Digital Inclusion - The Vision and the Reality

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Abstract— **The benefits of a digitally inclusive society are vast and the need for such inclusion is now a requirement for full participation in our society. While the basic concept of universal digital inclusion is simple, the reality is a long way from the vision. Despite efforts to reduce it, inequality of access still exists. The beneficiaries of a digital society are not just the individual, but all stakeholders in the wider society. While the challenges to achieve a fully inclusive digital society are considerable, the knowledge of how to create such a society already exists. The creation of local venues for inclusively designed ICT (Information and Communications Technology), support and learning in familiar places along with the harnessing of political will could make such a society a reality rather than a vision. With the cooperation of all stakeholders, actualisation of the vision of a digitally inclusive society, while challenging, will yield opportunities that eclipse the cost of implementation.**

Keywords-Digital society; digital inclusion; accessibility; participation.

I. INTRODUCTION

The fundamental concept of digital inclusion is the deceptively simple premise that everyone in the world deserves to have equal access to whatever knowledge and information they require to enable them live their lives to their full potential, which crucially, now depends on fast and reliable internet access. Despite attention in society from academics, politicians, social activists and many others for almost two decades, the reality still seems to be a long way from the vision. This paper revisits the vision and aspiration of digital inclusion, and then, seeks to look beyond the rhetoric to provide an analysis of the status quo, a consideration of some facilitators and inhibitors to progress and some suggestions for moving forward with renewed energy and commitment.

A. Background: The digital divide

The term "digital divide" was adopted by the Clinton/Gore administration in the US in the late 1990s and used in 1998 in a commencement speech at the Massachusetts Institute of Technology:
"...the digital divide has begun to narrow, but it will not disappear of its own accord. History teaches us that even as new technologies create growth and new opportunity, they can heighten economic inequalities and sharpen social divisions" [1].

The initial focus of the digital divide was one of access to technology and the acquisition of the basic skills to use it. As access to computers has increased across all members of industrialised societies, the digital divide has become not just about access and the acquisition of basic skills and knowledge, but also about the ability to exploit technologies for personal benefit, empowerment and even transformation. For such a divide to be narrowed, it is not just equipment and basic skills that are required but, confidence, good support and appropriately designed equipment and services.
The benefits of an inclusive digital society are well-documented and emphasise extensive and transformational impact. There are numerous published articles by governments, academics, practitioners and others which show that being part of the digital world can improve life in numerous ways, means and forms [2]-[4]. Often, the emphasis of such publications is on the financial savings for the state and for individuals. While monetary gains are important, the potential transformation for individuals, society and the economy are vastly more far-reaching. Appropriate and competent use of digital technologies also helps to improve the well-being of individuals and maintain their independence, autonomy and social connectedness. Other benefits include civic participation and the

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opportunity to improve skills to gain employment or simply to 'keep up with the times'.

Research identifies many factors that lead to inequality of access and opportunity. For example, Norris [5] recognises three kinds of digital divide:

- Global: the divide between the industrialised and the developing world
- Social: the divide between the have and the have-nots in society
- Democratic: the divide between those who use technology to participate in the public realm and those who do not [5].

In order for the divide to be significantly reduced or eliminated, each of these aspects need to be recognised and appropriate solutions and coping strategies put in place. This paper provides a vision for the development of a fully inclusive digital society by identifying the benefits, beneficiaries as well as a roadmap to achieve this vision.

The inspirational and aspirational 'Declaration of Principles' presented at the World Summit on the Information Society, Geneva, 10-12 December 2003 [6] states the following:

> **"We**, **the representatives of the peoples of the world** …declare our common desire and commitment to build a people-centred, inclusive and development-oriented Information Society, where everyone can create, access, utilize and share information and knowledge, enabling individuals, community and peoples to achieve their full potential in promoting their sustainable development and improving their quality of life …."

