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A Manifesto for a Socio-Technical Approach to NHS and Social Care IT-enabled business change – To deliver effective high quality health and social care for all

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Background to the Manifesto

The National Audit Office's report on *"Delivering successful IT-enabled business change"* highlights the challenges of implementing technology-based projects on time and within budget. Projects across the UK health and social care domain have not been immune to these challenges, including most recently the Integrated Children's System in England.

In many sectors of the UK economy the drive to get the technology 'on desk, on time, and on budget' can mitigate against developing a full understanding and consideration of how the changes may be of real practical value to users and clients.

Our manifesto is based on the premise that through both *learning* from past successes and problems in the Health and Social Care sector and *applying* socio-technical principles to future IT projects, we can deliver both better health and care and better value for money.

Core Argument

80% of IT projects are known to fail. Adopting a **socio-technical** approach will help them to succeed in the future.

The socio-technical proposition is simply that any work system comprises both a social system (including the staff, their working practices, job roles, culture and goals) and a technical system (the tools and technologies that support and enable work processes). These elements together form a single system comprising interacting parts. The technical and the social elements need to be jointly designed (or redesigned) so that they are congruent and support one another in delivering a better service. Focusing on one aspect alone is likely to be sub-optimal and wastes money (Clegg, 2008). Thus projects that just focus on the IT will almost always fail to deliver the full benefits.

The socio-technical approach

A key characteristic of socio-technical thinking lies in its stress on developing new ways of working that meet the needs of the clients (patients) and users (service providers). User ownership and engagement are critical to success - simply 'getting the IT in' is not enough.

Questions for Senior Executives

If you are a Senior Executive charged with responsibilities for improving health and/ or social care through IT-enabled business change, you should ask yourself and a cross section of Clinicians, Carers, Patients and Clients the following questions –

- What are the practical challenges that we need to address to improve the quality and effectiveness of care?
- What changes do we need to make in new working practices and processes? And only then..
- How can IT or new information management facilitate this?
- What is our track record of managing changes of this kind?
- Are we genuinely focusing on meeting the needs of service users and providers?
- Have our suppliers got the right mindset, i.e., that they are meeting the needs of service users and providers? (rather than providing IT)
- Have we got flexible approaches to planning and project management so that we can meet their needs?
- Have we identified real benefits on the ground?
- Have we got genuine local leadership, ownership and engagement?
- Are we using IT as the servant of change rather than its master?
- Have we got the necessary skills and capabilities for projects of this kind?
- Have we got an evaluation and monitoring plan in place so that we can learn and adapt as we go?

You need to have good and widely shared answers to these questions – if not, there is a real risk that your project will fail to meet its objectives.

Box 1

This approach focuses on service improvement by planning and delivering changes in working practices and job roles supported by technology. Local end-users, including senior managers, need to be at the centre of any change programme. This means empowering leaders to support local ownership, encouraging customisation and appropriate adaptation of processes and technologies. The socio-technical approach will intuitively resonate with anyone involved in the health and social care domains, inspiring constructive action. Together we can bring about the necessary changes to ensure a joined-up socio-technical approach is consistently adopted to help technology supported projects succeed in the future.

A need for Action

In December 2009, 35 Delegates from across health and social care, encompassing informatics, clinical functions and academia in England, Scotland and Wales, including the authors of this manifesto, participated in a socio-technical Think-Tank. The event was organised by the UK Faculty of Health Informatics in conjunction with the British Computer Society's Socio-Technical Group, the University of Central Lancashire (UCLan) and the University of Leeds. The event concluded that "technology-push", attributable to the need to implement new technologies 'on desk, on time, and on budget' should be replaced with the more systemic socio-technical approach, supported by a robust business case. Delegates agreed on the need for action to bring about and apply consistently these new ways of working. This manifesto is one such action.

One of the key aims of the event was to help Senior Managers working in Health or Social Care ask the right questions (see box 1) and indentify what a socio-technical approach involves.

What does a socio-technical approach mean in practice?

Delegates at the workshop identified a number of successful projects from across the UK that have adopted a socio-technical approach. The section below summarises some of these examples and also includes an example of a project where a socio-technical approach wasn't adopted and is proving highly problematic as a result.

Alongside the practical case studies we also present a set of underlying principles (see box 2) which capture the essence of the approach.

