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David Wainwright

Northumbria University, david.wainwright@northumbria.ac.uk

Teresa Waring

Northumbria University, teresa.waring@northumbria.ac.uk

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The Information Management and Technology Strategy of the UK National Health Service: Quo Vadis? A Position Paper

Teresa Waring* and David Wainwright+

**Newcastle Business School
Northumbria University
Newcastle upon Tyne
NE1 8ST*

Email; teresa.waring@northumbria.ac.uk

*+Department of Mathematics and Information Sciences
Northumbria University
Newcastle upon Tyne
NE2 1XE*

Email; david.wainwright@northumbria.ac.uk

Abstract

The year 2011 resulted in the expected demise of the English National Health Service estimated £12 billion pound IT strategy and its associated UK government management infrastructure, the National Programme for Information Technology (NPfIT). A new strategy, "*The Power of Information*" has already been launched in 2012, rising like a Phoenix from the ashes. In this position paper, using an adapted IT maturity model, we argue that many of the lessons from the last decade of failure have not been learnt. This creates an urgent need to rethink a more radical agenda for research with an emphasis on impacting practice towards more localised and effective IT acquisition, development and delivery.

Keywords: IT strategy, NHS IT strategy, Maturity Models, Healthcare Information Systems, Health Information Systems, IT Adoption

Introduction

The publication of the UK National Health Service (NHS) "*The Power of Information*" Strategy (DoH, 2012), accompanied by the "*Digital First*" (<http://digital.innovation.nhs.uk/pg/dashboard>) Digital Service delivery philosophy (http://digital.innovation.nhs.uk/dl/cv_content/32200), heralded a new strategic focus for the provision of information systems (IS) support across the NHS. Unlike its original predecessor, the 1998 "*Information for Health*" Strategy (Burns, 1998), the current strategy, 15 years later, is a radical move away from a centralised approach to delivering information management and technology across the entire landscape of health services. The latest UK

government and health policy, locates the responsibility of delivering the strategy firmly with local healthcare providers with a focus on patient involvement in assisting in removing costs from the overall healthcare system. Between 1998 and 2010 the New Labour government spent over £12.5 billion on a large scale IT programme, the National Programme for IT (NPFIT), which spiralled out of control failing to deliver much real substance, or value, and which many academics believed to be unachievable and ill conceived (Wainwright and Waring, 2000; Norris, 2002; Sauer and Willcocks, 2007; Brennan, 2007; Eason 2007; Currie, 2012).

We argue that current economic conditions, the historical context of the NHS information management and technology strategy and infrastructure, combined with the pace of technological change, places healthcare organisations in an invidious position when attempting to respond effectively to key goals set by strategic policy makers. Our position, and the approach taken within a forthcoming paper, utilises and develops a contextualised maturity model to provide a historical review of the NHS information and technology over the last thirty years. The aim is to understand how IT use within the NHS has developed, grown and been adopted in reality, as opposed to the espoused rhetoric and strategy. Firstly, we evaluate progress made from 1998 until 2010, and then we posit that the history of IT adoption across the NHS indicates that implementing the strategy is extremely problematic, risky, commonly misunderstood and systemically complex. Secondly, we reflect on the ambitious “*The Power of Information*” (DoH, 2012a) strategy and the “*Digital First*” (DoH, 2012b) philosophy, and comment on its potential outcome, given public sector budgets, existing IT capability and infrastructure and the willingness of the public to adopt ‘virtual healthcare’.

Looking through the Maturity Model Lens

Within the context of this position paper we do not intend to critique the maturity model concept or to consider the variety of theoretical models which have emerged from the literature. We acknowledge they exist (Poepplbuss et al, 2011) and believe that they can be of value in a variety of academic and practitioner areas (CMMI Product Team, 2010a; 2010b). Initially, we will focus on the original models and concepts.

