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Reshma Gandecha  
*Brunel University*

Christopher Atkinson  
*Brunel University*

Anastasia Papazafeiropoulou  
*Brunel University*

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# MACHINES AND MACHINATIONS: THE INTEGRATED CARE RECORD SERVICE IN THE UK NATIONAL HEALTH SERVICE

**Reshma Gandecha**

Centre of Health Informatics and Computing  
Brunel University  
[reshma.gandecha@brunel.ac.uk](mailto:reshma.gandecha@brunel.ac.uk)

**Christopher Atkinson**

Department of Information Systems and Computing  
Brunel University  
[Christopher.Atkinson@brunel.ac.uk](mailto:Christopher.Atkinson@brunel.ac.uk)

**Anastasia Papazafeiropoulou**

Department of Information Systems and Computing  
Brunel University  
[Natasha.Papazafeiropoulou@brunel.ac.uk](mailto:Natasha.Papazafeiropoulou@brunel.ac.uk)

## Abstract

*This paper examines the use of Actor Network Theory (ANT) as a lens to get a better understanding of the implementation of the Integrated Care Record Service (ICRS) in the UK National Health Service (NHS). Actor Network Theory has been deployed in various environments to achieve a better understanding of the roles of not only the humans but also the artefacts that constitute, in this case, healthcare networks of services and organisations. The theory is used as means of supporting real world interventions, providing a richer understanding of complexities involved and thereby helps management to make better decisions. This study is also explores Latour's concept of machines as machinations, whose role it is to translate other actors into the network. We propose ICRS as a fruitful empirical context for the use of ANT to support decision making for actors in health care provision.*

**Keywords:** Actor Network Theory (ANT), machination, information systems, IS, Integrated Care Record Service (ICRS) implementation, UK National Health Service (NHS)

## Introduction

Actor Network Theory is a paradigm that has its origins with in the work of Callon (1986 and 1991) and Latour (1987, 1992 and 1993) studying science in action and has emerged over the last two decades (Atkinson, 2002). According to the theory the human and machines interaction in a multiplicity of roles, together constitute what is are “socio-technical” networks. These networks act as independent autonomous actors referred to as “actor networks”.

ANT has been used to explore real-life manifestations of actor-networks and to further develop the theory of relationships between human and the non-human actor. Within this paradigm the humans and non-humans are treated symmetrically together they constitute a duality.

In the Information Systems field Walsham (1997) has specifically recognized that ANT can provide an understanding of these complex social interactions involved in IS implementation and contribute to the field in both theoretical and methodological terms. Since then there are a number of authors that have used ANT to explain the information systems phenomena (Bloomfield 1994, Berg, Walsham 1997, Atkinson 2002). For example Sidorova and Sarker (2002) have used ANT to explore how organisational actor networks involving IS fail to consolidate. The authors argue that ANT can provide a richer understanding of complexities

involved in IS failure and therefore help management take better decisions. Giddens' structuration theory, offers an alternative as has been used in some IS studies. However, the theory's inability to incorporate the technology as an actor discounts its use here.

This paper proposes to use Actor-Network Theory (ANT) as a framework or lens to get a better understanding of the Integrated Care Record Service (ICRS) being put into place within the United Kingdom National Health Service (NHS, 2002). It is felt that ANT is an appropriate tool for such an examination for several reasons, the key one being the fact that ANT serves not simply as a theory about how various dichotomies can be brought together and explained, but also as a means of supporting real world interventions. Additionally, ANT offers a framework for understanding how artefacts, as machinations of a focal actor, do or do not convene other actors around themselves. We explore the ICRS in its role as such a machination within the NHS.

ANT can generate a much "richer" understanding of the layers and complexities involved in those real world systems, and thus provide management with the means for better, more participatory, and more integrative record keeping and decision making (Atkinson, 2001). Its use is highly relevant to understanding the ICRS, which is an ambitious, complex system for use of advanced information technology systems to help in the provision of health care in the 21<sup>st</sup> century (Tatnall & Gilding, 1999). ICRS is a system with multidimensional aspects, involving a numerous and shifting set of participants ("actors" and "actants" in ANT parlance), which may lead to changes in the way those various participants— patients, managers, medical professionals, and users— go about performing their individual tasks and receive services.

In order to better understand the role that Actor-Network Theory can play in ICRS implementation, a part of the paper examines the theory itself, how it has evolved to its current status, previous examples of its use in health care settings, and its strengths and limitations. A description of the Integrated Care Records Service is included to provide a basic understanding of how the system is scheduled to work.