NHS Greater Glasgow & Clyde

The development of the Clinical Portal to support the opening of the New Stobhill and Victoria Hospitals in 2009 had user involvement at the heart of its development and the project was implemented on time and within budget. The development of a clinical portal was a key aspect of the move into new clinical facilities on 2 new hospital sites. Clinicians, as the key service users, were engaged to identify the most important pieces of information in the paper case record and from this IT led the work to interface these 'Top 16' elements into SCI Store – Glasgow's data repository – which included clinical and referral letters, notes and lab reports.

Engaging staff from all disciplines was a key requirement to both ownership and compliance using clinical, not IT, terminology. Changes in processes were both necessary, directed and supported through a dedicated team supporting the change in working practices and applied not only to the clinical environment but to a culture change. This extended to Diagnostics, Services and Management to support the implementation of a system designed to be used as a primary source of information to compete with and then take over from paper.

Guiding principles for Socio-Technical Change

Principle 1 – "There is no such thing as an IT project, merely business change projects, mediated by people and IT" (Prof Jim Norton, Parliamentary Office of Science and Technology, 2006). This is a fundamental point. Change is NOT about IT. As soon as work in this area gets translated into an "IT project", we focus too much on getting the kit on desks, on time, on budget. We lose the plot. Change is all about improving the various ways in which we deliver health and social care. This mindset is fundamental.

Principle 2 – Improvements require a Systems approach. Improving care delivery will almost always require changes in working practices, in roles and responsibilities, and in processes. Our working cultures may need to change. At its core, this means we do things differently and, of course, this may need to be supported and enabled by better information systems and some new IT. IT is the servant of change, not its master.

Principle 3 – Local initiatives work. There are many examples of local initiatives that deliver improvements in health and social care. These almost always involve staff at local level working with other professionals to develop new ways of working. The energy that exists for improvement at local level is a massive lever for successful change. The very best local initiatives have local champions who work with people they know to deliver improvements.

Principle 4 – Pull beats push every time. Too many change projects are designed centrally (usually by people with the best of motives) and then 'pushed' out to the local end-user communities. And usually they don't deliver the value and improvements that were hoped for. It is clear in this area that Pull projects, where the clinical and care teams are seeking improvements in how they deliver care, are the most successful. Innovation works best when local teams lead and own the changes they need in order to help them deliver better care.

Box 2

Understanding the clinical environment in terms of both how it was now, and how it could be in the new hospitals, was another key component of its eventual success. The recruitment of enthusiastic and pragmatic Clinicians such as the IT Nurse Consultant, Pauline McLean was a key factor in ensuring that dialogue was primarily focused on addressing clinical and patient information needs and issues and not IT.

The project specification identified the following key elements that were viewed by Clinicians as being essential:

- Ease of Use – intuitive, reduce typing IDs
- Individual user configuration
- Single Sign on
- Patient Lists – Inpatient/ED/Clinic/Day Caseload/Theatre Lists
    - attending presently and in future
    - recent attendances
- Patient-centric clinical information
- Launching applications with the patient in context
- Real time information
- Data Sharing
- Links to useful information – eLibrary, BNF, Toxbase
- Scanned case notes
- Role Based Access / Audit

The high and increasing level of use of the portal since its implementation in 2008 has been a great indicator of its success. Winning over the hearts and minds of clinicians was achieved by viewing information as something which is of real and practical benefit for them, rather than as part of an IT system which is done to them!

For further information on this project contact Pauline McLean IT Nurse Consultant, HI&T NHS Greater Glasgow & Clyde, at: **pauline.mclean@ggc.scot.nhs.uk**, or Scott Hendry, Clinical Portal Programme Manager at: **scott.hendry@ggc.scot.nhs.uk**

Another project in Scotland which was clinically driven and successful was the Emergency Care Summary record, a system for clinicians which was developed by a cross-Scotland multi-disciplinary team led by an Edinburgh GP.

Emergency Care Summary (ECS)

Aims

To enable clinicians working in Out of Hours organisations to have access to information from the patient's GP practice, in order to provide safer care for patients when GP surgeries are closed. The plan was to provide these clinicians with an up-to-date list of the patient's current medications and allergies at the point of care, derived for consenting patients from the GP record system.

Process for capturing and refining system requirements

This was clinically led by the GP chair of Scottish Clinical Information Management in Practice (SCIMP, **www.scimp.scot.nhs.uk**) and included extensive consultation with and involvement of RCGP, Scottish General Practitioners Committee etc. Focus groups were held with relevant patient groups to explore their views and there was consultation with the Scottish Information Commissioner re-data access model.