Galliers and Sutherland (1991) built on, extended and developed, an Information Systems adoption maturity model that was originally conceived by Gibson and Nolan (1974) and then refined by Nolan (1979); The Nolan stage model (Figure 1). This was an attempt to synthesise a fairly comprehensive and generic model of IT maturity and growth which may be applied in a contingent manner to any suitable organisation. As such it represents a useful heuristic tool to inform both present and future IT capability and has been proposed in a modified form to be suitable to facilitate more effective formulation of IT strategy within the NHS (Galliers, 1994).

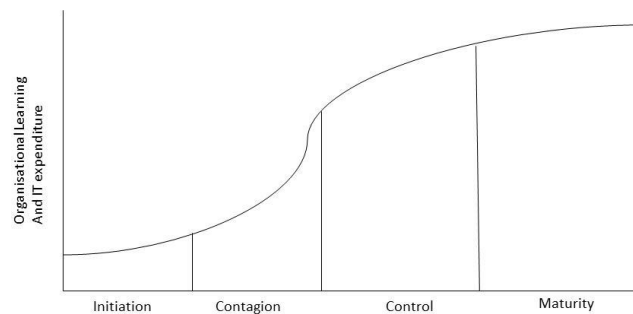


Figure 1: Stages of Growth (amended from Gibson and Nolan, 1974)

Galliers and Sutherland (1991) then re-characterised the maturity model to reflect information systems strategic concerns and developed the six stages to more directly address the organisational dimension as shown in Table 1.

Stage	Interpretation and focus
Adhocracy	Lack of control and understanding of IT issues
Starting the foundations	Increasing unsatisfied demand for IT services and technology – lack of business involvement in IT
Centralised dictatorship	Conflict where IT department comes under scrutiny of senior management and growing end-user computing due to unsatisfactory service from the IT department.
Democratic dialectic and co-operation	Lessons are learnt and more co-operative business and IT relationships emerge.
Entrepreneurial activity	Adding value to IT and systems through effective use of information.
Integrated harmonious relationships	Lessons are absorbed with emphasis on linkages between internal and external data and integration of IT into the mainstream of the organisation.

Table 1 Stages of Growth (adapted from Galliers and Sutherland, 1991)

The NHS does have its own maturity models and many of these can be found on a variety of management consultant and hospital web sites. However they tend to be technology and context specific. The Galliers and Sutherland (1991) model, being generic in nature, has the possibility of being applied to the NHS in the complex area of technology adoption for information systems across both the primary and secondary care sectors, and as such, represents a useful tool to gauge progress. To illustrate this concept the model is applied at a macro-strategic level against the NHS information management and technology strategy to explore its utility in informing the current levels of ambition compared to actual feasibility and progress. Figure 2 represents what we believe to be a selection of the key developments in IM&T within the secondary care sector, mapped on to the Galliers and Sutherland (1991) IS maturity model.

