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Telecoms and Healthcare IT

Drivers exist for implementing IT services within the healthcare industry on a large scale. Their interactions, however, are highly dynamic and remain largely ad-hoc. Nevertheless, the sheer scale of hospital modernisation projects and the ever-changing opportunities offered by new networking and communications technologies combine to make telecoms companies key actors in the process.

Ó **Interoperability:** The health service needs interoperability between systems, functions and geographies, not

just within the health service but interagency (police, social care, etc.). For example, a doctor in one area of a country needs access to records of a patient's hospital visit elsewhere in the country, or a General Practitioner (GP) arranges a patient's appointment at a local hospital and then later needs to access the test results. In England, this level of interoperability is being developed through the construction of a national infrastructure and consequently, only a few large companies are capable of managing the complexity of implementation, but even they have struggled! The approach employed in each project will vary, but a large secure network (called 'N3' in England) is essential. The extent to which the applications using the network are centralised or locally deployed is debateable, but some (e.g. patient records) seem to be good candidates for deployment on a regional or national rather than local scale. If a single national database doesn't exist, then interoperability between various systems is essential.

Ó **Mobility:** In recent years there has been an increasing focus on treating patients in the community rather than in hospitals and this has increased the geographical coverage requirements of certain healthcare services. This is a big driver in the transformation of the ambulance service where there has been a shift in policy towards improving workflow from the outset at the incident location. To achieve this, there is a requirement for effective access to relevant information (e.g. patient records) whilst mobile. The digital radio replacement programme for ambulance trusts in the UK has a significant focus on improving data, for getting better information to/from the patient as well as for more effective fleet management. Often, a (mobile) telecom operator's influence over mobile devices can put them in a strong position to offer services to address the mobility requirement.

Ó **Self-serve:** Technology, and the policy to support it, is enabling patient's to use 'self serve' mechanisms to access healthcare services or be connected to online 'telecare' services. However, information security and technology developments such as Fixed Mobile Convergence (FMC) are just some of the issues that these sorts of services will need to address to be effective and trusted.

Consequently, the large geographical scope and complexity of new healthcare services means the sophisticated and real-time (or near real-time) integration of networked IT services are required. By and large, these tend to be the domain of large telecom operators and system integrators.

Large, Complex Contracts Attract Larger, More Sophisticated Companies

As explained above, healthcare IT projects can be large and complex. They also draw upon all of the generic elements of the IT offering, namely:

Ó Telecommunications services e.g. telephony, switched data services

Ó Hardware products e.g. network equipment and computer hardware

Ó Software products e.g. systems and application software

Ó Core IT services e.g. implementation and operations

This in turn tends to attract the resources of large telecom operators (telcos) and systems integrators, who tend to occupy the role of prime contractor in partnership with other organisations.

The case studies below are examples that illustrates the size and complexity of healthcare modernisation:

The UK's National Programme for IT (NPfIT)

The UK's National Programme for IT (NPfIT) is an initiative by the National Health Service (NHS) and is said to be to be the world's biggest civil information technology programme. The UKs incumbent operator (BT) is prime contractor for four of the largest contracts to the value of circa £1.4 billion over 10 years. The aim is to connect more than 30,000 general practitioners to 300 hospitals and to move towards an electronic care record for patients, providing secure and audited access for authorised health professionals to patient records.

The Department of Health agency, NHS Connecting for Health, are responsible for delivering the Programme which will provide the following capabilities:

Ó The NHS Care Records Service (NHS CRS)

Ó Electronic Transmission of Prescriptions (ETP)

Ó A New National Broadband Network (N3)

Ó Picture Archiving and Communications Systems (PACS)

Ó IT supporting GP payments, the Quality Management and Analysis System (QMAS)

Ó Choose and Book

Ó Communications – a central email and directory service.

The sheer scale and complexity of the contracts meant BT got off to a slow start, but they now claim to have 'upped their game' by adopting a traditional large-programme organisational structure plus a new systems approach based on large programme methodology. BT built a dedicated network service operations centre in order to provide an end-to-end view of the services they are delivering under the NpfIT contracts.

The UK's Department of Health (DoH) Ambulance Radio Programme (ARP)

The UK's Department of Health (DoH) Ambulance Radio Programme (ARP) is currently being rolled out nationally to provide NHS ambulance services with a new digital radio network and associated communications services, including a managed service for the radio terminals, Integrated Communications Control Systems, and mobile data applications.

The £390 million, 13-year contract to deliver the programme was awarded by the DoH to O2 Airwave in July 2005, after a national procurement exercise. A key objective is to provide better data communications to help NHS ambulance services improve patient care and meet efficiency and response targets. Mobile data traffic already accounts for some 80% of ambulance communications, using legacy analogue systems as well as commercial bearers.

Since contract award, the NHS ambulance services in England have merged from 31 to 13 new ambulance service trusts. One of the key challenges during roll-out therefore, has been to maintain the programme implementation, while adapting the solution to meet the requirements of the new merged bodies.