Since that time, the overarching goal and some of the components embedded in the declaration have become familiar and well-established – if only by repetition. Some of the frequently voiced assertions, aspirations and principles of digital inclusion include the following:

- Global access to ICT (Information and Communications Technology) will make a significant contribution to improving health and wellbeing and quality of life for all
- Digital technologies make possible transformations which enhance quality of life of individuals, increase life chances, prolong independence and autonomy and improve social connectedness
- The transforming capabilities of digital technologies improve society and boost the economy
- Everyone should be able to access, create, utilise and share knowledge and information.

The remainder of the paper will examine and explore the subject of digital inclusion in greater depth. First, the definition of digital inclusion will be introduced, followed by a presentation of some examples of evidence of the value of a digitally inclusive society. The benefits and beneficiaries of such a society will then be introduced. Finally, the challenges to achieving a digitally inclusive society and the steps needed to make such a vision a reality will be discussed.

II. Defining Digital Inclusion

An inclusive digital society has been defined as one in which all members of a community are **able** to **access**, **use**, and **understand** digital technologies [7]. For this goal to be achieved the following preconditions are required:

- Connectivity – infrastructure and individual access to appropriate hardware, software, services
- Capability – education, tailoring for ability/disability, digital literacy and skills
- Content – availability of accessible, meaningful, relevant material

Meeting these preconditions will require the key stakeholders in society to collaborate effectively to make the vision a reality. The relevant stakeholders include local and national Government, all business sectors and professional groups, retailers, designers, developers and manufacturers of ICT products and services, third sector organisations, groups and communities of people and individuals. Crucially, they include diverse groups of the population, including the young and the old, the employed and the unemployed, the retired, the disabled and those unable to work. Only by recognising the wide range of needs and perspectives of all people and groups that make up our global society and making provision for them will digital inclusion come about. However, this will require that relevant influential stakeholders actively strive to achieve the digital participation of all the stakeholders in society.

III. Why is a digitally inclusive society important?

Digital literacy is fast becoming a requirement for full participation is society. In our emerging e-society, ICTs are an important aspect of daily life. They offer particular advantages to older adults, such as helping them to stay connected to family and friends, to pursue their interests and hobbies, to organise the mechanics of daily living, to benefit from the financial savings of internet shopping and to access health and social care. Yet, large numbers of older adults are reported to be non-users of technology [8]. Recent statistics show that while 99% of people aged between 16 and 34, this drops to 88% for people aged between 55-64, 71% of people aged between 65-74 and a very low 37% for people aged over 74 years [9].

The real benefits lie in the transformational capability of digital technologies. One strong example of the power and significance of the benefits of digital connection is seen in the experience of an individual reported on the website of Digital Unite. The individual was a woman who had lost her sight 6 years previously and had to rely on her husband to read the post, write letters and other tasks that required reading such as checking recipes. Her life was ***transformed*** when she discovered that she could download magnification

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and text to speech software. By having access to such software and hardware, she regained her independence [10].

While this is only one example, there are numerous examples (e.g., from Leicestershire CareOnLine [11]) showing similar transformations, and the importance of such transformations cannot be understated. For those who are, or who become, digitally disengaged, there are real social and economic consequences in terms of accessing government services, accessing health information and social support as well as researching and procuring goods and services, or accessing price comparison and review websites. Indeed, it can be argued that the cumulative ripple effect of individual digital inclusion is far-reaching enough to have the potential to affect wider society, for example, by reducing the costs of maintaining people in the community who might otherwise require residential care or significant at-home support. The heart of this vision is to ensure that everyone is able to access and experience these transformational opportunities and impacts. The following section considers the benefits and beneficiaries.

IV. THE BENEFITS AND BENEFICIARIES

To promote a digitally inclusive society, it is important not only to raise awareness of the wide-ranging benefits but also to acknowledge the wide range of beneficiaries of such a society.

