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## Developing and briefly evaluating Telehealth and Telecare scenarios for NHS<sup>1</sup> estates and facilities

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### ABSTRACT

**Purpose**, Reports the development of scenarios to help one public-private NHS property organisation assess the potential implications of Telehealth and Telecare (T&T).

**Theory**, Literature review and scenario planning

**Design/methodology/approach**, Expands existing NHS Policy and Innovation Research Unit (PIRU) digital health scenarios into six property scenarios triangulated within the organisation via questionnaires and interviews.

**Findings**, Current NHS scenarios do not consider how T&T might impact FM and Estates (EFM). NHS EFM literature largely ignores the implications of T&T.

**Originality/value**, The six property scenarios are original as is their use as a method of assessing the understanding and readiness towards T&T. They begin to provide insight into a previously overlooked “gap” between NHS FM and estates and T&T.

### KEYWORDS

NHS Estates and FM, Telehealth, Telecare, Property Scenarios,

*It can't be [business as usual], we can't carry on even though it works at the moment, we've got to be flexible and adaptable because things are going to change....*

## 1 INTRODUCTION

Developments in Information and Communications Technologies (ICT) were one driver for the establishment of FM in the late 1970s. They remain relevant today with, as our opening quotation illustrates, considerable uncertainty as to the implications for real estate holdings and their management. The health sector is implicated as much as any, yet although the Royal Society of Medicine has supported the *Journal of telemedicine and telecare* since 1995, the potential implications for EFM remain under studied. Telehealth allows patients to self-manage and monitor their own health at home via a multitude of devices with information fed back to clinicians to enable monitoring and diagnosis without the patient needing to attend a clinic. Telecare enables patients to live safely but independently in their own homes supported by various sensors and alarms linked back to monitoring stations (Cruickshank et al. 2010; Department of Health, 2011; Steventon and Bardsley, 2012).

So far as we can determine after an extensive search (details available) the T&T literature does not consider impacts on property and facilities. Likewise property and facilities literature offers little concerning the implications of T&T for the NHS. Our aim with this paper is to highlight that gap and develop scenarios (De Geus, 1988) to illustrate possible implications. In developing same we have introduced potential lessons from other customer critical sectors such as retail and hospitality. We recognize that the paper is, intentionally

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<sup>1</sup> The UK's National Health Service

speculative. Scenarios are not intended as forecasts. We tested the scenarios against a small sample of EFM staff in an opportunistically selected study organisation.

## 2 THEORETICAL FRAMEWORK OF THE STUDY

### 2.1 Policy developments

T&T has been claimed as beneficial to both patients and the NHS (Table-1) but has only been implemented via small pilots in specific locations looking at specific health conditions.

Table 1 - Benefits of T&T

Item	Benefit	Source
1	Better control of own healthcare	Clifford et al. (2012)
2	Cost savings for the NHS	Clifford et al. (2012)
3	Reduced hospital admissions	Longman and Swage (2013); Berkley (2011); Cruickshank et al. (2010); Department of Health (2012)
4	Reductions in visits to community clinics	Carlisle (2013)
5	Reductions in visits to GP practices	Longman and Swage (2013); Berkley (2011); Cruickshank et al. (2010)

T&T is however being used at scale outside the UK and similar benefits to have been achieved (Burmahl, 2003; Cruickshank, 2012). The NHS's Policy Innovation Research Unit (PIRU) developed four possible scenarios (Figure-i) for how technology could change the NHS by 2030 (Evennett and Barlow, 2013). We do not have the space in this short paper to summarise the Evennett and Barlow report but draw readers attention to the reports extensive literature (8 page bibliography) and stakeholder group. Our critique is that EFM has not gained its place in such company.

### 2.2 Bricks and Clicks in other sectors

A significant variable in the PIRU scenarios is the speed of public acceptance of new technology. We cannot find studies of same in the health sector which prompted us to examine recent trends in other, or some would say more overtly, consumer sectors.. Studies completed in the US retail industry reported that just nine years ago only 37.4% of people shopped online (Lepkowska-White and College, 2004; Miyazaki and Fernandez; 2001). Fast forward four years and Court (2006) reported that in the UK only 5% had negative perceptions towards online shopping and 55% carried out most of their shopping online. Online shopping apparently meets a social desire for convenience (Jiang et al., 2013). It is increasingly affecting retail property (Geddes and Owen, 2012) with physical locations either being promoted as retail experiences or dismissed as "*Amazon's showcase*".

