Response to NHS Chief Executive’s Open Call for Evidence and Ideas

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Organisation name: BT Health

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NHS Chief Executive Innovation Review
Call for Evidence and Ideas
Response from BT plc.
To:

NHS Chief Executive Innovation Review Team
Department of Health
Room 2N16
Quarry House
Quarry Hill
Leeds LS2 7UE

Date: 31 August 2011

Subject: Response to NHS Chief Executive Innovation Review – Call for Evidence and Ideas

Dear Madam / Sir,

BT is pleased to submit a response to the above call for evidence and ideas.

At BT Health, we are dedicated to helping our customers transform healthcare and deal with the challenges thrown up by this ever changing world. As one of the largest suppliers of IT and communications services to the National Health Service in the UK, innovation is at the heart of everything we do.

BT remains committed to helping the NHS innovate and transform its services through the effective use of information technology, and engaging the NHS with BT’s wide ecosystem of innovation partners to help the NHS implement programmes for the effective adoption of innovation at scale.

Sincerely yours,

Dr Justin M Whatling

Chief Clinical Officer and Director of Strategic Growth, BT Health.
Confidentiality

All information contained in this document is provided for the purpose of stimulating the diffusion and adoption of appropriate innovation in the NHS and towards that end, BT provides permission for this document to be shared widely. When content from this document is cited in other documents, BT requests that an appropriate reference is made to the source.

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Do you want to be included in a wider community of interest? **Yes**
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1 Executive Summary

Action required by the NHS at national level

In the face of the expected rise in demand for healthcare and the associated increasing costs of new medical technologies, there are a few powerful strategies available to the NHS to counteract the upward forces on its cost base.

- Driving the adoption of preventative participatory healthcare models that address the primary modifiable risk factors of long-term conditions such as physical activity, nutrition, tobacco, alcohol, substance misuse, state of mind, and health literacy.
- Transforming the economics of healthcare delivery processes through digitisation of integrated care pathways to drive translation of evidence into practice, coordinate care for complex needs, and improve the quality and repeatability of highly complex delivery processes.
- Using information to generate insight that can drive commissioning and decommissioning decisions, and identify priority areas to direct funding and support for future areas of innovation and invention.

There are many different types of innovation and the NHS needs a different approach to dealing with each of them. The NHS is reasonably good at adopting inventions and technological innovations. It is less adept at disseminating and adopting sustaining innovations that gradually improve performance. However, its structure, incentives and budgets pose significant barriers for the adoption of disruptive innovations that have the potential to transform the economics of the NHS, and these are the innovations the NHS needs the most.

An appropriate platform for digitally enabled services is a key enabling technology for a number of disruptive innovations to become possible. Other industries have achieved efficiency gains of 20% or higher through digitisation of processes and better internal and external integration (section 3.1.1). The digital infrastructure is essential for the orchestration of complex services, recombination of care resources into novel pathways and collection of performance metrics to drive insight and improvement.

While the digital platform is essential, it is not sufficient for driving the adoption of innovation at scale in the NHS. The NHS also needs to create a conducive environment for innovation by creating a space within the organisation for such innovation to take place, and providing the right balance of incentives for exploitation (sections 3.1.2 and 3.1.3). The information currently generated in the NHS and the new information from the digital platform for services, needs to be liberated for internal and external analysis through competitions and other incentives (section 3.1.4). Providing this information in a more structured environment may speed up the process of technology adoption and service transformation by a factor of 10 (section 3.1.5).

Innovation requires a suitable climate in which to thrive. It is the role of leadership to provide this climate. The current NHS reform provides an opportunity for leaders to reframe their role and find a way to create an innovation climate that is authentic to their style of leadership (section 3.1.6). As part of this process, NHS leaders need to drive
the creation and adoption of action learning kits for the effective management of innovation at each level in their organisation (section 3.1.7), which should provide practical support to people to drive innovation as part of their day job.

The adoption and diffusion of innovation can be speeded up further by adopting appropriate informatics standards for transformation of services (section 3.1.8). Consistent and appropriate standards go hand in hand with enabling technology to reduce the cost and effort required for the transition to deliver a service in a different way. Appropriate informatics standards when combined with the use of social media can put external resources at the disposal of the NHS to drive better engagement with patients to nudge them towards making better decisions about their own health (section 3.1.9).

