to news or current affairs and social networking[184].

There are a number of fun-centric ways that organisations can use to inspire the disadvantaged as to the value of internet access. For example, Scottish housing associations provide virtual bingo for their residents and there are the email equivalent of PenPal schemes in Poland to stimulate community cohesion and twinning.

[183] Adapted from "Improving lives together", French & Blair-Stevens
[184] WiredCommunity@Collingwood evaluation report, digitalinclusion.net.au

Leveraging the value of networks

Online networking can help disadvantaged people become better connected, more influential and self-empowered but it can also help with self-discovery.

FLiP (http://www.flipyourself.co.uk) is an example of a web service that harnesses the incidental value of online networks for personal benefit. Predominantly aimed at young people, FLiP provides an innovative way of assessing key employability and character strengths.

Young people are struggling to find work or training. Many have poor self-esteem, low aspirations and low confidence. Moreover, young people find advice from organisations unhelpful, seeking alternative advice from people they know.

With FLiP, young people can use their online social networks to build a 'strengths' profile; improve the way they present themselves to employers and track their development. The process of discovery is a combination of self-assessment and anonymous rating by people that are invited into the process via a linked social networking profile.

FLiP can be embedded within employment support and personal development programmes for young people. Organisations can use strengths profiles to tailor employment support and improve CVs.

Beyond community access initiatives

Once internet access has been established, communities can start to exploit the benefits of shared services. A significant enabler for this is 'cloud computing' (software and infrastructure as a service) which can be used to remove a number of barriers to everyday access.

Community internet services are being made possible by community ownership in next generation networks. These are beginning to emerge on the back of state-aid for the roll-out of superfast internet. For example, Fibre Garden (http://fibre-garden.co.uk/) has recently secured funding from DEFRA to develop Fibre to the Premises (Fttp) in a number of parishes in rural Cumbria.

Community groups are often unknowingly in a position to provide a fully managed service for their members, complete with software applications that can be rented from a centralised service provider (a 'hosted desktop'). There are a number of advantages to this:-

- The reception equipment is minimal as the computational load is externalised. This means that consumer access is low-cost (and low-energy).
- Simple to use. There is no end-user maintenance requirement (all upgrades, antivirus etc. are centrally managed).
- The risks of data loss are mitigated as storage is provided centrally.
- Support can be provided remotely.
- Software can be accessed on a pay-as-you-go basis.
- Community landing pages can be developed and hyperlocal information or alerts can be pushed to users.
- The total cost of computer ownership is reduced.

Examples of community internet services already exist where there is existing access. The CommunityNet Digital Inclusion project in Merseyside has provided 5,000 households with a managed desktop service on top of their existing grid. Families on this network take advantage of a fully managed computing platform, with all software applications hosted at the AIMES secure, energy efficient data centre, in Liverpool.

Offline is the new Online

A future internet scenario is that offline access could be as enriching as online access. This is made possible by the lowered cost of personal storage and increased speed of transmission. In other words, there is a growing differentiator between real-time and near-time internet access. For example, it is possible to carry on reading a web page after you disconnect from the internet and it is normal to defer the sending of emails or text messages until there is connectivity.

As long as the internet behaves seamlessly without a connection it is feasible that intermittent connectivity can be adequate. This largely depends on what you are trying to do. Commercial products for consuming content offline are already a reality (e.g. http://www.maximumsoft.com/products/wc_pro/overview.html).

Home-based recycle and repurpose

There is already an industry of home-based recycling for ICT consumables, such as DIY ink refill kits. However, digital fabrication technology such as 3D printing means that it is possible to turn household waste into raw fabric which is then used to create a new item. For example, plastic bottle tops could be turned into 3D printer filament – as could plastic bags.

The technologies to support this reality are not yet fully mature but work has already begun on creating products which have this intended purpose (e.g. flabot.com).