## Actor Network Theory

Actor Network Theory (ANT) is an especially promising basis for theories of information and communication technologies because this theoretical framework provides a vocabulary and a conceptual apparatus that allows us to analyse the role of technology without resorting to simplistic and deterministic searches for causal connections. When we use actor network theory, this is the way the paradigm operates; the different factors form the network and the individual undertaking the task is the network (Hanseth, 2002).

Actor-Network Theory is particularly promising as it ignores the micro-macro dichotomy and includes all relevant entities irrespective of scale. This is particularly apposite to our explorations of the ICRS and NHS as they span from the individual patient encounter, via the various organisational care services to the Ministry of Health and the Government itself.

ANT provides us with the concept of the actor network and the dynamics of their coming into being. Actor networks are heterogeneous congregations of humans and artefacts of all kinds. They convene together at the prompting of a focal actor, who problematises a situation in the real world then seeks to address it through the creation of an actor network. The network becomes the solution to the problematisation. The focal actor achieves this through a process of what is called translation. Humans and artefacts are persuaded, cajoled, prompted and beguiled into joining the network. In the case of artefacts, such as SIT, they may be designed and developed or procured. Technologies that have the focal actor's interests inscribed in them are used, as Latour () says, as machinations, strategies to translate other actors around themselves into and to further consolidate the network. They can be powerful in creating an *intéressement*, a closure around the other actors, locking them in, *enrolling* them into the network. Multiple actors, once enrolled, are then *mobilised* to address the problematisation. In doing so, the actors traverse the obligatory passage point originally envisaged by the focal actor. They become hybrid entities. This marks the irreversible convocation of the network. The network is further consolidated by addressing additional obligatory passage points. New alliance may form, and the network can become unstable. In turn these are also formed from objects or actors in other networks, in some instances another network may be 'black boxed' to appear as a single actor when it is in reality a composite entity (Tatnall and Gilding, 1999).

ANT with its focus on its description of heterogeneous networks offers an ontological framework for understanding real world situations, here in health, as presented by (Atkinson 2002). As for ANT's epistemology, Lemke (2001) sees ANT as providing an "actant-relational epistemology", in which those who are seeking to understand a network become part of it. Latour also expounds on this position when he says "... whenever you want to understand a network, go look for the actors, but when you want to understand an actor go look through the net the work it has traced" (Latour 2001).

This study uses ANT’s ontology and epistemology for developing a theoretical sensitivity that allows us to extract data from disparate sources such as the 21 Century ICRS Strategy document as well as from unstructured interviews with number of NHS Trust managers and clinicians within the UK. A representative sample of interviews were conducted and recorded.

### The Integrated Care Records Service as an Actor

The Integrated Care Records Service (ICRS) is one of the four key deliverables set out in the new NHS IT procurement strategy 'Delivering 21st century IT support for the NHS', published in June 2002. The ICRS is a ‘broad, continuously expanding and maturing portfolio of services covering the generation, movement and access to health records’, which includes electronic prescribing in hospitals and workflow capacities to manage patients care pathways through the NHS.

The benefits of ICRS include convenience and confidence, integration of care, improving outcomes, using evidence, supporting analysis and improving efficiency (NHSIA, 1998). With estimates that 25% of nurse and doctor time is taken up collecting data and the potential increase in speed and efficiency of communication the benefits appear very straightforward with the promise of “seamless care” (NHSIA, 1998). It is seen by the government as a powerful machination for convening a multiplicity of services together for the benefit of the patient and the care service providers.