**Action required by NHS at local level**

At a regional / local level, the NHS needs to protect and enhance the role of the Regional Innovation Councils (section 3.2.1). They have a role to play in helping prioritise the focus of innovation in that geography, work in collaboration with other regional councils to avoid duplication of effort and enable sharing of experience / knowledge / insight. Local NHS organisations would benefit from commissioning guidelines for innovative services (section 3.2.2) balanced with the right set of incentives for the diffusion and adoption of innovation (section 3.2.3).

The NHS needs to work in closer cooperation with local government to share resources for the delivery of common objectives (section 3.2.4). This could take place through sharing infrastructure and resources to deliver a closely related set of services within the scope of Health and Wellbeing Boards. Emphasis needs to shift to self-service and virtualised service models to put more power in the hands of the customer / patient, and reduce service costs. That sharing of infrastructure and resources should be extended to social enterprises as part of the drive for external integration (section 3.2.5). The ultimate vision is to create a whole local ecosystem of public and private services that deliver models of anticipatory healthcare – these are proactive models of care that don’t wait for a person to be ill (section 3.2.6).

**Action required by NHS partners**

The NHS needs to work closely with its strategic innovation partners to share opportunities and resources for innovation. The partners can get early insight of the problems for which the NHS needs solutions, and the NHS can benefit from a partnership that creates innovations that are fit for purpose, increasing the likelihood that they will be adopted and used widely within the NHS. This can be facilitated by involving industry partners in the Regional Innovation Councils (section 3.3.1) to draw upon the partner’s experience of running customer focussed innovation programmes. By drawing in a sufficient variety of partners, the NHS will benefit from an innovation ecosystem (section 3.3.2) to benefit from the vast innovation resources of a much wider network.

**Challenges for innovation in the NHS**

The NHS needs to address several challenges that work against the productive development, adoption and diffusion of innovation. These challenges range from wasted resource on pilot programmes that merely replicate learning from elsewhere without a clear vision to scaling up, to procurement processes designed to buying
commodities rather than adopting innovations. This is characteristic of systemic risk aversion that makes the NHS a laggard when it comes to adoption and diffusion of innovation. ICT has been a key enabling technology for innovation in other industries, but the NHS tends to view ICT with more suspicion than what the risks might warrant. There is also a need to shift the emphasis away from expensive face to face services and consider alternative channels of interaction.
2 Innovation and the NHS

*This section sets the context for the recommendations that follow in Section 3 and explains some of the terminology related to innovation as it is used in this document.*

The NHS has an excellent track record of innovation throughout its history. However, as the call rightly points out, the need for innovation is higher now than it has ever been. The combined pressures of financial constraints, an ageing population, and the growing burden of long-term conditions, are contriving to make the founding principles of the NHS unsustainable. However, simply asking for more innovation and the diffusion of this innovation may worsen the situation of the NHS as we know it today. This is because of the peculiar nature of the vast majority of innovation in healthcare, (be that in the NHS itself or in the global healthcare industry at large) that innovations tend to increase both the demand for, and the cost of, healthcare.

The definition of Innovation in Wikipedia is very useful especially as it draws out the distinction between Invention and Innovation, terms that have been used interchangeably in the call document.

**Definition:**

The term *innovation* derives from the Latin word *innovatus*, which is the noun form of *innovare* "to renew or change," stemming from *in-"into" + novus-"new". Although the term is broadly used, innovation generally refers to the creation of better or more effective products, processes, technologies, or ideas that affect markets, governments, and society. Innovation differs from invention or renovation in that innovation generally signifies a substantial change compared to entirely new or incremental changes.

Inventions in healthcare such as new drugs, diagnostics, instrumentation, etc., have been critical to improving the quality and duration of human life. However, in the process, they have increased the cost of providing healthcare and also created new demand for healthcare. While there are still many significant challenges to overcome in this domain, the sole pursuit of healthcare inventions could lead to an unaffordable public healthcare system.

