THE GLOBAL INFORMATION AGE: WIRELESS TECHNOLOGY'S TRANSFORMATIVE POTENTIAL IN KNOWLEDGE-BASED SOCIETY

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Abstract

This paper argues that mobile technology is qualitatively different to other information and communication technologies (ICTs) in the context of achieving the political aims and objectives of the 'information society'. Crucial to this claim is the belief that mobile devices are becoming increasingly integral to the lives of users – whether for work or leisure, and that they are inherently transforamative. Their 'always-on' connectivity and increasing processing [1] power and capabilities distinguishes them from other ICTs. Their functionality goes beyond voice and data transfer. Their potential for identity confirmation and networking, for example, is unmatched – though there are considerable dangers. These include, amongst others, involuntary exclusion, surveillance, privacy, accountability and the need for openness. In many cases these are political questions that cannot be left to the market.

1   INTRODUCTION

This paper sets mobile technology and services against the backdrop of existing debates on 'information and 'post-industrial' societies. It posits the suggestion that mobility has the potential to realise the information society aspirations of politicians in a way that information and communication technologies more generally have failed to do in recent years. Essentially, mobile services and the devices that enable access to them are becoming constitutive of the lives of users both in a work and a social dimension. This essential nature of the technology renders it different from on-line networking that has become a part of normal working environments in the developed world. However, there are real dangers of exclusion in the absence of political and regulatory intervention. The paper starts with a discussion on the meaning of the information society and post-industrialism [1]; [2]; [3] and considers criticisms [4] that they are unrealised constructs such that economies are still dominated by manufacturing and that the classifications given by advocates are fatuous and meaningless. Moreover, in order to comment on the dangers of exclusion from the benefits of the technology utilisation, the paper considers the concept of 'social exclusion' in a bid to challenge policy-makers' assertions that the information society – wireless or otherwise – can and will bridge the social divide. The paper concludes with a discussion on policy implications for the achievement of inclusivity and openness.

2   THE IDEA OF AN INFORMATION SOCIETY

Webster distinguishes analytically five definitions of the information society. These are technological, economic, occupational, spatial and cultural. For our analysis, we might add temporal to this list, but we will restrict the debate to the first four. Moreover, Webster is critical of the concept of the

information society as representing a new age or epoch in contrast to the production or – more pertinent – 'advanced industrial' sectors [5] (p10).

The major element to the technological definition is the growth in, and power of, information processing technologies. In particular the networking capabilities: the ability to transmit data as well as to process it. This is seen by Webster, however, as being technologically determinist and simplistic in ignoring the social, economic and political dimensions to technological innovation.

The economic debate surrounds the concept of the 'knowledge economy'; namely, that in the new order, wealth is generated from knowledge and information rather than manufacturing. There have been some compelling studies, argues Webster, ascribing to knowledge-based activities significant contributions to the GNP of advanced economies. However, the categories selected tend to be all-embracing so the knowledge-intensive activities of manufacturing firms are stripped out and included in the statistics, when previously they would have just been seen as industrial activity. Moreover, such research, argues Webster, homogenises disparate economic activity. Everything from esoteric academic research to TV advertising becomes part of the 'knowledge economy'.

The occupational definition is similar in its emphasis on numbers as the determinant of having entered the information age. Again, it relies on dubious categorisations of knowledge work, where teachers, clerks, scientists and inventors all share the same classification. Importantly, this definition suffers from a shortage of ethnographic studies capturing the detail and complexity of the work experience of people [5] (p15).

The spatial definition emphasises the centrality of information networks linking locations within and between towns, regions, nations and continents. Webster isolates from the work of writers in this area including Castells, the significance of information flows. We are all familiar with the statements about the huge volumes of data, emails, transactions, etc. travelling across networks. The question is, to what extent is the reality a network of individuals? Webster believes that it may simply be a question of linked technologies. Moreover, does the fact of the volume of data and the transmission speed mark the transition to a new society – the information society? Communication links are not new. Postal and telecommunication networks in the past have each carried huge volumes of data [5] (p20). If digitalisation defines information society, then the technology definition should suffice.

2.1 What is information society?

The semantic debate between Castells and his detractors like Webster can be reconciled to some extent by accepting that information is a resource that can be used to add value to the labour process. It does not have to be a defining characteristic of society, or represent a new era. However policy-makers around the globe are putting in place statutes designed to foster knowledge-based economic activity. Moore [6] (p150) identifies two broad goals shared by all countries from those in the G7 to developing economies. These are:

- Investment in telecommunications systems and bandwidth.