Implementation and roll out

Awareness of the risk and containment of mission creep by steering group, who kept the list of system users and the dataset to the minimum required to satisfy the above aim. Novel access model developed to address

Principle 5 – Focus on benefits
Change projects work best when the local teams can see a direct benefit in the near future. They will invest time and effort if they can see that the changes will improve care, benefit patients and clients, improve the service they give, and make their job easier. If they can see real local benefits, change is worth doing.

Principle 6 – Join it all up!
All the above have at their heart a focus on changing how we do things locally, capitalising on the energy and enthusiasm of local professionals to deliver better care. But of course, it does all need stitching together so that what works in Glasgow can still be coordinated with what works in Gwent. Common national standards and inter-operable infrastructure are a pre-requisite for joined-up local systems.

Principle 7 -- Monitoring and evaluation
Monitoring and evaluation are key to improvement. It is clear that successful projects all include careful monitoring and evaluation as they progress. Data of this kind helps us learn as we go, allowing us to adjust our plans and re-focus our efforts and resources as necessary. This is not about 'ticking boxes' but about making genuine efforts to learn. Thus, for example, Are we meeting our objectives? Is care improving? What are the health and social care professionals telling us?

Box 2 ctd

patient, GP and Information Commissioner concerns: opt-out for patient record extract to be copied to the central database; opt-in at the point of care to allow OOH clinicians access to data.

Pilot in 2 Health Board sites, necessary changes made and then roll out over a 1 year period to other Health Boards. Training and education was rolled out at the same time as the system was being implemented. Access to the ECS through integration with the A&E system PMR, the NHS24 system and Adastra and Taycare, the Out of Hours systems, to allow users secure and seamless access to ECS data.

Key achievements of ECS

- The participation rate for GP Practices is 99% of all Scottish practices with 1014 sending ECS extract files. 336 GP Practices have at least 1 patient who has opted out. By 2006, over 99% of Scottish patients had an ECS record, and only 1700 patients (one in 2500 of the Scottish population) had chosen to 'opt out'.

- 4.2 million accesses by over 8,500 users have been made to ECS records since the national launch in September 2006. The number of accesses to ECS gradually increased to 40,000 per week, with an increase of 37% in 2009 compared to 2008. Staff in all Health Boards except NHS Orkney have used ECS to access patient details.

- ECS is currently available to all clinicians working in Out Of Hours centres, NHS24, A&E Departments and Acute Receiving Units who take unscheduled admissions, provided the patient has given their consent (though a "break glass" option is available for unconscious patients). ECS provides patient data within 5 seconds to authorised users and is now relied on routinely during the unscheduled care of patients in settings such as NHS24:

- In a critical incident study of A&E and out of hours staff, 93% of 64 respondents rated ECS as "helpful" or "very helpful" and 47% said that data available through ECS had made a difference to their management of the patient, for example "ECS has been useful where GPs have sent in handwritten lists but missed some drugs e.g., a recent patient with no mention of levothyroxine"

- In a similar study of NHS24 staff, 81% of 120 respondents said they found the ECS information "helpful" or "very helpful" and 20% said that data available through ECS had changed their management, e.g., 'Very helpful - especially with elderly patients who often don't know what medical problems they have'

- In 2009 a doctor was caught soon after accessing celebrity ECS records out of curiosity as a result of ECS audit checks carried out routinely by GP practice managers.

- In 2009, the dataset was extended to include items specified in the Gold Standards Framework for palliative care, which was already in place in many practices in a paper based form. This is known as the ePCS (Palliative Care Summary) and is now being rolled out in Lothian and Grampian with other Health Boards following on throughout 2010.

- ECS received the BT / eHealth Insider Best use of IM&T to promote patient safety award, 2008.

Northern Ireland has announced that all four Health Boards will be adopting ECS for sharing information between GPs and Emergency and OOH departments, so that patients in Northern Ireland will soon benefit from the developments and lessons learned from ECS.

Emerging socio-technical issues

- There are continuing demands to access ECS from other clinical groups, e.g., community pharmacists, ambulance staff, doctors working in other hospital departments and outpatient clinics, in order to bring these benefits to a larger number of patients and clinicians. Access by some of these groups is currently being piloted.

- Doubts were expressed by 36% of NHS24 respondents over the quality of ECS drugs data. This is probably because some GPs are unaware of the secondary use being made of their practice data. The plan is to encourage GPs to update drug records with drugs prescribed at home or by others, and to delete obsolete drugs from the record, to ensure the ECS extract is accurate.