In the face of this inexorable rise in the demand for healthcare and the associated increasing costs of the new technologies, there are a few powerful strategies available to counteract these upward forces on the cost base of the NHS.

- Driving the adoption of preventative participatory healthcare models that address the primary modifiable risk factors of long-term conditions such as physical activity, nutrition habits, tobacco, alcohol and substance misuse, state of mind, and health literacy.
• Transforming the economics of healthcare delivery processes through digitisation of integrated care pathways. This would help ensure translation of evidence into practice, coordinate care for complex needs, and improve the quality and repeatability of highly complex delivery processes.

• Using information to generate insight that can drive commissioning and de-commissioning decisions, and identify priority areas to direct funding and support for future areas of innovation and invention.

Innovations that improve the performance of an existing process are called Sustaining Innovations. Such innovations produce efficiency gains. Much of the innovation challenge in the NHS as generally understood is about the diffusion and adoption of Sustaining Innovations at scale. These innovations range from the use of a particular technology to improve the productivity of a process or a relatively minor change that improves coordination, communication and collaboration between multiple individuals and organisations involved in the delivery of care. This is also called Continuous Improvement. Such innovation is taking place every day in different parts of the NHS, but it isn’t easy to find the exemplars of good practice, much less transfer their learning and practice to other locations.

Much as these Sustaining Innovations are required, they are not sufficient to achieve the transformational strategies mentioned earlier – for these strategies disruptive innovations are required. They need to seriously disrupt the existing way of doing things. So in an extreme scenario, if preventative participatory healthcare models were adopted by all people, the burden of preventable long-term conditions might recede to the point of being negligible. Vaccination was a disruptive innovation that transformed healthcare for many infectious and contagious diseases. Innovations of a similar disruptive power are required for long-term conditions. It may be helpful to compare how disruptive innovations have transformed other industries, and how those industries coped with the disruption.

The process of building cars has gone through a series of disruptive innovations which can be characterised as follows:

• Hand building
• Assembly line manufacture (Ford)
• Just-in-time and Lean (Toyota Production System)

Each stage of disruption required an enabling technology. Assembly line manufacture would not have been possible with advances in metal working technology – sheet cutting, pressing, die casting, etc. JIT and Lean would not have been possible without modern transportation and communication systems.

Healthcare is still in the hand building mode. Some specialist treatment centres are working in assembly line mode. Telehealth for long-term conditions has potential to move the model into Lean and JIT modes.

Disruptive innovations can be classified as follows:
Disruptive Technological Innovation

- Scaling up of a niche market into a mass market (compact copiers, 100 cc motorcycles, consumer power tools, quartz movement watches, inkjet printers).
- Changes the performance economics (delivers better value for money) and/or expands the market (brings in more users by making the solution more affordable).

Disruptive Product Innovation (Radical Innovation)

- Introduces products & value propositions that disturb prevailing consumer habits in a major way (car, TV, PC, mobile phones, smart phones).
- Disrupt both consumers and producers.
- More supply driven rather than demand driven (the nature of the innovation creates demand for it).
- First mover may not be an advantage (iPod was not the first mp3 player, and iPhone was not the first smart phone).
- Healthcare specific examples: PACS

Disruptive Business Model Innovation (Strategic Innovation)

- Discovery of a fundamentally different business model within an existing business (Software as a Service, budget airlines, online retailing).
- Changes the basis of competition.
- Requires different activities that are often incompatible with legacy business models due to trade-offs & conflicts.
- Frequently arise in response to unmet need (demand driven).
- Healthcare specific examples: Outcomes based commissioning, subscription based services, self-management of long-term conditions.
3 Diffusion and Adoption of Innovation

3.1 Action required by NHS at national level

3.1.1 Create an enabling infrastructure to enable Disruptive Business Model Innovation

We recommend that the role of the National Commissioning Board (NCB) should include considering Disruptive Business Model Innovations. Some aspects are already included in scope for the NCB such as commissioning Integrated Care Pathways and Outcomes Based Commissioning.

While these are truly disruptive innovations, we would like to point out that there aren’t enough enabling technologies in place as yet for these innovations to be able to deliver their full potential (see the automotive industry example provided in Section 2, pg. 3).