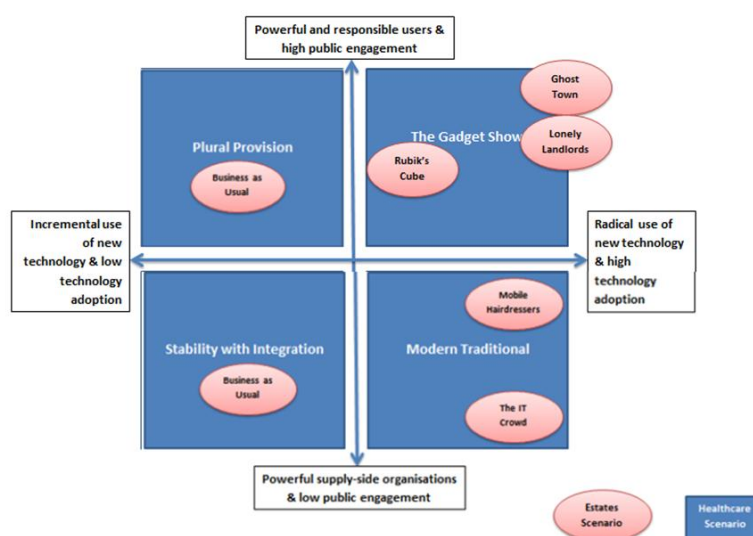
Like the retail industry, the NHS provides a service to the public in physical locations (Price, 2004) but the parallels may be more with hospitality than retail. Technology has enhanced the hospitality industry through ease of access and encouraged the development of experience led environments (Olsen and Connelly, 2000). Although the recession has seen been pub closures, hotels have rapidly embraced vital technology (Cline, 1999; O'Connor and Murphy, 2004). In 1999 only 4% of hotel reservations were made online. Now online booking systems are ubiquitous. Arguably 'boutique' hotels have found the playing field levelled vis a vis competition from chains.

Unlike modern retail, hotel services are always experienced in a physical asset. Bitner (1992) groups hospitals, health clinics and hotels into the same type of servicescape<sup>2</sup> whereas retail

<sup>2</sup> Elaborate, interpersonal services

buildings are omitted from her classification. Do hospitality services provide a better model than retail<sup>3</sup> for at least some NHS FM and estates services?

Figure i. EFM scenarios mapped onto PIRU scenarios



### 3 SCENARIOS

The literature and consideration of comparative sectors informed a number of EFM scenarios which we find map surprisingly well onto the PIRU scenarios (Figure i).

#### 3.1 Ghost Town



In their 'Gadget Show' Evennett and Barlow suggest that community health centres will disappear. Could T&T actually render physical assets redundant; leaving NHS EFM organisations with no estate to manage and questioning their very existence? According to Christensen et al. (2000) T&T is commoditising healthcare. In other industries where technology has commoditised services<sup>4</sup> property is classed as a burden and has 'disappeared' over time (Hinks, 2002; Court, 2006). Lilley (2008) predicts that the NHS

will look very similar to banking and travel agencies and also suggests that NHS property will disappear.

Alternatively Bitner's (1992) servicescape theory holds the physical surroundings as important when the service is produced and consumed simultaneously. Even Christensen et al. (2000) stress that there will always be patients who require physical assets for their care such as the terminally ill, pregnant women and patients who need washing<sup>5</sup>.

#### 3.2 Lonely Landlords



Rather than make the estate redundant, T&T may simply reduce the amount of estate required to deliver healthcare. GP surgeries and hospitals are both cited to experience reductions in visits in some of the pilot studies. In this scenario there is more vacant estate and EFM organisations need to change the way services are delivered.

Over ten years ago the Healthcare Informatics Journal compared the rapid adoption of technology to the industrial revolution. Noting that technology

<sup>3</sup> There is even recent literature which prompts healthcare to apply elements of hospitality to improve services (Wu et al., 2013)

<sup>4</sup> The banking and travel industries have commoditised some of their service offerings and now offer online banking and online travel bookings

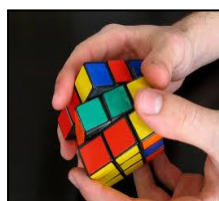
<sup>5</sup> Post contextual meetings with Liz Mear and Dr Elkin (the lead GP for digital health in Liverpool) support this. Dr Elkin advised that GPs will sometimes need physical contact with a patient because GPs will sometimes need to 'touch a belly' to ensure effective diagnosis.

has catalysed a reduction in property in other industries it predicted that healthcare would follow suit (Anon, 2000). Aspects of healthcare may face the same challenges as are found in the general New Workplace movements where scenario planning literature also envisages technology making some estate obsolete (Suarin et al., 2008; Mason and Herman, 2003).