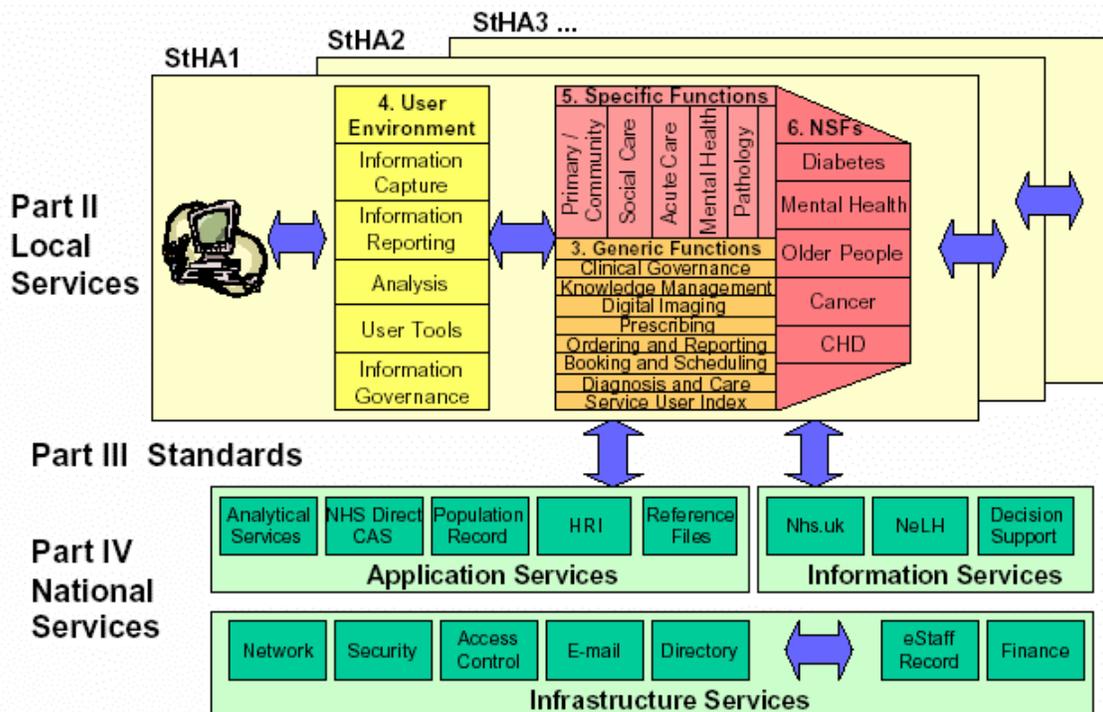


Figure 1. The ICRS Structure (Adapted from NHS 2002)

When looking at the implementation one of the outstanding factors is the lack of standard EHR implementation procedures (NHSIA, 1999). The department of Health have recognised the need for the service to be fast and efficient with care records, but that these should not only be the health service records, but integrated with social care records, and focusing on the patient in an holistic manner, not designed around the institutions (Department of Health, 2002). In looking at the changes that have been proposed the main factor is the need for a single national system, rather than a collection of smaller system that are then linked up (Department of Health, 2002). This will allow local flexibility, but integrated health records across the different health regions.

The implemented integrated care records services (ICRS) records service will be:

- Integrated across all health and social care settings;
- Designed around the patient, and not around individual institutions;
- Will be able to support the implementation of care pathways as part of National Service Frameworks (NSFs).

The proposed ICRS moves away from the model of a number of separate information systems based primarily around organisational structures to one in which care professionals in many organisations are provided access to the one patient integrated record service. The services will include access to records and the functionality needed to support clinical practice and the provision of social care. The ICRS, if realised, would have a powerful role in convening the necessary care givers around the individual in need. ICRS incorporates concepts of both the organisation-specific Electronic Patient Records and also the cradle-to-grave Electronic Health Record and supersedes the Information for Health Strategy (NHS 1998). A Schematic Layout for ICRS is presented in figure 1.

Following this model, ANT can be used to analyse the rationale behind the successful or unsuccessful implementation of the ICRS. The key human actors in major ICRS implementation include board members, senior management, clinicians, particularly doctors and nurses, technical staff project managers, administrative, clerical staff and the patients. There are also non-human actors such as the structure of the local health economy, Information for Health Strategy, models such as the 21<sup>st</sup> Century Strategy paper, Medical records and the capabilities of the ICRS suppliers. On reflection what can be discovered is a complex organisational/contextual dynamic, where the Government's current political agenda mediates organisational forms and performance with respect to external changes such as shifting the balance of power (Information For Health Strategy 1998-2005) from institutes to patient's and their careers.

## Discussion

Latour (1987) says of the role of machine actors tying actor networks together:

“The simplest means of transforming the juxtaposed set of allies into a whole that acts as one is to tie the assembled forces to one another, that is to build a *machine*. A machine as its name implies, is first of all, a machination, a stratagem, a kind of cunning, where borrowed forces keep one another in check so that none can fly apart from that group”. (pg 128-129)

The ICRS, in Latour's terms we would argue, can be seen as a machination on behalf of the UK government, a machine to convene disparate individual, organisational and institutional actors associated with care together at several levels to form a greater machine with multiple machinations. These levels within care can be seen as: firstly those of the individual in need, secondly those disparate carers who need to communicate with each other about both individual and numbers of patients. Thirdly, are the organisations that manage and deliver care to groups of patients and fourthly those organisations that plan and orchestrate care at a regional level. Finally, within the government itself, those Ministries under whose disparate aegis these care services come.