Hyperlocal

In recent years, specific attention has been paid to the term 'Hyperlocal'. The term was originally used by media organisations, such as the BBC, to describe the activities of their local news teams. However, the term has been repurposed and is applied to more than just media organisations or those who are paid to deliver services. At its core it can be described as: "*Online news or content services pertaining to a town, village, single postcode or other small, geographically defined community*."[185]

In 2009, Ofcom released a discussion document entitled Local and Regional Media in the U.K., it reported that nine out of ten U.K. adults regularly consumed local news through TV, radio, newspapers or the internet, with one in five consumers using community websites at least monthly. People engage with digital services when they are able to identify why it is relevant to them. The prevalence and growing demand for online services including for Community Media content presents an opportunity to provide services which are very specifically relevant to people and also for them to become part of generating content for others to find. As recommended within Radio Content Providers and Audio/ Visual Content Providers, there are opportunities for Communities of Interest to work more closely with Multimedia Content Providers in future

There is a proven real world social value[186] to people belonging to very local email lists and other forms of local online community. However, there is no there is no 'official' repository of all hyperlocal sites in a given place, partly because the nature of how these sites emerge and grow does not really lend itself to being officially recorded. As a consequence, far fewer people ever find out about and join their local online groups.

A number of attempts have been made at rectifying this such as groupsnearyou.com but perhaps the most prevalent is an online directory contained within a government sponsored platform at http://e-voice.org.uk/.

Whilst no-one has yet taken the unenviable task of attempting to quantify all communities of interest producing Community Media content, at the point this report was written, Openly Local (www.openlylocal.com) reported 610 hyperlocal sites operating in the U.K. .

Openly local is an open data project run by volunteers who aim to provide "A place to access data about the workings of your Local Council, without having to poke around through dense, difficult-to-navigate websites.". Their existing site, commitment to open data, lack of political motive and familiarity with the hyperlocal community has made them a suitable site for hyperlocal sites who wish to be recognised as such to add their details to.

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[185] Radcliffe, D. (2012) Here and Now: U.K. hyperlocal media today (http://www.nesta.org.uk/areas_of_work/creative_economy/destination_local/assets/features/here_and_now_uk_hyperlocal_media_today)

[186] Hampt, K. & Wellman, B. (2003) Neighboring in Netville (http://homes.chass.utoronto.ca/~wellman/publications/neighboring/neighboring_netville.pdf)

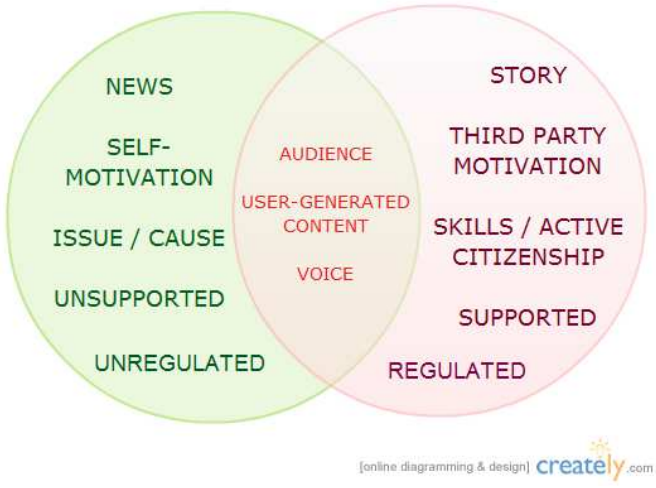
In 2012, Damian Radcliffe[187] produced the report 'Here and Now: U.K. hyperlocal media today' for Nesta. Alongside providing the above definition of what hyperlocal is, he found that the diversity within the hyperlocal community made it difficult to classify the services these sites offered to their readers. For example, although much of what hyperlocal sites do, falls within the realms of traditional and citizen journalism, many site providers do not perceive themselves as being journalists nor is their main motivation to provide journalistic services.