- Eight GP practices in Glasgow out of the 1,030 in Scotland are refusing to upload information to the system

The Integrated Children's System – England

The importance of the socio-technical approach is underlined in cases where its underlying principles have not been followed. The Integrated Children's System (ICS) provides such a cautionary tale. Conceived in response to high profile child deaths, such as Victoria Climbie, the ICS aimed at improving the safeguarding of children, through the imposition of formal procedures and assessment methods in statutory children's services. After a period of piloting, the ICS was "rolled out" nationally from early 2007. In reflecting on the widespread problems encountered during its

implementation, the research team led by Professor Sue White and Professor Dave Wastell concluded their critical evaluation as follows:

"Although this paper challenges the huge investment in systems of performance management and IT, we are not arguing for a wholesale Luddite abandonment of new modes of governance and new technology. The remedy lies elsewhere, in a radically different approach to design, an approach which draws on core socio-technical precepts of user participation, minimum critical specification and the optimisation of local autonomy.

Above all, it is essential to found the design of systems on the needs of users and a thorough understanding of their working practices. The arguments are both ethical and technical. Technically, user-centred design is essential in order to gain reliable knowledge for designing new tools and processes. Failure to involve users in the development of new systems also inevitably engenders alienation, and there were unmistakable signs of practitioner disquiet in pilot studies of the ICS. It is regrettable that such early warning signals apparently went unheeded. As a result, the strictures of the work regime imposed by ICS have not only produced unsafe practices but are now provoking overt resistance from an increasingly frustrated and mutinous workforce."

Other socio-technical lessons to be learned from the ICS "failure" include: the need for engaged senior management; the importance of putting work organisation first; recognition that simple solutions are often best ("small is beautiful"); the need to be innovative in the use of technology; the imperative to examine all stake-holder positions in a multi-perspective approach; and the need to be vigilant for unintended consequences and perverse incentives.

The vicissitudes of the ICS ultimately led to a fundamental review of its design, initiated in the summer of 2009 at the behest of the Social Work Task Force. To a degree, lessons have been learned at a national level; there is a welcome new emphasis in the review on usability and the need to engage practitioners. There are also individual authorities, such as Kensington and Chelsea, who have achieved noteworthy success through the development of local solutions following more of a socio-technical approach.

For further information on the lessons learned from the ICS contact David Wastell, Professor of Information Systems, Nottingham University Business School **david.wastell@nottingham.ac.uk**

The Welsh Clinical Portal

Healthcare information within NHS Wales was fragmented and held in silos. Clinicians needed a way of making it easier to access information to support clinical decision making.

To address this, the Welsh Clinical Portal has been developed to bring together information about the patient in one place, and is part of the NHS Wales strategy to create a **single integrated electronic health record**.

The Portal is a sophisticated web service that works in a similar way to sites like Amazon, but it has been designed by doctors and nurses working in NHS Wales to help them in their day-to-day work. It will provide a safer working environment, with information visible instantly, enabling staff to look across the care pathway.

The Portal links the many disparate information systems used in hospitals and in time will also provide access to the GP-held patient record, linking primary and secondary care information.

The single electronic record has four key components, which will supply all the electronic information sources needed to support patient care.

The components are:
- The **Welsh Clinical Portal**, which brings together information from many hospital computer systems (http://www.wales.nhs.uk/ihc/page.cfm?orgid=770&pid=33557)
- The **Individual Health Record**, which gives emergency and out of hours doctors access to GP-held patient records (http://www.wales.nhs.uk/ihc/page.cfm?orgid=770&pid=34153)
- The **Welsh Clinical Communications Gateway,** which handles referrals between GPs and hospitals (http://www.wales.nhs.uk/ihc/page.cfm?orgid=770&pid=33626\)
- **My Health Online**, the patients' website that lets patients use the internet to book appointments with their GP or request repeat prescriptions (http://www.wales.nhs.uk/ihc/page.cfm?orgid=770&pid=33598) .