A. Benefits

The spectrum of benefits of being part of the digital world is vast and increasing all the time. This bigger picture can be overlooked when the specific aspects of digital inclusion, such as responsibility for delivering on-line services, are viewed in isolation. The benefits of a digitally inclusive society include the major advantages to the economy and society which derive from enabling individuals to become or remain economically active through learning digital skills, resulting in enhanced health, wellbeing and quality of life as well as increased opportunities for social interaction, cohesiveness and civic participation.

The keys to enabling economic development at the individual level are: enabling education; increasing opportunities; increasing self-efficacy and improving and expanding skills.

1) Health, wellbeing and quality of life

Digital participation also helps to reduce loneliness and improve independence and wellbeing. These benefits could in turn lessen demands on other (formal and informal) support systems for older people; improving the quality of life of older people while also reducing costs of care. By enabling rehabilitation, remote assessment and diagnosis and treatment delivery, the need for residential care could be delayed, or for some, avoided by supporting policies of early intervention.

2) Social interaction & cohesiveness

The social environment, as well as the social opportunities afforded by connectivity, promotes inclusion and helps to reduce social isolation. This increased social contact helps maintain good mental health by reducing the depression, stress and anxiety associated with social isolation. Increasing digital participation allows people to stay connected with friends and family, their local community and the wider world in a variety of ways. Civic engagement and participation, e.g., voting and knowing what is going on in your community, is maintained even for those who are housebound. Enabling social networks thus creates a digital haven of having fun and increasing and maintaining social contacts.

B. Beneficiaries

The beneficiaries of a digitally inclusive society are numerous and include key stakeholders in the following categories: government – national and local, service providers, retailers of on-line services and products, designers and developers of ICT products and services, AT (Assistive Technology) providers, individuals and society.

1) Government

a) National Government

Digital inclusion would benefit national government by enabling citizens to possess the skills that are required of a modern workforce. Additionally, if more people feel confident to access centralised services online, the burden on traditional services will be reduced. The provision of care would also benefit from a digitally-engaged populace with access to the health, care and wellbeing benefits enabled by technology.

b) Local Government

The ability for all members of society, especially older people who use large numbers of services, to utilise online services, would allow for cost-savings arising from greater individual health, care delivery and societal participation. Local government could expect see a lessening on the burden on some services as a result of the benefits of digital inclusion that enable independent living, greater well-being and the reduction of social isolation.

2) Service Providers

In the case of the public sector, the increased levels of confidence and capability of older people in digital participation will begin to increase the uptake of on-line services (e.g., Universal credit) and this will be of great value to overburdened local government bodies attempting to ‘achieve more with less’ (such an effect would be especially beneficial in achieving savings as the heaviest use of government services is by older people).

3) Retailers of On-line Products and Services

Well-publicised demographic change means that a major market exists in the 50+ age group which is not well-served and has yet to be ‘discovered’ by many retailers and other commercial companies. Understanding and being able to

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'segment' appropriately the older market to achieve better tailoring of products and services offers competitive advantage to business. For businesses that provide online services, e.g., banks and retailers the existence of community venues will provide a venue for retailers and service providers to demonstrate their online services (without sales pressure!), provide information and support, build capacity in the older population, encourage customer loyalty and develop customer engagement.

4) Designers and Developers of ICT Products and Services

The design of technology can pose many problems – particularly, the speed of change and unnecessary complexity arising from function creep (i.e., the including of features outside that of the original specification). When combined with a raft of ageing issues and disabilities which are associated with ageing, these factors adversely affect older adults' experiences of using and sustaining use of ICTs. Good design can mitigate these effects and enhance the user experience.

The principles of designing for inclusion are well established and relate to the importance of eliciting detailed user requirements and then tailoring products, systems and services to these requirements. Despite this knowledge having been available for decades, it is still not the norm to design for inclusion. And yet, one of the major concerns identified by older people is that constant technological change poses a major hindrance for them in maintaining digital connection. It is entirely possible to have new functionality hidden, in order to keep the interface unchanged. If people want to do more, then they can; but when it suits them and when help is available. In other words, stability of the interface is maintained for them until/unless they want enhanced functionality.