In the same way that it is hard to pin down and categorise the social experiences of everyone who uses social media, it is unhelpful to position all hyperlocal sites as having one purpose. For them to be successful they must reflect the community they are for and what this 'community of interest' is interested in will be dependent on their individual context. Conversely, trying to meet the needs of a specific community and their local context can mean that not all hyperlocal services are successful, however well intentioned, funded or tended to by passionate volunteers (see Weaknesses).

People's Voice, a not for profit community organisation specialising in social media as a community engagement tool have also been reflecting on the differences between further distinctions within content producers for communities of interest of 'community reporting' and 'citizen journalism'.

In 2012, Theresa Wilson (Partnership Manager at People's Voice), presented a paper to the Institute of Community Reporters outlining their observations on the crossover between the terms citizen journalist and community reporter, where they differed and how they supported the group they work with (community reporters). In Fig. 1, their Venn diagram outlines the core areas that separate the two terms.

Fig 1. People's Voice (2012) [188]



[187] Radcliffe, D. (2012) Here and Now: U.K. hyperlocal media today (http://www.nesta.org.uk/areas_of_work/creative_economy/destination_local/assets/features/here_and_now_uk_hyperlocal_media_today

[188] Wilson, T. (2012) Community Reporting and Citizen Journalism: A Venn Diagram (http://testmcin.files.wordpress.com/2012/06/community-reporting-vs-citizen-journalism.pdf)

As indicated in the diagram, for People's Voice the terms are broken down into five core areas: news/ stories, motivation, belonging, support and regulation. In news/ stories, where Citizen Journalists find 'newsworthy' stories Community Reporters find *"Individuals telling stories about their own lives rather than reporting on news, an approach that serves to benefit both the individual and the community"*[189]. Citizen Journalists are primarily motivated by demonstrating their existing professional standard skills, whilst Community Reporters are motivated by learning and focused on the story as a means of developing their skills.

In 'Belonging' Wilson reflects that for Citizen Journalists *"reporting key news and events will be the driver for content production"*[190] whereas for Community Reporters the sense of belonging to the community drives their contributions to content production. With specific regard to People's Voice Wilson considers the issue of regulation especially in terms of how social media is used for reporting. Here the distinction is more about how People's Media relate to the two groups. Whilst both are affected by regulations affecting the freedom of the press, People's Media specifically train and support their team of community reporters for potential issues; they do not support citizen journalists.

In the U.K., one of the key organisations involved in promoting and supporting hyperlocal communities and through this work existing communities of interest wanting to develop digital skills, are 'Talk About Local'[191]. They are a not-for-profit organisation, established by people who have previously created and curated their own successful hyperlocal sites. Talk About Local provide support to individuals and communities interested in setting up or developing their own hyperlocal service, often in partnership with U.K. Online Centres. Talk About Local run an annual conference of the same name (shortened for ease and social media use to TAL) each year. These events are opportunities for groups and volunteers to swap ideas and stories for developing their hyperlocal sites.

[189] Wilson, T. (2012) Community Reporting and Citizen Journalism: A Venn Diagram , p3 (http://testmcin.files.wordpress.com/2012/06/community-reporting-vs-citizen-journalism.pdf)
[190] Wilson, T. (2012) Community Reporting and Citizen Journalism: A Venn Diagram , p4 (http://testmcin.files.wordpress.com/2012/06/community-reporting-vs-citizen-journalism.pdf
[191] Talk About Local: http://talkaboutlocal.org.uk

7. Closing Remarks

The activities documented within the preceding chapters can be viewed as having theoretically distinct agendas from one another. However, they are all frequently successful in reaching excluded and disengaged audiences in a meaningful and motivating way that cannot be achieved to the same degree through large, broad-brush campaigns.

In reviewing the many schemes it has become clear that there is a need for a renewed emphasis on the evaluation and analysis of internet access initiatives. These should be instigated by the full spectrum of interest groups such as academia and external agencies, funding bodies and embedded within the internet access initiatives themselves.