Fixed Line Telco Incumbents are Investing Heavily in Next Generation Networks

Given their stagnating revenue and the decline in their core service propositions, most incumbent telcos are embarking on Next-Generation Network (NGN) transformations.

The reasons that operators give for this investment are:

Ó Network will be better suited to supporting data networking requirements of customers

Ó Conveyance of voice, data and video traffic over the same platform (i.e. self contained segment of infrastructure)

Ó Voice and data traffic can be integrated at the customer's premises

Ó Supports scenario of ubiquitous customer services i.e. services everywhere, all the time

Ó Operational cost savings

There is also the possibility of a single NGN supporting multiple customers to increase the level of supplier competition.

There are three main approaches to NGN investment:

Ó Move to a full NGN core (such as that being carried out by BT),

Ó Investment in next-generation access (NGA) with a core overlay (like that by Deutsche Telekom)

Ó Full-IP strategy of rolling out NGA and NGN at the same time (like that of KPN).

Of course, operators will immediately seek to maximise revenue from their expensive new investments; they will do this by looking to develop extra value from the synergy between their acquisitions in IT applications / services and their new networks i.e. they will constantly look to innovate in the design and delivery of IT services.

IT is an Important Market for Traditional Telcos

The decision by BT Group to go after networked IT and broadband services, rather than just traditional carrier services, has been the main driver of their growth in revenues over recent years. This move is evidenced by the small rise in BTs staffing levels, which has been fuelled in part by acquisitions of IT services companies. These staffing changes are reflected in Figure 1.

Within BT, the focus on IT has been developed within the business unit facing global multinational customers, which is called 'BT Global Services'. Consequently, BT enjoyed a 38% growth to £6.28 million in what they term 'new wave revenues' which is mainly generated by IT, broadband and mobility services. New wave revenues represented 33% of all revenues in the 2006 financial year. This growth more than offset the decline in traditional revenues as shown in Figure 2.

However, our own report [(Wood, R. And Sale, S., Next-Generation Network Architecture: what and when?, Analysys Research (Cambridge, 2008)] forecasts that revenue from broadband services are likely to saturate in around two years, with growth opportunities focused as a result on IT and mobility services. Thus, BT are interested in demand for IT services from a variety of customer markets and not just from multinational companies. Healthcare is one such example, and indeed BT have set up a business unit called 'BT Health' specifically for this purpose.

Telcos have Entered into Partnerships to Address the IT Opportunity

Our report states that:

"Faced with little prospect of growth in enterprise telecoms, many incumbents, such as BT and Deutsche Telekom, are placing more emphasis on the market for networked IT services. Opportunities lie in caching, hosting, back-up and security, but also in less familiar territory, such as applications integration and desktop management. As networking and IT markets converge, telcos will come into increased contact with a range of new competitors, such as the following:

Ó **Systems integrators.** Systems integrators have a strong position in networked IT and are advancing into core telco markets by, for example, buying Layer 2 connectivity services and managing LANs and WANs for enterprise customers, thereby further squeezing telcos' margins.

Ó **IT providers.** These existing players in the enterprise IT space include Accenture, HP, IBM and (India's) Infosys."

Although BT are effectively transforming themselves from a connectivity oriented business to a services business, BT has recognised that it lacked the requisite IT skills to offer the full IT proposition and has addressed this issue through partnerships with some of the IT providers mentioned above .

Telcos are Considering Their Marketplace Options for Software and Content

In order to further develop future revenue opportunities, telcos are considering repositioning themselves to occupy new positions in the IT industry value chain. For example, in a September 2007 newsletter to industry analysts, BT's Group Director of Strategy and Portfolio, stated that: "…Five years ago we made strong decisions to go after broadband and global IT ….We've got to make the same decisions for the two or three years ahead…..I think we're confident that it's probably software and maybe content, but we need to identify exactly where in software and exactly what it would look like in content.."

Thus it appears that the current trend for the turnkey provision of all IT services from increasingly large suppliers will continue.

Do Telco Trends Change the Business Case for Modernisation?

The preceding paragraphs have highlighted several trends in the telecoms industry that are all important to the healthcare industry.

The market profile for IT services is changing due to:

Ó A developing supplier market for turnkey IT services that should lead to economies of scale and increased competition

Ó Deployment of NGN's by European incumbent telco operators that should significantly reduce their operating costs for delivery of voice, video

and data services, and enable the development of innovative services in order to maximise the return on their expensive investments

Ó Importance of information security and associated technologies underpinning trust in technology deployments

Ó Uncertainty in telco markets as NGN's, Fixed Mobile Convergence and new technologies vie for dominance.

These trends will be important because the modernisation of hospitals requires the consumption of significant volumes of new, bandwidth-hungry, IT services delivered over a wide geographical area.

Therefore, the current developments in the telecommunications industry are likely to have a material impact on future business cases for healthcare modernisation.

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