- 'Upgrading' from labour-intensive, to knowledge-intensive operations. Information is viewed as a resource able to improve commercial and industrial competitiveness and productivity: using information within and between organisations to improve systems and processes, management techniques and foster innovation.

Policies for an information society should not be seen in isolation. Building infrastructure and utilising information within and between firms will not result in a fundamental shift in the nature of economic activity. Therefore, a key indicator of an information society is an educational system that equips its children and citizens with the skills that can be used to realise the upgrade. Policy makers also express a belief in information society as a provider of social cohesion. Quite how access to, and utilisation of, information can bring this about is not clear [6] (p150), but we might reasonably argue that an efficient high value economy is one in which a citizenry is fully employed and therefore crime levels

(particularly petty acts) will fall. Cohesion also encapsulates an informed citizenry and participation in the political process.

2.2 Post-industrialism

For Stonier [3] (p23), post-industrial society demonstrates:

- information and knowledge as limiting factors
- application to existing productive processes for increased efficiency generating new wealth
- overcoming previous scarcities
- the rise of the information operative
- a shift to a credit-based economy
- transnationalisation of production
- instititutionalisation (corporations, governments and trades unions)
- relative affluence
- increasing pace of change.

The term post-industrial society is attributed to Daniel Bell writing in the 1970s [2]. It is an analytical construct rather than a tangible picture of the present or future. Bell's thesis, however, is criticised for its teleology [4] (p32). In the language of transformation, the post-industrial society is one in which there is a political transparency wrought by a shift from crude economizing [2] (p275) to sociologizing (p283). Hence, *inter alia*, environmental protection and the enhancement of the educational experience beyond the merely vocational ('schooling') are prioritised over liberal economic and corporate rationality [2] (p481 & p423 respectively). Importantly, information is not an end in itself, and therefore planning – both public and private – consumes considerable effort and resource (p470).

3   WIRELESS TECHNOLOGIES AND SOCIAL EXCLUSION

Wireless devices are conceptualised as belonging to the family of ICTs. Access is critical, as is how it is achieved. Access to, and affordability of, essential equipment may be an arbiter. For accessing the internet, there is the additional question of access through the portals of internet service providers (ISPs), and the ability to pay access charges levied by service providers.

For telecommunications, however, there is an additional dimension. As a communication tool, it is not just a question of accessing the internet, but rather gaining access to others to meet either professional or social needs (or expectations of these) [7]. Mobile technologies, as observed by Churchill et al, are marketed in such a way so as to suggest that they will find a 'natural home' in the hearts of busy people engaged in 'time sensitive competitive exchanges'. In this representation, the technology and the individual are fused together [7] (p161). This is not without problems. For example, what are the consequences for those who choose to opt out in the event of the technology finding a 'natural home' in the minds and work routines of mobile workers? Equally, there are the excluded who cannot participate because of disability, homelessness or some other social disadvantage.

3.1   The relevance of social exclusion

How meaningful is the concept of social exclusion in a discussion on wireless technologies? The concept of social exclusion has its roots in debates over poverty and 'relative poverty' in the 1970s (for example, see [8]). Essentially, humans are social rather than physical beings and as such anything that restricts an individual's ability to engage in social interaction beyond being a consumer, could be viewed as 'relative deprivation' [9] (p389). There are two further dimensions highlighted by Haddon.

First, there is a level of resources needed for citizenship; i.e. the ability to fill certain social roles. Examples of this include voting (in an active sense) or receiving information (from a more passive perspective). Second, is the key notion of social isolation. It is not entirely clear what a minimum level of participation might entail, and it also raises difficult questions about voluntary exclusion on the part of the individual. However, research shows that fixed-line telephones are important for the wellbeing of vulnerable groups in terms of their perception of being *connected*. [9] (p389).

These factors are captured well by Burchardt et al [10] (pp231-2) who argue that individuals are socially excluded if they are:

a) geographically resident in a society, and

b) do not participate in the normal activities of the citizens of that society. Normal activity is defined in five ways:

- consumption

- savings

- production (engaging in paid work, education, etc.)

- political (collective effort to improve social/physical environment)

- social.