- The delivery of evidence based Integrated Care Pathways (ICPs) requires technology for process digitisation, orchestration and coordination across multiple specialities and organisation boundaries. This is particularly required for managing patients with long term conditions and complex needs. Today, these hand-offs are mostly manual and form based. The NHS can potentially realise efficiency gains of 20% or higher through the digitisation of these processes as other industries have achieved through supply chain integration and optimisation over the past 50-60 years. An appropriate enabling technology platform for ICPs will help the NHS achieve:
  
  o Improved internal integration and coordination of services, particularly complex services,
  
  o Improved external integration and coordination with patients, carers and third party providers of services including the voluntary sector and social enterprises,
  
  o Consistent and repeatable processes, allowing room for flexibility to adapt to patient needs, and
  
  o Improved patient safety.

- There is a need to evolve system wide performance management from the current model of process based key performance indicators (KPIs), to a balance between resource, activity, cost, risk and outcome based measures.
  
  o This requires the accumulation and analysis of validated data sets that are of a level of quality that can be trusted by commissioning and provider organisations to form the basis of a contract for services.
  
  o These data sets need to be generated directly from activities driven by the platform for ICPs so there is no overhead involved in the generation and collection of data.
This will also ensure that resources, activities, costs, risks and outcomes are monitored and measured consistently to get a truer reflection of performance.

If the data is generated out of a system that everyone uses, there will be less room for debate and ambiguity and more time spent on finding ways to improve quality and outcomes.

If the NCB puts such enabling infrastructure in place, Clinical Commissioning Groups (CCGs) can confidently commission services that comply with NCB guidelines for ICPs and use the enabling technology platforms to deliver an integrated service. The platforms will also simplify the process of contracting for services and measurement of KPIs. Equally, if there are CCGs that are not complying with NCB guidance to commission appropriate technology enabled pathways, they can be shown the evidence of their performance against compliant CCGs, which when combined with tweaks to their incentive structure will help drive improvement in quality and outcomes associated with specific ICPs.

For more information on Disruptive Innovation in general and in the context of Healthcare, please see the following articles:


3.1.2 Create a conducive environment for disruptive innovation

Although Disruptive Innovations such as Telemedicine and Telehealth have the potential to fundamentally change the quality and economics of care for people with a long-term condition, they are proving very difficult to implement in the NHS. The nature of disruptive innovations is that they create a fundamental shift in the alignment of benefits, incentives and budgets of an organisation. The natural reaction of most organisations is to fight back against a Disruptive Innovation, even more so than any other kind of change. Organisations that have been successful at grasping the potential of Disruptive Innovation have the common characteristic of being able to play two different games at the same time. In business literature, these organisations are called Ambidextrous Organisations.

In Ambidextrous Organisations, the Disruptive Innovation is incubated in a separated part of the business and protected by the CEO from potential interference by vested interests from the dominant areas of the business. This interference is likely to arise because the interests of the incumbents are potentially threatened by the Disruptive Innovation and because the incumbents are typically more powerful at the early stage of the innovation, they are likely to be successful at delaying or even squashing the innovation.

The NHS currently creates ambidexterity to some extent through Pathfinders and Demonstrator projects. However, these approaches have largely dealt with the structural and process changes that have been taking place in the NHS over the past 15 years. The NHS needs to create ambidexterity to test out true Disruptive
Innovations. BT’s view is that Strategic Health Authorities would be in a prime position to take a strategic view on which Disruptive Innovations to consider and then support a local / regional NHS leader who would champion the testing and adoption of the innovation. The NHS needs to consider how this process would be managed once the SHA’s are disbanded.

Alternatively, the NHS should consider testing Disruptive Innovations in another country. As part of its international philanthropic work and thought leadership, the NHS could choose to try out these innovations in locations where the needs are similar, but the incumbent forces are not very strong. This will enable the NHS to test the innovation, understand what it would take to scale it up in terms of capability, capacity, incentives and budgets. If it then believes that the innovation is of value, it could bring it home on a much stronger footing.

Players in the Telehealth industry are using the above strategy to sustain their business. After a decade of largely unsuccessful attempts to sell their wares to the NHS, some vendors are seeing greater interest in Central and South America.