Organisations should document each activity they run that is successful in reaching new audiences, innovating ways to engage hard-to-reach audiences and improving opportunities for local communities. Sharing these online as short written evaluations, short videos or podcasts, photo journals, blog posts or anything else that can demonstrate an activity actually happened would soon produce a more realistic representation of the size and scale of activities within these sectors.

This would also support better connections amongst those developing and delivering activities nationally and internationally and provide opportunities for partnership and expansion. At present, the weak evidence base of many activities is contributing to a lack of effectiveness and is under-representing the value of community supported digital inclusion.

Infrequent access simply does not cut it for the silent majority of deprived communities and disadvantaged groups. Community organisations have an important part to play in shaping the opportunities around infrastructure, policy development and enablement – particularly as they lie outside the boundaries of business economics. The challenge is twofold - to cater for the existing access deficit and the new inequalities caused by widening extremes.

The good news is that open architectures, devolved powers and economic stimuli are paving the way for an increasing number of community interventions. Internet access opportunities are likely to become less dependent on circumstance or a technology in the future which means that tackling root causes will be easier.

Internet access must also be defended as a choice and a right that can be waivered. Activities directed at “including” more people in the use of digital technology are predicated on the assumption that such inclusion is invariably a good thing. Yet there are unsavoury characteristics of digital by default. For example, the result of enforced internet access is more centralised control in terms of electronic surveillance, censorship and sharing. Community groups must subsequently recognise when it is necessary to defend non-inclusion freedoms and represent the voices of those who actively choose to opt-out.

The short-to-medium-term future of the internet is fairly well scoped[192]. The number of networked devices will increase dramatically. More people will be connected, more devices will be connected and more devices will be directly communicating. More users will create more content and the internet will be ingrained as the backbone of the information society.

The impact of this future scenario is that the laggards of tomorrow will be even more isolated, even further behind and even less tolerated by society.

The third sector is being increasingly propelled into the position of solution provider of the future at a point when many organisations within the sector face uncertain financial futures. The skills these organisations contain, as well as their grassroots connections within communities ideally place them for becoming expert partners and lead organisers in the next phase of digital outreach and inclusion activities. However, it is up to the individuals within these organisations to inform themselves of and make connections to the growing opportunities. In the same way that the internet and new technologies present opportunities to their learners, organisations should not forget that it is a space for them to explore and grow through too.

We encourage the community network to embellish the emerging opportunities and risks that are presented by our digitally orientated society in a way which builds on the lessons learned from existing good practice, as interpreted by this review.

[192] EU (2008): The future of the internet - ftp://ftp.cordis.europa.eu/pub/fp7/ict/docs/ch1-g848-280-future-internet_en.pdf

8. Glossary

Channel-Shift : the migration of communication to the most effective and efficient medium for an organisation. For example, the desire to move away from paper statements to online statements in order to save printing costs.

Circles: in an social networking context, groups of people who have some sort of trust relationship. At the simplest level, a permission based membership or access.

Communities of Interest: content producers who produce content which is both limited and specific.

Community Media: independent, civil society based media that operates for social benefit and is not for profit.

Crowd-funding: The process of pooling small contributions from a diverse set of individual investors or donors based on an open idea or transparent intentions.

Digital rights management (DRM): access control technologies that are used by hardware manufacturers, publishers, copyright holders.

Freeview: a free-to-air terrestrial digital television service in the U.K.

Hackspaces: a type of neighbourhood centre or facility that incubates high technology learning - such as turning creative ideas into physical objects.

Hashtag : a mark that serves as a tag for similar content. A hashtag can also be used as a destination or reference for a discussion.

Hotspot : an access point (piece of networking hardware) that is physically connected to the internet backbone and produces a wireless signal across a limited zone.

Hyperlocal: online news or content services pertaining to a town, village, single postcode or other small, geographically defined community.

Smart TV : an internet enabled television, capable of basic internet access and the streaming of internet video.

WiFi: a standardised type of wireless local area network, typically used for getting an internet connection without a cable.

WordPress: a low-cost (open-source) web content management system.