3.2 (un) Equal access

It is not just availability of equipment that constitutes access. Particularly where wireless technologies are concerned, for example, there will be *at least* two platforms competing to provide access. There is soon to be an immediate inequality of users with UMTS subscribers at one end of a continuum, non-users at the other extreme, and GSM users somewhere in-between but further divided depending on whether they subscribe to GPRS or EDGE. One might anticipate UMTS users to be wealthy, white, educated young males with a business enjoying a technology focus. Moreover, the technology is not static: there is a need for recurrent upgrading, replacement, and peripheral/add-on costs that are an inevitable feature of ICTs procurement and maintenance [11] (p11); [12].

These facts cannot be ignored if one of the objectives of the information age for policy-makers is to raise the value of economic activity and erode the social divide that threatens the fabric of society and the security of particular states.

4 WIRELESS TECHNOLOGIES AND THE INFORMATION AGE

In this section we seek to highlight aspects of wireless technologies that make them distinct from wired alternatives. If we take the concepts of the information age and post-industrial society as analytical constructs rather than fixed realities, it is clear from the discussion above that access is important because the information society in its broadest sense functions only where inclusion – for those who seek it – is guaranteed. The discussion will proceed under the following headings: identity, time, privacy and surveillance, access to services and information and healthcare.

4.1 Identity

For Rogerson, citizens have a dependence on digital icons such as credit cards, national insurance numbers, and the ubiquitous PINs that facilitate access to so many essentials, not least cash. The citizen, therefore, has a composite identity – part physical, part digital with the digital part in the ascendancy. So whilst the digital identity enables access to an increasing number of services, there is a danger that citizens will surrender anonymity. In any transaction in which identification enables access to services, data are stored about individuals and/or his/her consumption habits and activities [13] (p3).

Moreover, where SIMs are used as identification 'cards', the likelihood is that threads of information about individuals will be drawn into a single source; the individual essentially becomes constitutive of the mobile device. And without it, citizens cannot live, work or seek help in times of need [13] (p3). When such data reside in a single place, it is quite difficult to update information, and verification of the integrity of held data is problematic. These are overtly political questions [13] (p4).

4.2   Time

Mobile devices are used to exploit workers' increased mobility for social purposes within the parameters of what might be deemed 'work time' [14] (p128). But equally, mobile devices enable individuals to optimise time by arranging new appointments where a window appears in a schedule [15] (p113). This may not be as desirable as it first seems. Mobility makes it possible for those engaged in 'time sensitive competitive exchanges' to spend more time out of the office (on trains or in cars, assuming the mobile office is a viable complement to fixed office space for at least some of one's work time).

There is also the illusion of simultaneity. ICTs undermine the concept of linear time: we now experience a series of overlapping times. This, on the one hand, makes it possible meet the demands imposed by modern living (both work and home), but equally the technology may also be the cause of what seem like impossible demands imposed on individuals [16] (p25); [1] (p473). The demands of simultaneity mean that the mobile device has to be permanently switched on; indeed, owners can be held to account for having it switched off.

There are places where mobile telework enjoys a particular logic. Trials of wireless working in the UK are interesting (see [17]; http://www.teletractor.com). Farmers are transforming their concepts of time in shifting the management of the agricultural cycle from the office to the field or processing plant. In this scenario, the business model is transformed, too. There is evidence of farmers trialling wireless technologies to:

- provide real-time information to potential customers to competitive advantage

- send data (images) directly from the field to veterinarians, crop specialists and Ministry officials, and

- engage in co-operative activities in order to increase the return vis-à-vis large supermarkets.

4.3   Privacy and surveillance

The use of mobile devices brings with it implications for privacy and surveillance. Teenagers use the technology to monitor one another whilst adult users who are subject to the gaze of employers embodied in their devices use an array of technologically-mediated strategies for protecting time and space against intrusion. These include switching the phone off and using call screening or voicemail [18] (p41). However, Green argues that we may be prepared to forfeit aspect of our privacy in order to embrace some of the benefits of location-based services. For example, GPS (Global Positioning Services) can facilitate one's attempts to get a cab on a dark cold night in London, or be located easily by emergency services [18].