3.1.3 **Invention to Innovation succeeds only with scale and innovative exploitation**

The NHS suffers from coordinated invention as opposed to successful innovation. Until a new invention is widely and extensively used it hasn't transitioned from being a 'measurably' good idea to a valuably exploited contribution to the NHS.

Key to exploitation is the need to develop successful knowledge management/reward systems that facilitate the sharing of knowledge of 'good ideas' to encourage other 'organisations'. It also needs incentives for individuals to actually use them.

Successful innovative organisations actively measure, encourage and reward reuse to increase adoption of an invention at scale leading to a more successful definition for innovation. Budgets focussed on encouraging reuse to drive scale are required to promote behavioural change. In the current environment we tend to promote 'heroic' innovation as opposed to recognising 'boring' re-use where the 'not invented here syndrome' and 'but of course we're different' are the frequently promoted excuses. This is compounded by professional interests to develop something "original", publish it, and gain kudos, rather than adapt, adopt and be successful for the NHS and patients. If something is a measurably good invention, then it can only be classed as an innovation when a scale threshold has been achieved for a service improvement performance indicator or a financial target.

In the NHS the current innovation budgets are dissipated/fragmented and generally usable for only tactical interventions. Furthermore, due to the organisational emphasis on autonomy the competition is for the 'ideas' budget which continues to propagate the 'mini' pilots for the majority of projects as opposed to large scale deployments. There appears to be little or no alignment of incentives or budgets across organisations to drive large-scale adoption.

It is not sufficient in many cases to say idea 'A' is worth deploying at a unit level. The ROI or organisational structure in one organisation may be different to another hence they can dismiss it and chose to develop their own invention.
In the purely technical arena inside the NHS where central procurement has resulted in a large number of users of identical infrastructure, “communities” have been encouraged to share best practice and learn from each other saving time, money and effort.

This is not easy to do and counterintuitive to the prevalent competitive western culture and particularly within the NHS. Once the journey is started however with the right performance incentives the competitive element can be exploited as a true invention will ‘cross the chasm’ into scale and then the economic argument will prevail as a measure of success and ‘we can't afford not to do it’ would be heard along the corridors.

3.1.4 Liberate information for analysis inside and outside the NHS

The NHS needs to continue the process of making information about NHS resources, services and impact available for analysis. There is already a wealth of information available from the NHS Information Centre, NHS Evidence, Evidence Adoption Centre, and other NHS organisations with similar objectives. The NHS needs to exploit modern cloud computing and analytics technologies to make these vast information assets available for analysis by a wider set of professionals and groups with an interest in making a difference.

There are examples in other industries of companies making their data available to the public and running competitions to find solutions to business problems. One firm provided air traffic data to see what novel analyses could be carried out: [http://stat-computing.org/dataexpo/2009/](http://stat-computing.org/dataexpo/2009/). Another firm ran a competition to develop better traffic prediction algorithms for intelligent GPS navigation: [http://tunedit.org/challenge/IEEE-ICDM-2010](http://tunedit.org/challenge/IEEE-ICDM-2010). OmniCompete is an example of an organisation that has run a very successful completion for digital security and is now planning a competition for Health [www.omnicompete.com/health](http://www.omnicompete.com/health).

The NHS should consider whether:

- Hospital admission / discharge statistics could be used to optimise workforce scheduling as this would help optimise nurse and consultant duty patterns.

- Population density, disease prevalence, transport resources and telecommunication links should be modelled to determine optimal locations and delivery channels for various types of health services i.e. find opportunities to deliver services better, faster, cheaper.

- Data such as health episodes, outcomes, resources and case mix should be made available to analyse underlying causes of variation, and presented in a user friendly format to enable people without formal economics or statistics training to draw insights.

- Dynamic traffic data could be used to site A&E departments and ambulance services so that target response times could be met 99.9999% of the time. This could help make evidence based cases for A&E rationalisation.

Maybe just making consistent data available and providing the incentive for analysis through grants and competitions will help generate activity that produces workable
solutions to some difficult problems. There is no doubt that much of this information is
available in the NHS. It needs to be made available for wider analysis outside the
NHS’ boundaries.