Geddes and Owen's (2012) survey found that a combination of the recession (Morley, 2013; Simmons, 2013), adherence to outdated store concepts (Curwen, 2013; Christensen et al., 2000; Ayling, 2013) and the impact of technology rendered a large number of staff redundant with 15,000 shops in UK town centres closing between 2000 and 2009. A further 10,000 were in the process of closing in 2010-2011. Based on these findings, Geddes and Owen predict that the retail industry will require even less estate.

However, in 2013 the head of retail research at CBRE (commercial property consultants) stressed that the demise of retail property due to online shopping has been exaggerated and argued that 'the only physical property area that has truly been affected by internet sales growth is the bulky goods market'<sup>6</sup> (McClary, 2013). In addition, the British Council of Shopping Centres (BCSC)<sup>7</sup> contends that online retailing is simply an addition to the physical landscape and not a replacement (Kilby, 2013)<sup>8</sup>.

### 3.3 Rubik's Cube Estates



T&T may change and 'scramble' the type of space NHS EFM requires to deliver health services. In retail outlets spatial flexibility is already paramount. Over half the participants in the BCSC study predicted that there will be more flexible space in next five to ten years with a need for more experience led environments to compete with online retailing<sup>9</sup> (Court, 2006; Hendershott et al., 2000; Geddes and Owen, 2012). Similar

trends have long been prevalent in time-segmented hospitality outlets.

Cruickshank et al.'s (2010) '*Healthcare without walls*' paper stresses the importance of T&T monitoring centres. A monitoring centre dominates an image produced by Ofcom in 2008 which predicted how healthcare will look in the next 10-20 years; a prediction which has come true in the case of the 2011 Whole Systems Demonstrator trial (WSDT) and other more recent pilot studies<sup>10</sup>. Cruickshank et al. also suggest that mobile health will allow NHS clinical staff to work anytime at anyplace and with anybody, rather than needing to access health records via a static desktop PC.

### 3.4 Mobile Hairdressers



Outwith the NHS, a common theme in the FM literature is that the FM role needs to change to become more logistically minded and flexible as a result of the increasing use of technology in the workplace (Hinks, 1998; Grimshaw and Cairns, 2000; Grimshaw, 2007). Hinks (2002: 273) suggests that FM could become obsolete as a result of the increased use of technology and reduced requirement for estates. He stresses that FM should become 'totally integrated with the new virtual, physically dispersed core business because staff will still need support they once had in a physical space'.

<sup>6</sup> This is because more people are buying their white goods online rather than going to their local electronics store (McClary, 2013).

<sup>7</sup> The BCSC also sponsored Court's 2006 study which looked at how online retailing is affecting retail estate and buying behaviours

<sup>8</sup> Some online retailers like Amazon are now providing services in physical assets such as the Amazon Locker where customers can pick up their online orders in a variety of different store types and locations

<sup>9</sup> Retailers like Apple and Bose provide experience led environments with most of the store dedicated to demonstration space allowing customers to try before they buy

<sup>10</sup> As a result of the AHSN trial of the digital health feedback system in Cumbria; monitoring hubs have been created to allow clinicians to respond effectively to patients. This is also the case for a community healthcare provider in Liverpool as a result of the MI (More Independent) pilot - <http://www.moreindependent.co.uk/>

The Mobile Hairdressers scenario explores the equivalent for healthcare. Will EFM in the sector become an increasingly mobile and remote service in line with the way in which care will be provided?

### 3.5 The IT Crowd



The IT Crowd represents a considerable shift in service provision for FM. The scenario seems particularly plausible in PIRU's 'Modern Traditional' scenario whereby the adoption of technology is high and the supply side organisations are powerful. The creation of many new T&T provider organisations could drive NHS FM and estates to become integrated with, and a component of, IT.