Work by Vilhelmson and Thulin in Sweden is instructive in showing that the regulation of the labour process impacts greatly on the use of ICTs and the diffusion of mobile work. The overwhelming need for managers to monitor employee behaviour renders the office a compelling component of this regulation [19] (p1026). They also show that teleworkers are not big users of mobile technology and biased towards 'traditional professions' allied to the *old* economy. Teachers and general business personnel represent over 50 per cent of teleworkers, with IT professionals representing a mere 10 per cent. The determining variables for teleworking are high income, good access to ICT technology, and the ability to control their use of time, place and technology. In other words, these are not average workers [19] (p1023).

4.4 Access to services and information

ICTs provide a means to achieve the efficient delivery of public services, by avoiding duplication and contradiction. It has the potential to inform government better by increasing participation rates in debate and even voting. However, public authorities have to balance the need to be confident about data that are released by ensuring the identity of those to whom it is realised, with the client's requirement desire for anonymity. Moreover, the challenge for local authorities is to develop portals that are not just about services and payment, but rather support access and training initiatives as well as promote genuine civic dialogue. This may include establishing portals providing gender and ethnically distinct content (in languages other than English). However, ICTs may only be acceptable as a 'citizenship tool' in an environment of absolute inclusiveness, and the additional right to self-exclude. Implementation should not just be a matter of cost reduction [13] (p4).

The i-mode model in Japan, which provides everyone with the space to be a content provider is revealing. In Japan, i-mode is one of the primary mechanisms for accessing information due to the overall shortage of fixed-line internet connections and the relative high cost of such connectivity, amongst other things [20]. Likewise in Africa, it has been demonstrated that wireless technologies have the unique ability to circumvent the limitations posed by under-investment in fibre optic networks in less prosperous localities and national territories due to lower infrastructure costs [21].

4.5 Healthcare

Mobile technologies may have considerable impact on the way in which health services are delivered. Financial pressure on healthcare providers presents a considerable incentive to utilise the technology to:

- improve efficiency of procedure and process such as increasing the reliability of patient attendance at hospitals for appointments;

- increase the effectiveness of medication by alerting patients to dosage and frequency in real time;

- transfer of patients from care establishments such as hospitals at the earliest safe opportunity;

- support independent living by the elderly.

The challenges are many. Issues such as usability of devices by the elderly and those suffering degenerative conditions such as dementia require new thinking in terms of design. Stakeholders such as Hewlett Packard, Intel and Fuji Xerox are offering designs – albeit intended for the business market – based on 'personal architecture'; for example, device embeddedness in the physical environment (home, care establishment) or wearability (integral to clothing or even an implant) both of which take away the need for individuals actively to manipulate a wireless device [15] (p117).

5 DISCUSSION: INFORMATION SOCIETY OR NOT?

Despite the actions and perceptions of self-excluding groups such as the elderly and female single mothers [9]; [22], device ownership and usage is not restricted to privileged groups such as business people. Mobile devices are ubiquitous – a fact which is exploited by a number of mobile businesses such as *Paybox*, which enables the owner of any networked mobile phone – who also has a bank account – to make secure electronic payments to merchants or to other individuals. The same is not true of wire-based electronic payments. The credit card, for example, does not have the same flexibility as a mobile payment system. It can rarely be used in a taxi or for any other small or motion-based transaction such as public transport, fast food, newspapers, or other impromptu purchases. And because it is an extension of the functionality of an already familiar device (the phone) and payment system (the debit/credit card), it is qualitatively different from other electronic payment options.

The discussions about how mobile devices will affect the way we work is currently mediated by discussions and observations of how individuals utilise the devices. The bias is obvious. Mobile workers tend to be senior figures in businesses with degrees of autonomy not enjoyed by the majority. The world of work is dominated by the geographically-fixed office with its secure accountability and surveillance opportunities for managers. Employees, too, are able to exploit this environment, however. Being truly mobile or a teleworker imposes considerable discipline issues on individuals. Embracing wireless technology requires some significant – but realisable – changes in the working methods and organisation.