The ICRS is intended to be a machination on behalf of the patient/client as the focal actor within an episodic network. Its role, firstly, is to support the person, the patient in healthcare and client in social care, in convening and co-ordinating a number of care givers around themselves to provide the episode or ongoing care in an integrated fashion. The ICRS, is also the virtual place where a corporeal patient/client is embodied electronically (Berg et al. 1997) within a set of case notes and services, accessible to all carer. So secondly it is a machination of the case manger, or care team who is seeking to provide care through orchestrating and communicating across multiple care givers, clinicians and social workers, at one time for the individual and groups patient/clients. It consolidates the care team, by having their interests as well as the patients inscribed within it.

Thirdly, the ICRS is a machination of the government to bring what have been traditionally disparate care sectors and organisations together: social services, hospitals, general practices, mental health services, and so on. To get them to talk and work together, using case and aggregated data, on the delivery of care, its standards and how to integrate them across agencies in the future. Fourthly, to enable social and health services at local and regional levels to joint plan and set targets for and monitor the delivery of integrated so as to address and improve the health and social well being of large groups of patients/clients, as well as manage resources. Fifth and finally it is, we conjecture, a cunning stratagem of the Ministry of Health to bring social care back under its aegis. Social care services have been within the remit of the, Department of Work and Pensions for many years, anything that can assist in bringing it back into the health fold, such as the ICRS, is a machination of the Minister of Sate for Health of the highest order and therefore priority.

All these machinations are encapsulated within the ICRS as exemplified the government's Ministry of Health *National Specification for Integrated Care Records Service* (NHS 2002) when they say: “There is a core set of generic functions, to operate across the whole health community. These include the patient/service user index, diagnosis, treatment and care management, booking and scheduling, ordering and results reporting, prescribing, digital imaging, access to knowledge (developing into decision support), clinical governance and operational service management ... It is important that such services are provided

within a common user environment that enables the capture of information, the reporting and analysis of such information, and the provision of flexibility and user tools to support local development. It is vital that the services are based around a robust framework of Information Governance, addressing security, confidentiality and data quality issues”

However given the history of public service IS&T initiatives (Fitzgerald 2000) (Finkelstein and Dowell 1996)(Jones 2002) within the UK health service, we would see the ICRS as a machination that would have to forge alliances at local and government levels and with many other human and IS&T actors if it is to be successfully implemented and its benefits realised. The NHS Information Authority (NHSIA) who is responsible for the ICRS does not have the national or local power to affect the politics of organisational change necessary to convene the people and organisations around the ICRS into the care networks envisaged. Only if the government and its alliances with its proxy organisational actors of the Regions, Local Health Authorities and Primary Care Trusts as well as the numerous clinical professions who provide care, the latter notorious for their non-compliance with government machinations, will this be achieved. The individual patient alone is political too weak; collectively though they can vote out the government, so they too must be politically translated into accepting and forming an alliance with the ICRS. To have all these interests inscribed within the ICRS so as to translate them will be a machination in its own right. Whether the government will accomplish those necessary translations and alliances, to take advantage of the ICRS as a machination working on behalf of the patient and all the other institutional actors within healthcare only time will tell; though history seems to be against it.

## Conclusions

It is argued here that the use of ANT analysis in the ICRS UK NHS environment can provide vision of what the future will hold for ICRS when this actor network comes into being. This ANT lens will look at organisational /IS actors and how that integrates together and the role of ICRS within the new emergent network. Given the level of complexity as well as the mix of human and non-human ingredients within the ICRS, Actor-Network Theory is a strong candidate for the type of examination that will capture both the flaws and the strong points in the system. Additionally, ANT can be used as a diagnostic tool to help calibrate (or re-calibrate) the universal record system if slippage occurs. Its use here reveals the ICRS as a machination on behalf of the government.

ANT does not have a long history, and its roots are in the social sciences rather than information systems, but it also draws on various technical systems and soft system modelling. If the theory can be successfully used for analysis in an environment such as the ICRS implementation process, the findings may also have implications for how Information Management and Strategy Groups think about implementation in general of the futuristic Electronic Patient Record System. This focus may contribute to better implementation practices by comparing strategies and possible future research. ANT offers an opportunity to move away from the anthropocentric nature of organisational development approaches, the majority of which have no way of encompassing information systems.

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