3.1.5 Create a modelling and simulation environment for in-silico
assessment of innovations

This recommendation takes the previous one of liberating data to the next logical level.

The NHS is a complex web of sophisticated, interdependent resources. A number of
NHS organisations, academic institutions and businesses conduct a significant amount
of work modelling various facets of the NHS to assess the potential impact of
inventions, process changes and interventions of every type imaginable. It is very
likely that over 90% of the modelling effort is reinventing wheels over and over again.

The NHS should consider co-investing with industry to create a common modelling
environment with reusable objects that is available to all interest groups inside and
outside the NHS. The modelling environment should have:

- Modular entities representing strategic resources such as hospital beds, wards,
estates, people, skills, equipment, etc.
- Rate variables that influence changes in the various resources
- Key levers of change such as policies, technologies, influence and risk that
  affect the rate variables
- Benefits, incentives and budgets that enable or constrain the influence / impact
  / risk of the policies and technologies that are introduced into the model, and
- A virtual game based interface that makes the modelling environment usable
  by people who are not professional modellers or have advance qualifications in
  mathematics, economics or other quantitative disciplines.

This modelling environment could enable participants to rapidly assess the impact of a
proposed change and produce a business case whose underlying assumptions could
be easily verified in the environment.

We suggest the NHS reviews programmes like The Cumberland Initiative
http://www.cumberland-initiative.org/ and examines how this could be implemented,
either as a Technology Innovation Centre (TIC) or other organisational form.

A resource such as this could be used by the National Institute for Health and Clinical
Excellence (NICE), as part of its work programme, to evaluate the potential impact of
technologies to support models of self-care in long-term condition management
(telhealth). In the absence of such a modelling environment, evaluations have been
going on at a sub-scale level for the past 15 years and few people within the NHS or
the industry appear to be any closer to a conclusion. Even the report on the Whole
System Demonstrator (WSD) considers the potential impact of telhealth on less than
10% of the population with a long-term condition.

The modelling environment will enable researchers and industry to adopt a risk-based
approach for prototyping of new patient-centred technologies and consumer health
services. It does not have to be right the first time so long as risks are understood and mitigated. Creating the culture of ‘change at pace’ is vital for a world-class health service to evolve at a rate that makes it (at keeps it) world leading.

### 3.1.6 Coach NHS leaders to foster an conducive environment for innovation

Innovation thrives in a suitable climate. It is the role of leadership to create that climate. The innovation climate is a function of:

- Incentives for the creation, diffusion and adoption of innovation
- Commitment to sustaining focus on innovation even in adverse times
- Processes for sharing of knowledge, collaborative working and continuous learning, and
- An organisation mind-set that transcends boundaries to create productive networks with partner organisations.

Management processes in the NHS were created at a time when a high degree of organisation control was thought to be required. The current reform of the NHS breaks down many of these control structures. This creates an opportunity for innovation in the management processes of the NHS to help create the adaptive organisation that is required for the future. This kind of innovation has been termed Management Innovation and is the subject of on-going research by Gary Hamel (see The Management Innovation Exchange at [http://www.managementexchange.com/about-the-mix](http://www.managementexchange.com/about-the-mix)). The NHS needs to grasp this opportunity to find innovative ways of managing the organisation. It is not for BT to suggest how the NHS should be managed, but to merely point out the opportunity for change and the available resources.

NHS leaders need to ask themselves if they possess the requisite DNA of an innovator. Christensen describes the Innovator’s DNA as having the following characteristics:

- Questioning allows innovators to challenge the status quo and consider new possibilities;
- Observing helps innovators detect small details -- in the activities of customers, suppliers and other companies -- that suggest new ways of doing things;
- Networking permits innovators to gain radically different perspectives from individuals with diverse backgrounds;
- Experimenting prompts innovators to relentlessly try out new experiences, take things apart and test new ideas;
- Associational thinking -- drawing connections among questions, problems or ideas from unrelated fields -- is triggered by questioning, observing, networking and experimenting and is the catalyst for creative ideas.
Unlike DNA however, these skills can be learned. The NHS Leadership Development Programme needs to consider the development of these skills in its leaders at every level of the organisation. NHS leaders may benefit from coaching and mentoring from innovators and leaders from other industries. Sometimes a different perspective can help shed new light on a problem, or create a new opportunity for innovation.