Perry et al's [22] discussion about 'dead time' (e.g. railway stations, hotel rooms, etc.) is indicative of its current rudimentary state. It is also indicative of the potential for future usage where higher bandwidth can expand utility. The crucial point is Perry's criticism that even with mobile technology the best that can be achieved is 'Zombie time' because it can only be used inefficiently and cannot be utilised for sequential work activities that are the norm in an office environment. However, this is arguable on a number of counts. First, this may be true of current technology, but radical changes are afoot in the very near future. Second, many employees are indeed engaged in routinised and sequence-dependent work processes. Many, however, are not. Those involved in project work, for example, increasingly find the sequences challenged where procedures are re-engineered in order to reduce indicators such as 'time-to-market', for example. Thus the sequence argument is static and doesn't take account of how work processes are in flux, and how the technology can be used to devise new procedures that capture these shocks to the familiar and safe linear – Fordist – work models. The technology has significant potential for enhancing dispersed teamwork, cross-functional co-operation and learning and inter-firm co-operation.

Third, they assume that the mobile device is a personal device and not a tool of an integrated system. If mobile technology is going to enhance the work experience both in terms of autonomy (for the individual) and efficiency (for the firm), then the deployment of the technology has got to be part of an integrated system – integrated with other ICTs in the workplace; and not just a device for calling a secretary or colleague in order to extract some verbal information from them. It needs to be a device that can – just as the networked computer does currently – interrogate databases, extract information and take away from employees the time consuming 'pre-planning' that mobile workers currently engage in order to utilise dead time. This normally involves carrying print-outs of emails or letters that can be read on aeroplanes or trains. We see no evidence of this kind of integration in the current literature, merely normative statements. Few discussions are generated about the role of wireless devices in process improvement in team-based, multi-site/national development work. This is most certainly a rich seam for further research, preferably with an action-research methodology due to the incipient and cultural nature of the technology.

Fourth, mobile workers seem not to be convinced about the desirability of dispensing with paper. The mobile device currently is not designed to download reading material. PDAs, however, have displays that are comparable – though different – to the printed word. The battery capability, however, remains a limiting factor. The need to print a document may be seen as the desire to make tangible the electronic document. It does not always have to be so. The status of the electronic document will change – its readability, its acceptability as an accurate record or a legal document. And electronic documents can be annotated just like a paper copy.

The case of healthcare captures two of these factors. The technology has the potential to reduce costs in the delivery of secondary healthcare by removing patients from the relatively expensive environment of the secondary healthcare establishment at the earliest possible juncture All without compromising the care or survival chances of the patient. These are truly significant ideas that uniquely challenge all stakeholders. The consultants are challenged because they lose absolute control over the data coming from their remote-sensored patient as it is mediated by a combination of technology and human intermediaries whose task it is to respond only when the data indicate a change in condition that demands action. This could be either a recall into the hospital or an alert to the patient to take remedial action him or herself. A bonus, however, is the realisation that much of a consultant's

current work involves scrutinising ordinary and unexceptional data. Surely, it is argued, a better use of consultants' time is being called upon to respond to exceptional data? By this, true value can be realised for a scarce resource.

This form of delivery also challenges the patient's sense of wellbeing. Some patients are going to opt for the close supervision and security of the hospital. However, others will embrace the opportunity to leave hospital providing they have confidence that wireless systems used are failsafe.

These problems notwithstanding, such innovations are revolutionary. Wireless technology is uniquely valuable in this kind of monitoring. In order for telecare to work in a wired environment, the technology has to be embedded in the home. This can be a retrofit, or standard for new build. However, mobile technology can render this unnecessary. Using wireless technologies, connection to the fixed-line infrastructure (of the hospital) can be made by having a network link to existing public infrastructure (from the home).

So the healthcare example meets a number of the criteria of the information society. The case demonstrates the following aspects of the information society:

- Increased efficiency of organisations; dealing with scarcity – financial and skilled personnel due to an ageing population, medical advance and the inclusivity of modern healthcare systems.

- Integral role of 'information operatives' monitoring patients remotely and processing the generated data.

- Speed, volume, and value of data transfer.

There is a more fundamental aspect to consider, however. Healthcare provision of this kind is perhaps a surface phenomenon, albeit challenging. It does, however, bring to the fore discussions about ownership and interpretation of data. Business initiatives like *NetDoctor* (www.netdoctor.co.uk) feed into an already ebullient population of information gatherers keen to pre-empt diagnosis by a professional, or take more control over their health and wellbeing by utilising alternative services. Currently *NetDoctor* is web-based with wireless applications around self-help communities (smoking, asthma, Irritable Bowel Syndrome, for example) being launched soon. With greater customisation of these private services, healthcare professionals are going to be further challenged by questions over portability of medical records (can they be incorporated into a wireless device?) and veracity of information, advice, and care plans.