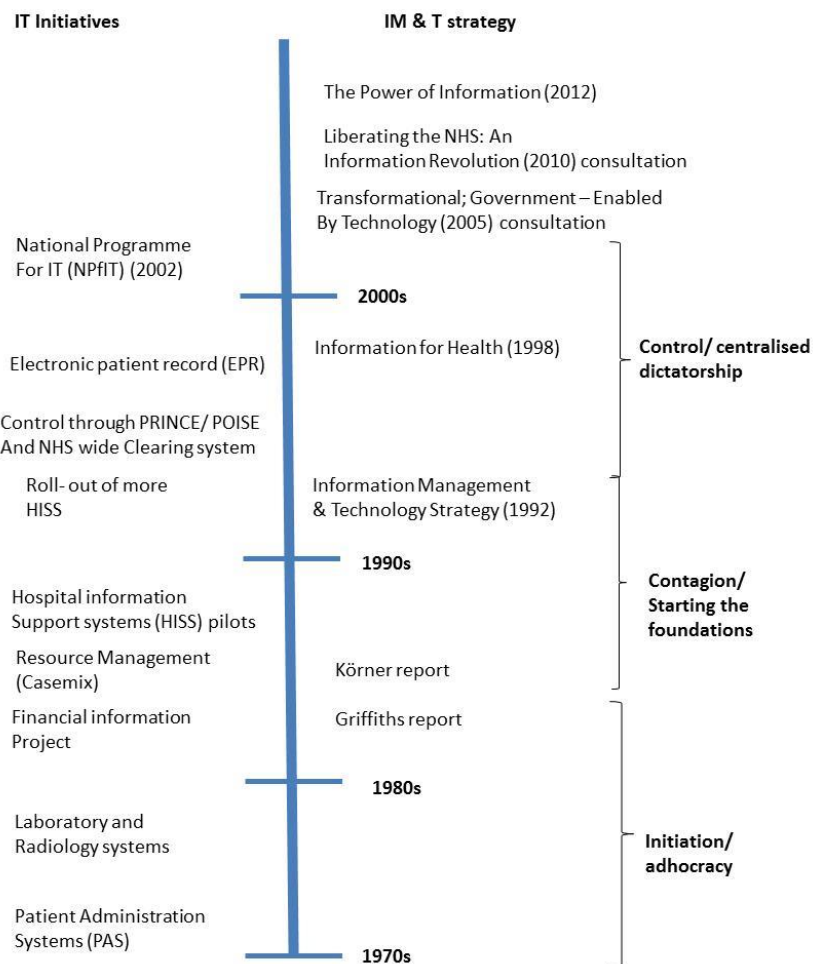


Figure 2: IM&T strategic initiatives in the NHS mapped to the Galliers and Sutherland (1991) maturity model

Adhocracy/Initiation

In this stage information technology is introduced into the organisation and in terms of the NHS this began in the late 1970s with some very basic patient administration systems (PAS) and laboratory systems run on mainframes. However the origins of the IM&T strategy can be found in the Financial Information project (FIP) which was intended to develop systems capable of recording the use of resources within the service. These were localised initiatives often championed by regional health authorities whose sole purpose was to provide accounting information to government with little information gained in return. There was little emphasis on clinical information systems and decision support.

Starting the Foundations/Contagion

This stage implies that there is rapid proliferation of systems, technology and supporting infrastructure. In the NHS this was driven by technological progress (Growth of PCs and lower processing costs), opportunity, political decisions and increased consumer demand. The Körner report and the following Resource Management Initiative in the 1980s suggested and then tried to provide clinical staff with costing information on clinical procedures to aid their decision making. However the technology and information systems were not in place to facilitate this and therefore hospitals were encouraged to develop their own systems. This led to the Hospital Information Support Systems (HISS) pilot sites and roll out of competing vendor systems throughout the 1990s (Thomas et al, 1995). A key driver for this was the adoption of the Enterprise Resource Planning (ERP) philosophy and integrated architectures which had growing success in the manufacturing industries (Waring and Wainwright, 2000). This was built on integrating 3 core applications comprising: the electronic patient record (EPR), Order Communications Systems (OCS), and Patient Administration Systems (PAS). The integrated technological architectures would then facilitate the connection of disparate specialties and services such as diagnostics and picture archiving and communications systems (PACS).

Centralised dictatorship

A series of national audit office reports, including a very damning one on the Darlington Hospital (HISS) adoption, concluded that the HISS programme was problematic and that the anticipated benefits were not realised. The integration of systems was not only a technical problem but included many social and political issues associated with changing embedded