The demands of digital engagement, especially cognitive load, can be reduced by designs which are:

- Tailored to diverse user requirements
- User friendly
- Accessible
- Intuitive
- Seamless
- Embedded where appropriate ("hidden functionality")
- Adaptive
- Making upgrading and administration transparent and easy

Meeting such design needs represents a commercial opportunity for ICT designers as well as offering an exciting intellectual challenge.

5) Assistive Technology (AT) Providers

Many ATs for people with recognized disabilities can help everyone in demanding or extreme usage situations. Accessibility = Profitability. Successful examples include:

- Text to speech
- Shorthand for text messaging
- Image stabilization
- Closed captions in video games

Such accessibility technologies open up new market opportunities in every sphere of life, e.g., healthcare, homecare, commerce, education and recreation.

6) Individuals

Individuals will benefit from all the aspects detailed above. For example, creating adaptable interfaces could be particularly important for older users who want to use what everyone else is using rather an AT, either because of the steep learning curve of some ATs, or because of a personal preference to use what everyone else is using [12]. This experience of built-in personal customisation is of benefit to all. Similarly adaptivity features that aid in automatic customisations can reduce or eliminate the learning curve of such changes - removing a number of access barriers. By ensuring stable, intuitive, usable and adaptive design, individuals will benefit in terms of not only accessing goods and services but also engaging in personal pursuits and living independently.

7) Society

The breadth of individual economic, health and wellbeing and social benefits combined with the reach of benefits across the private and public sectors benefits society as a whole. Moreover, the interaction between all of these advantages creates a synergy such that the total benefit to society is potentially far greater than the sum of the individual benefits.

A genuinely digitally inclusive society offers transformations which range, for example, from the empowerment that results from an individual who learns a specific skill on YouTube being able to solve a particular problem/meet a need, becoming economically active through online courses and social support, to being enabled to participate fully in society. There far-reaching benefits, will not only benefit the individual experiencing them, but also wider society and the economy.

V. THE CHALLENGES TO DIGITAL INCLUSION

The challenges to achieving digital inclusion are extensive. Not only are there significant challenges in getting everyone online – especially some older and disabled people, but in addition, there are special challenges for them in staying 'connected'. It is a common myth that 'once people are online, they stay online'. Various studies show that some people who have used the internet at some point, and for some period of time, have subsequently stopped doing so [13]-[16]. This phenomenon is a potential but largely unrecognised 'fourth digital divide' [17], i.e., it cannot be explained by a simple interpretation of lack of access, lack of skills or lack of interest or motivation, because the people in this category have formerly been users. One in ten people are reported to have given up on using computers and it has been found that the older generation are more likely to be the ones that 'give up' [18].

There are a number of factors which may lead to older people giving up use of computers and other digital

technologies. It is well established that older adults are vulnerable to social, cognitive and physical changes in later life. These changes have important implications for older adults' experiences of learning to use and sustain use of ICTs. Changes in psychological and cognitive aspects will impact on remembering sequential processes and confidence levels in using ICTs. Changes in physical aspects, such as changes in vision have implications for seeing what is on the screen and dexterity issues will create problems for controlling the mouse. Additionally, social changes, such as family members moving away, also impact on the support available to older ICT users. Further, older adults encounter some or a range of the following barriers in learning to use and sustain use of ICTs: confidence and fear of using ICTs; problems with understanding technical jargon and dealing with pop-ups and spam; problems with updates, drivers, and software; dealing with the rate of change of technology and coping with poorly designed software and hardware [19].

The absence of adequate learning and support also impacts on older adults' abilities to continue use of ICTs. A survey of older ICT users showed that 56% of older people said they regarded support as the most important factor in sustaining their digital participation. Respondents reported using a wide range of learning mechanisms, including self-directed learning (54%), inter-generational learning, peer-to-peer learning (40%) and taught classes (47%). Respondents reported heavy reliance on support from family members or friends both to learn and to solve problems. Around a quarter of respondents said that human support and encouragement was the most important thing to help them use technology successfully [20]. Yet a further study on the Sus-IT project showed that the opportunities for learning and on-going support are extremely inadequate [19].