This question of portability of medical records feeds into the debate about identity that is central to the concepts information society and post-industrialism. There can be no greater transformation than the notion of one becoming constitutive of an electronic device. Moreover, the embeddedness of the data contained on such a device represents a logical end point for the incremental change in the way citizens pay for goods and services. The notion of using a mobile as a payment device has already been discussed. This logic may be even more compelling for users. If the mobile device carries considerable and important personal data, the barriers to further concentration of information carrying may evaporate. The mobile device, moreover, correlates absolutely with portability; a fact which may, in turn, make the transition easier. A splendid contradiction here relates to the fear of users about surveillance by the information generators (retailers, governments, etc.) vis-à-vis the ability of the technology for users to control or take ownership of their own medical profiles rather than it being controlled by professionals.

Complementary technologies like Bluetooth, moreover, enhance the utility of mobile technology. The work potential is high for internet ports in public spaces; individuals too can utilise the technology for personal use. Keeping in mind the positive aspects of connectivity and being 'always-on', general and location-based information have real utility and they are generated because of mobility.

The utility of wireless technology is, we have argued, significant. However, by definition an information society is just that, society. Society is not absolutely about individuals and financial

advantage. As Bell has argued, many of the decisions made in the post-industrial society are not purely economizing in their focus. They are social and about public goods. An information society shares with the concept of the post-industrial society the fact of being as much a political entity as it is an economic entity. At the political level, the potential for social exclusion arising out of the inegalitarian deployment and use of the technology, is high. Certainly at the level of consumption, production and social levels in the conceptualisation of social exclusion [10] these are important questions. Conceivably inclusivity and openness are, pre-requisites.

Inclusivity is important in two senses. If access is a public good, then a political settlement is required if the benefits of information society are to be fully realised across populations and social cohesion promoted. If we list the potential benefits of mobility and the additional attributes of the technology such as a device's processing capacity, we can envisage an aggregate societal benefit. The benefits range from connectivity, access to information which is location independent (whether it be push or pull), cashlessness, better utilisation of work time, greater potential for socialising and face-to-face human interaction, identity verification, access to and exploitation of public services (e.g. healthcare, libraries, transfer payments) as well as to secure buildings such as workplaces. However, should there be some kind of universal service obligation on operators? Services are available, but sometimes at a price that renders the technology exclusive. Cashlessness, in some cases, demands as a minimum network access and a bank account. There are many cases of neither of these being held by excluded individuals. If cashlessness is the dominant trend, then those who cannot participate are liable to have to pay more for goods services provided by those who can deal in a dual economy. Unresolved too are questions about whether access itself is enough, or whether there are unacceptable hierarchies of access determined by device and software upgrades, different platforms (UMTS vis-à-vis GSM). The quality of access, therefore, has to be examined. These are inherently political questions and a market correction for inclusivity may be necessary.

The second issue is that of openness. The information society is predicated on the concept of large volumes of data being transferred at high speed across networks (either pushed or pulled). Some of the data are confidential or profiling in nature. Data held about individuals need verification and correction. A most challenging task, therefore, for governments, is to regulate information provision and data collection and transfer and ensure that it is both secure and confidential. This should be balanced against the need to ensure the veracity of published information (health information, for example) and data kept on individuals (e.g. credit profiles or medical records) and the ability to inspect, update or alter it where errors are detected.

6   CONCLUSION

This paper has examined the concepts of the information society and post-industrialism in the context of mobility and wireless technologies. The authors have argued that, despite criticism by Webster, the potential for these technologies to realise the benefits of an information and knowledge-based society is high. These technologies are uniquely placed to transform societies by virtue a combination of their 'always-on' connectivity independent of location, constitutiveness and their ancillary capabilities such as processing capacity. In this, they are qualitatively different to fixed-line ICTs. They can also be used within existing work organisation to improve productivity for competitive advantage. Though the literature on this aspect such as deployment in team-based work is under-developed.

This potential is incipient, however. The conditions for embracing the transformative potential for wireless technologies are largely political rather than economic. If connectivity is important, then it is important for everyone, and access for all has to be secured. The other side of the coin is protection through regulation of the veracity of information provided by certain organisations such as new healthcare businesses, and the ability to control the content of data held by public and private bodies ranging from marketing companies to public authorities.

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