The image below illustrates the information flow for a single integrated electronic record.
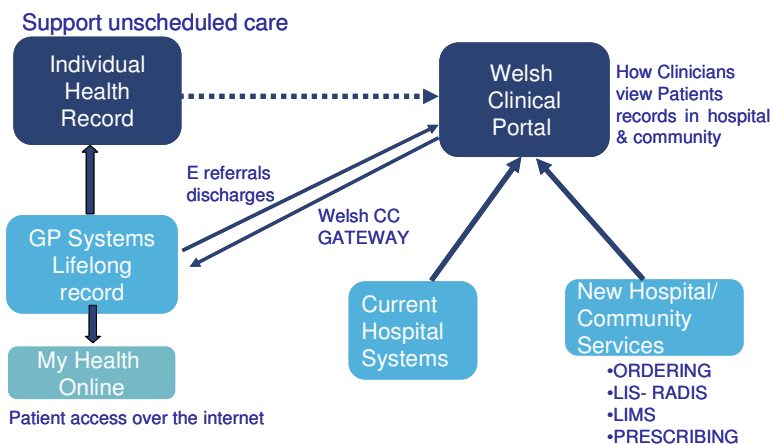
Figure 1 Information flow for a single integrated electronic record

Engagement

Healthcare professionals have been involved in the design of the Portal from the start, through an ongoing programme of user-centred design workshops that have identified exactly what is needed from technology and information within the care setting. This has encompassed stakeholders from all disciplines including, radiology and pathology, and at all levels, from clinical and nursing directors to junior doctors and nurses.

The Portal is being developed incrementally, with feasibility studies and pilots allowing clinical staff to become actively involved at every stage. Each of the seven Local Health Boards is currently developing an implementation plan for the first phase of the Portal, which streamlines test requesting and results reporting.

The Welsh Clinical Portal is being built in Wales by NHS IT and software experts, with support from specialist commercial suppliers. Before the Portal is put into use, each version is deployed and tested by clinicians and IT staff at Informing Healthcare's health informatics laboratory at Swansea University. A major role for the lab is to try out and test IT solutions before introduction into the live NHS Wales environment.

Business Planning and Business Case process

By convention, our focus in Wales has been on delivering tangible benefits for patients through small service improvement projects that allow us to adapt and learn from new ways of using or linking information. Once we know they work and meet the expectations of both clinicians and patients, we can move ahead with a national solution.

Across all our programmes of work, we operate a stepped approach that demonstrates good strategic fit, best value for money, optimal resourcing in the context of resource constraints, and achievability of the management plans. This is achieved through the Strategic Outline Plan (SOP), which outlines the five year vision, our strategic objectives and the business need for NHS Wales.

Annually, we review progress against the SOP and then financial allocations are made on the basis of a series of business cases which justify investment in the overall programme of activities. As part of the annual review we evaluate progress and consult closely with our stakeholders to inform future direction. At Hywel Dda Health Board, an early-adopter site for the Portal, we are working in partnership with clinicians, radiologists and pathologists. Their views, based on use of the Portal, inform future development.

This joint approach gives us the flexibility to re-prioritise, where necessary, to meet the needs of patients and of NHS Wales, and ensures new products and services are developed in the context of improving patient care. It also ensures that resources and investment in information technology are aligned to benefits, which avoids the risk of IT projects begin perceived as 'stand alone' investments disconnected from patient care.

Implementation

The Welsh Clinical Portal has the backing of the Welsh Assembly Government. The first phase of the Portal, has been piloted at a number of hospitals and is in use in out-patients and on some wards at West Wales General, where it is allowing health professionals to request pathology tests electronically and action results.

The Portal has the flexibility to incorporate new features or systems into the architecture. The lessons from history and international benchmarks are that this capability is the one factor that ensures success in the medium to long term.

Portal key achievements
- Faster access to tests in progress
- Improved patient safety
- Transcription of pathology orders eliminated
- Single log on to multiple systems
- Decision support when requesting tests
- Avoids test duplication, paper results are eliminated
- A national solution to meet local needs
- Makes best use of existing expertise across Wales
- It does things electronically that we can't do currently - delivering faster communications across the service
- Reduced need for training

Emerging socio-technical issues
Growing demands for integrated information across health and social care, and the ability to see what has happened to the service user throughout their journey.

Contact
For more information take at look at www.wales.nhs.uk/ihc or contact Gill Friend, Head of Communications, on 01656 678113 **gill.friend@wales.nhs.uk**

More detail on these, and other projects, can be found in the workshop report on the BCS website at:
www.bcs.org/sociotechnical

How do we take this agenda forward?

The case studies above reveal there exist substantial local successes in developing improved health and social care. To achieve a wider and more consistent impact there are three essential components, as described below.

1. **Capacity** – we need to enhance skills in core socio-technical methods, supported by case studies, reference sites, toolkits, networks etc.
2. **Motivation** – adoption will be driven largely by local enthusiasm, supported by top down actions such as national standards, marketing and promotion
3. **Leadership** – this is necessary to channel local and national support. A receptive political environment, where changes in health and care services are measured by improvements in the quality of care rather than the installation of IT, will help.