professional practice. A grand strategy was conceived to reconcile these problems of large scale technological integration and re-engineer working practices of administrators, management, clinicians and nurses. This heralded the publication of the *Information for Health* (Burns, 1998) strategy. The development and implementation of the hospital based, and episodic, electronic patient record was seen as central to the success of the strategy alongside a new emphasis on a ‘cradle to grave’ electronic health record (EHR). The EHR or summary care record was to be held on a national data infrastructure called N3 or ‘the spine’ and serviced by a consortium led by British Telecom. The project, estimated at over £12 billion pounds was seen as the most ambitious IT programme worldwide in history. It was to be driven and governed by the Department of Health’s Information Management Group renamed as the National Programme for IT (NpFIT) and later Connecting for Health (CfH). This centralised government agency then administered outsourced contracts initially to 5 regional local service providers (LSPs). The LSPs were consortia of large consultancy companies in association with healthcare IT vendors. They then became part of the NpFIT management structure and worked with their regions (Strategic Health Authorities, Hospitals and Trusts, and Primary Care Trusts) to deliver the core components of the strategy.

By 2010 only 2 of the LSP consortia remained, large companies such as Accenture having withdrawn from the project with large penalties due to non delivery of specified hardware and software. NpFIT was quietly ‘wound down’ in 2011. Large scale centrally controlled strategies and systems were now seen as impossible to deliver. A localised delivery approach based on devolved budgets to hospital trusts and care commissioning groups (CCGs), which are due to replace PCTs in April 2013, replaced NpFIT and CfH.

Democratic dialectic and co-operation, Entrepreneurial activity and Integrated harmonious relationships

The NHS IT strategy never reached the final 3 stages of maturity as proposed by Galliers and Sutherland (1991). This was despite of more than a decade of unprecedented publicly funded investment. Hospital Trusts have operational Patient Administration Systems and fully functional, and in some cases highly successful, ‘islands of information’, such as pathology systems and PACS. The idyll of fully integrated and interoperational EPRs, EHRs, and digital services provisions to patients and primary care has yet to be realised. The close relationship of IT services with clinicians, nurses, and patients is not seen to exist. The new and highly

ambitious 2012 *'The Power of Information'* strategy (DoH, 2012a) is focused on achieving these objectives.

Few lessons have been learnt from the past 2 decades however. The 2012 strategy has been facilitated by consultants and associates from the industry IT vendor consortium, Intellect. It is based on an exciting technological vision of the future and encapsulated in the Digital First (DoH, 2012b) philosophy, associated websites and documents. Little attention is once again being paid to the social, political, cultural and organisational issues that will be associated with effective diffusion of the proposed systems and applications.

Quo Vadis?

The strategy has effectively gone back to 'Square One'. It is a case of 'Quo Vadis'. We are once again at the adhococracy and initiation stage. The new systems will be devolved down to individual Trusts who control their own budgets. IT services will be outsourced, often based on lowest cost and unsubstantiated claims of service provision. The problems associated with this were manifest on the 5th February 2013 with the rapid and catastrophic collapse of one of the largest IT cloud service providers 2E2. Sussex NHS Partnership along with several Trusts in North London had outsourced their IT service provision over a period of 7 years at a cost of £38m. A crisis has occurred where they may only keep their services running if they pay inflated service charges (£40K per week) to keep the data centres running on a weekly basis (<http://www.ehi.co.uk/news/ehi/8373/2e2-customers-to-stump-up-%C2%A31m>).

The difficulty for academics using the maturity model approach is how does it explain what is currently happening in the NHS? The NHS has not reached maturity in its development of integrated systems across the UK but society has moved into a digital age. There is now a critical mass of staff in the NHS both in clinical and management roles who have grasped digital technology in their own personal life, have the skill sets to use digital IT within their professional life and have an expectation that information systems should be seamless. However the skills of the IT support staff expected to deliver the new devolved digital IT strategy within the NHS is less than adequate due to the deskilling and outsourcing of IT services which has taken place within the last fifteen years.

It is clear to us that maturity models have the potential to provide insight into how and why organisations, and their IT, develop in a particular way. As yet, however, they do not necessarily explain what is currently happening in the UK NHS. This is where our work will be developed.

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