In some ways the scenario recalls the predictions around the turn of the millennium that FM would develop as RM (Resource Management), with a shift in focus from facilities to ICT (Grimshaw and Cairns, 2000; Hinks, 1998). The Gartner Group (cited by Grimshaw and Cairns) predicted that one third of all organisations in the US would have a RM role by 2003. According to Druckman (2004:52) the purpose of the new role is 'to ensure the functionality of the work environment by integrating people, place, process and technology'. Clearly those predictions proved exaggerated, but for how long?

NHS Property services state that information management and technology is outside of their remit. Is that short sighted? In 2013 the Kings Fund's '*Time to think differently*' paper debated whether NHS buildings are an obstacle or an opportunity. One of the main conclusions is that historically, EFM in the NHS has been too focused on maintaining the estate rather than exploiting technology to help support commissioners' plans (Edwards, 2013). Morrison (2005) had a similar opinion and claimed that hospitals in the US improved their performance when they linked 'bricks and clicks' (property and IT).

### 3.6 Business as Usual



PIRU's 'Plural Provision' and 'Stability with Integration' scenarios take the adoption of technology as low or non-existent and so are likely to have the least impact on NHS EFM. Although Morrison (ibid) champions property and IT working together to improve organisational performance, he stresses that healthcare organisations tend to over emphasise technology and states that 'we need to pay as much attention to the built environment (the bricks) as we do to the IT infrastructure

(the clicks)'.

Fry (2013) predicts that the future of retail property looks no different. Court (2006) recognises that technology will change the way that space is used but most of the interviewees in her study guessed that the physical infrastructure would remain more or less the same. She points to other industries where, despite studies, the impact of technology on property remains uncertain.

Brody (1993) recognises that making predictions about technology is unreliable because the use of new technology is either over exaggerated or under estimated and this can result in sceptism. According to Ayling (2013), NHS staff are generally sceptical when it comes to innovations. Sillanpaa and Junnonen (2012) concluded, albeit in Finland, that large innovations are not apparent within FM because FMs lack innovative capability and are generally sceptical of innovations.

## 4 EVALUATION OF THE SCENARIOS

### 4.1 Research design

Our primary purpose has been to report how we developed the scenarios. However using them to raise awareness in a study organisation provided the opportunity to test them in a

recently formed organisation of both public and private sector estates professionals charged with ensuring a joined up approach to EFM across Merseyside, in the UK’s North West. Recognising the philosophical contradictions in FM (Cairns, 2003; 2012), we adopted a mixed methods approach exploring the scenarios via both questionnaires and semi-structured interviews. In terms of Collins, Onwuegbuzie, and Sutton (2006)’s four rationales for mixed method research we completed interviews after a questionnaire to understand the reasoning behind people’s perceptions and to strengthen our conclusions by attaching meaning to the quantitative data (Johnson and Onwuegbuzie, 2004). As suggested by Feilzer (2010) we used the findings of the questionnaire to shape the interviews and then subsequently used the interview transcripts to re-focus the questionnaire analysis.

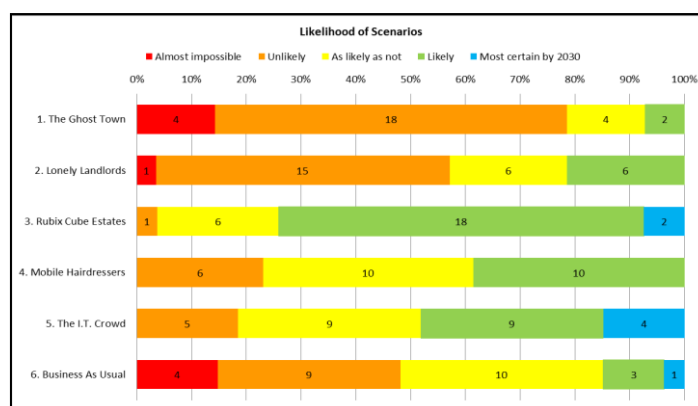
The questionnaire asked participants to rate the impact and the likeliness of each scenario on a scale of 1-5 as per Ratcliffe’s (2002) impact and certainty survey, which has been applied to a number of estates related scenarios studies. T&T is progressing quite slowly (Burmahl, 2003; Cruickshank, 2012) so we used ‘most certain by 2030’ instead of 2015, which aligns with the PIRU timescale. We included free text questions to identify whether the respondents were aware of T&T and whether they actually understood the difference between the two terms.