These learning mechanisms alone are not adequate and the UK Digital Inclusion Panel Report [3] reported that "there is a real risk that in the medium to long term, significantly more citizens will migrate from being digitally engaged to being unengaged than the other way round, as their capabilities change".

One of the major determinants of sustained digital engagement – and therefore of digital inclusion in the long term – and for older people in particular, is the quality of support available to them. For ICT users in the workforce, the majority of workplaces will have a dedicated member of staff tasked with ICT support i.e. setting up and maintaining the infrastructure, selecting which technology platform is used, installing updates etc. The ICTs are looked after for those in the workplace although they are the relatively able bodied, reasonably technologically au-fait members of society. What exists beyond the workplace for the many without the institutional support is very different. In contrast to the situation in many workplaces, many ICT users who are at home, unemployed, retired, living with disabilities, living on a reduced income, living with a reduced social circle and possibly living with reduced health find themselves having to cope with all these demands themselves. There are organisations, such as public libraries that can offer limited help, but more typically it is piecemeal and variable, and as such, is inadequate and unsatisfactory. In spite of this lack of support it is amazing that so many do succeed with so little support. Just think what these individuals could achieve with adequate support.

The current situation is very unsatisfactory from the point of view of older and disabled users and from the perspective of many stakeholders tasked with delivering services designed to be used on-line. For digital inclusion to become a reality for these groups, vastly improved access to ICT support in the community is required.

From the brief analysis of the status quo presented above, it will be evident that the challenges to digital inclusion are immense.

VI. HOW TO MEET THE CHALLENGES?

Encapsulating the essence of the 2003 Declaration of Principles allows the vision of an inclusive society and economy to be articulated as "the enhancement of the quality of life for all, extending autonomy and independence through the use of digital technologies. This vision would be characterized by:

- Empowered people experiencing the benefits of digital inclusion
- Widespread participation in society and the economy
- Readily available support in the community for engaging with and managing all aspects of the digital world".

To create the digitally inclusive society encapsulated in the vision described above requires structural, political, and social change on a vast scale - which perhaps helps to explain the slow progress to date.

The process of achieving such change needs itself to be inclusive of all stakeholders across society. This means that to succeed, the co-creation of an inclusive society is required – and this will require collaboration on a grand scale to address the challenges through innovating, creating and evolving a digitally inclusive society that harnesses the power of ICT for the benefit of all. The knowledge to meet the challenges already exists, but before a fully inclusive digital society can be achieved, the prevailing myths concerning the idea that once people are online they stay online; that there is no clear cut way to get older people online; that the one-size fits all workplace model of ICT training is sufficient for widespread digital inclusion; and that older people are not interested in shaping the design of technologies to their benefit should be dispelled.

The key enablers for a digitally inclusive society are the provision of Community ICT learning and support venues and the will of influential stakeholders.

A. Community ICT Learning and Support Venues

Learning to use new technology is only the beginning of the journey to competent and confident use of ICTs. People

need appropriate venues in which to learn to use ICTs. The majority of ICT courses and campaigns to promote internet use are centred on acquisition of basic skills to go online rather than on promoting confidence and sustained usage. Many older people express their discomfort with formal classes and the negative associations with their school days. Once initial training is over, older people can feel alone, anxious and frustrated when experiencing problems with on-going ICT use. Fifty-six percent of older people said they regarded support as the most important factor in sustaining their digital participation [20]. Evidence also indicated that older people would like ICT learning and support opportunities that are user friendly, accessible, affordable, local, adaptive and embedded in purposeful and enjoyable activities. Similarly, findings from the research suggest that once older people are doing what matters to them, facilitated by ICT use, they are more likely to be motivated to continue their participation in the digital world and to progress to being 'digital by choice' in other areas of their lives.