The feeling of the Think-Tank was that the anticipated drop in public spending is likely to affect the implementation of new IT systems, but may paradoxically provide an impetus for getting better value for money by adopting socio-technical approaches to change.
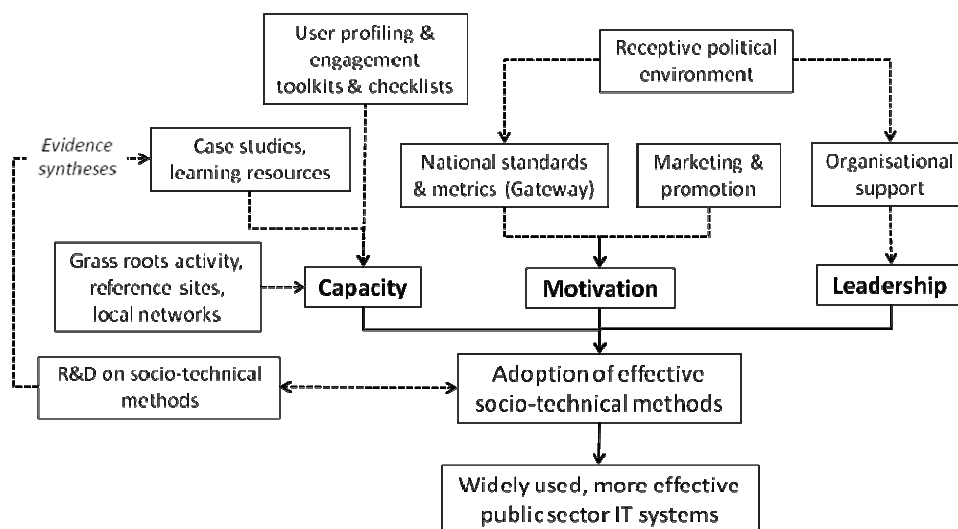
Figure 2 An illustration of how we take this agenda forward

How will we know if we are making progress?

All innovations are easier to manage if they are monitored and socio-technical approaches are no exception. At the workshop we agreed on the following measures that would indicate adoption and success of the socio-technical approach:

Outcome indicators:
- Better health and social care for the clients
- New, more effective ways of working
- Better systems, in wider use, faster
- Greater Return on Investment quantified from a service perspective

Structural indicators:
- Leaders of the change programmes will be keen users, involving engaged and enthusiastic CEOs
- There will be a full understanding of user attitudes & knowledge
- Competencies: people involved in projects will have taken part in opportunities to learn about the approach and will be able to exercise key socio-technical skills in both planning and implementing the changes
- There will be an increase in the size of socio-technical communities of practice – e.g., growth in membership of the BCS Socio-Technical group

Process indicators:
- Socio-technical approaches will be referred to in policy documents, national standards and guidelines e.g., OGC, local business cases, and in tenders etc.
- "Utilisation rate" – evidence of marker techniques (e.g., rapid prototyping) being used; download rates for relevant toolkits; demand for experts, MSc courses, textbooks, article downloads & citations
- SMEs that serve the market will provide evidence of such approaches

What next?

We are organising a meeting to discuss these issues and to take this agenda forward.
The meeting will be held at the British Computer Society in central London.
If you wish to be kept informed about this, please let us know by emailing your interest to Liam Irwin at –
l.d.irwin@lubs.leeds.ac.uk

In addition, we invite you to become a member of the UK Faculty of Health Informatics. To apply for membership go to:

http://www.espace.connectingforhealth.nhs.uk/community/nhs-faculty-HI
You will be prompted to enter your eSpace log-in details or to apply for membership on clicking this link

The purpose of the UK Faculty of Health Informatics is:
To stimulate the uptake and application of Informatics research and development within UK Health and Social Care services in order to improve the quality of care for all.

This is done through providing opportunities for anyone with a passion for applying their Informatics knowledge and experience in practice to participate in:
- *an engaging online discussion forum*
- *vibrant face to face events and meetings*
- *writing relevant and stimulating reports and papers*
- *sharing their own research findings*
- *contributing an informatics perspective to future health and social care policy*

Membership and attendance at all Faculty events is free of charge.

We also invite you to join the British Computer Society Socio-Technical Group. Further details can be found at
www.bcs.org/sociotechnical

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