## 4.2 Research findings

### 4.2.1 Survey stage

Generally respondents perceive T&T will impact the NHS but steer away from more ‘extreme’ scenarios (Figure ii). Most participants (21 out of 27) understand Telehealth and could give examples but only 12 correctly distinguished Telecare. Only half were aware of local T&T pilots. The majority haven’t been involved in discussions with clinicians regarding T&T. There are notable differences in response to the different scenarios (Figure iii). The Rubik’s Cube scenario is considered to be most likely, followed by the IT Crowd. However, respondents also think that these two scenarios would have the most impact on the organisation and job roles (Figure iv). The Ghost Town scenario was seen as unlikely because there is an assumption that there will always be a need for physical assets to provide some aspects of healthcare. Perhaps because of that view the majority of respondents think that the Ghost Town and Lonely Landlords scenarios will have a low impact on the organisation and job roles. Assessment of likelihood appears to influence assessment of impact and may point to a need to clarify the labels used for the different scenarios.

Figure ii- Perceived likelihood of each scenario.



Both the survey and the interview data suggest that participants’ prior work experience and sector affects their assessment of different scenarios; a topic beyond the word limit of this paper.

Figure iii Perceived impact of the scenarios on the organisation

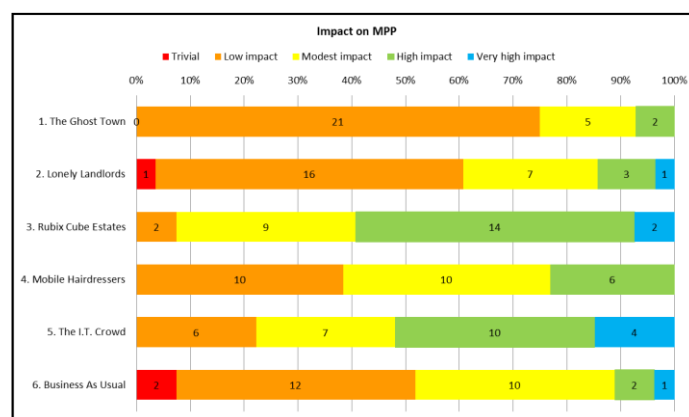
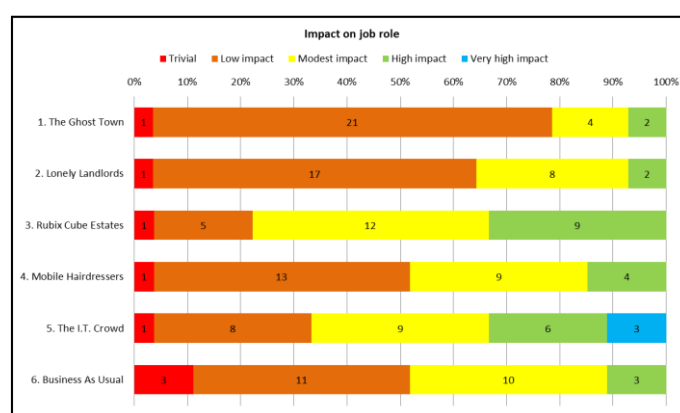


Figure iv Perceived impact on job roles



#### 4.2.2 Thematic analysis

We analysed the interview transcripts for themes. Ultimately 51 codes reduced to 12 themes all of which seem to reflect an underlying lack of awareness of T&T. Lack of awareness and lack of understanding may also be linked with lack of involvement. How can the organisation be aware and fully understand something they are not involved in? How can the organisation become involved in something which they don't fully understand or aren't aware of?

#### 4.2.3 Discursive analysis

FMs face an ecology of linguistic constructs (Price, 2012). An individual's use of language provides insight into their second order reality and the reasons behind their reactions to change (Ford et al. 2002). We selected two transcripts and analyzed how and why certain language was used. It is evident that one interviewee has a more positive perception of T&T overall and of its impact on NHS FM and estates. Although negative statements are more frequent in both cases the ratios of the two differ widely. The themes suggested by word counts of the interviews are also very different. One interviewee stresses people (though makes no mention of patients). The other stresses buildings (though does mention patients). The study is limited in scope and the labels on some scenarios may have been 'scarier' than others. The labels put on scenarios perhaps need to be evaluated with care. While we cannot make definitive claims based on such a brief sketch the results suggest that using the scenarios provided a route to surface very different background understandings of the challenges and opportunities posed by T&T. The diagram also encapsulates a dilemma found in FM research and practice. Does the discipline concern buildings or the impact those buildings have on the people who use them?



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