To enable individuals that are not familiar with ICT but wish to develop digital literacy skills, to have their ICT needs met, the requirements articulated by older people in the UK are for access at home/in the community to inclusively designed ICT, support and learning which utilises wherever possible, existing venues e.g., libraries and village halls with which people are familiar and comfortable and which are sustainable.

B. *Harnessing Stakeholder Will*

The vision and benefits of a digitally inclusive society are known and the structural changes needed to achieve the vision have also been identified. These are essential preconditions but are not sufficient to turn the vision into reality. Change comes about when (i) dissatisfaction with the 'As Is' situation (ii) a shared vision of the desirable future and (iii) a clear 'roadmap' to achieve the vision are cumulatively greater than the costs (both financial and psychological) of implementing the vision. Where this situation arises, it is often the case that a strong will develops among stakeholders to take action and move towards the shared goal. While there will inevitably be different perspectives and priorities among individuals, communities, businesses and government regarding what a digitally inclusive society looks like, the transformational outcomes envisioned by the Declaration of Principles help to inspire a shared vision and perspectives and encourages commitment to follow the path to achieving this. The sharing of perspectives between all stakeholders, especially those in positions of authority such as national and local government and those in business developing and selling ICTs are crucial to success in creating and sustaining a digitally inclusive society. Inter- and intra- stakeholder co-operation, ongoing negotiation for the mutual benefit of varied stakeholders and respecting the voices of less influential/authoritative stakeholders is also key to this journey.

VII. NEXT STEPS

To provide a path towards the vision of an inclusive digital society, the following steps are essential:

- Promote widespread awareness of the benefits – individual, societal and economic – of digital inclusion
- Engage and gain the 'buy-in' of key stakeholders to the Vision of digital inclusion
- Encourage and reward adoption of inclusive design principles and promote them as the industry 'norm' for designers, developers and manufacturers of ICT systems, services and products
- Create expectations of and demand for inclusive design/digital inclusion amongst buyers and users of ICT
- Promote awareness that current ICT learning and support provision in the community is variable in quality and availability and not 'purpose' tailored to the requirements of users
- Recognise that sustaining people online is an even greater challenge than getting them online in the short term – and invest in community provision indicated above.
- Create a framework for ubiquitous provision of ICT support in the community e.g., in public libraries
- Document and co-ordinate the various local initiatives that exist, e.g., some GPs are now "social prescribing" (e.g., recommending patients make an appointment at a local library to obtain digital skills training).
- Utilise local resources to meet local needs
- Harness the political will to push this vision
- Recognise and celebrate what we can all achieve given the right access to ICTs.

These steps offer a roadmap to a digitally inclusive society.

VIII. CONCLUSION

In summary, digital inclusion is fundamental to a flourishing democracy and to the full participation of people in society and the vision for universal inclusion and connectivity has been stated. At the individual level, digital inclusion is crucial to sustaining and enhancing independence and autonomy. However, the transformative potential of such inclusion transcends the individual and has wide-reaching benefits for the whole of society and the economy. To achieve the vision will require coordinated policies, strategies and practices which led or endorsed by national governments, coordinated and implemented by local government, service providers, businesses and third sector organisations. The barriers to achievement of a digitally inclusive society are well understood and, while commitment and effort to overcome them will be required, solutions are available and the return on investment in implementing these will be extensive. With leadership and

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commitment, sustained digital connectivity for everyone is within our grasp now. In particular, leadership is needed to promulgate the vision and to encourage the development of strategic alliances and partnerships within a framework of appropriate policies and strategies, involving all relevant stakeholders – especially older people and disadvantaged groups in society. Engagement at grass-roots is urgently needed to complement the 'top-down' digital inclusion campaigns currently in operation in some countries.

The path is understood and waiting to be travelled. The rewards are significant and achieving the vision of digital inclusion presents opportunities for innovation and change in business and society that are even greater than the challenges.

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