The combination of right leadership skills with the right climate for innovation will help the NHS derive full value from the range of innovation available to it.

3.1.7 Create action learning kits for the effective management of innovation at each level of the NHS organisation

The NHS should develop action based learning kits that would provide practical help to people at every level who are looking for a solution to a problem: These kits should include the following topics (not exhaustive):

- Idea generation, sourcing, selection. This would include setting objectives and performance criteria at the outset, although these may be subject to change as more information about the problem and potential solutions is gathered through a discovery process.

- Hot housing to quickly evaluate solution options and make decisions on how to proceed.

- Business case development to secure funding for the development / adoption of a solution.

- Productive pilots that have clear goals, success criteria and a path to scale if they are successful. Pilots should not replicate what has already been proven elsewhere.

- Commissioning / decommissioning criteria need to be clear and adhered to. In a resource constrained environment, something usually has to give way in order that something new can be adopted. Training required on decision techniques for making difficult choices, including access to appropriate modelling environments (see sections 3.1.4 and 3.1.5).

These action learning kits need to be more than how-to guides. The kits also need to link into knowledge communities where practitioners can share examples of how these kits have been used, and new users have access to support from experts. As discussed in Section 3.1.6, this process can be accelerated by providing incentives (which do not need to be monetary) to share experience, adopt good practice and provide support to new users accessing the community resources. These incentives could take the form of social recognition in the community, CEO awards and other forms of recognition and / or privileges that are socially valuable but don’t need to have a high monetary value.
Most important of all, these practices should form a part of the day job of every person working in the NHS. They should not be the responsibility of a designated innovation centre, department or team.

3.1.8 Drive creation and adoption of informatics standards to accelerate transformation of services

The following recommendations are extracted from the recommendations of the British Computing Society (BCS) in response to the consultation on the NHS Information Revolution.

The NHS information strategy needs to set out clear roles for the centre and the market place in terms of information management. This must offer an integrated view of the health market and the supply chain that will come together to deliver information services. This is critically important to help shape a vibrant market through leadership and signalling of how everyone can appropriately engage. Core functions of the centre would include setting data and indicator standards, deciding and controlling national data requirements, ensuring data quality and publishing official statistics and data.

The creation and adoption of appropriate standards will provide a consistent foundation around which innovative new services can be designed, tested, deployed and adopted at scale within cycle times of months rather than years.

Commissioners need to incentivise the sharing and rapid adoption of best practice in process redesign and the use of IT without stifling innovation in the market.

The NHS information strategy needs to commission an academic institution to develop and maintain a library of successful IT-enabled service redesign in health care around the world and the return on investment delivered in order to support boards in making investment decisions and enable organisations to confront redesign programmes at the appropriate scale.

The role of the centre should include:

- Rapidly setting stable standards and a standards road map for information, enabling ICT suppliers to rapidly innovate solutions for health and care;
- Taking action to open up the health and care software market and bring the benefits of competition;
- Encouraging continuous exploitation of existing investments in infrastructure, data and channels for the Information Revolution to be affordable.

The NHS Commissioning Board has an important role to play in encouraging competition and innovation in the marketplace, driving best practice.

ICT supplier accreditation schemes need to keep standards high, but also to keep barriers to entry low. Interoperability ToolKit (ITK) accreditation is a good recent example that has allowed rapid innovation from ICT suppliers – this accreditation scheme should be maintained and extended as a ‘kite mark’ for interoperability.

The NHS should maximise reuse of standards being adopted by global ICT suppliers as this will accelerate importable innovation to the UK market and reduce the costs of
implementation. Standards to be adopted include initiatives such as Integrating the Healthcare Enterprise and Continua Health Alliance, which are ICT supplier-driven initiatives to self-select standards for practical interoperability.

3.1.9 Encourage use of social media not just for sharing information, but as a tool for innovation

We recommend that the NHS information strategy should encourage care providers to use technology and media as a tool to engage patients and the public in taking responsibility for their own health and wellbeing. The NHS should utilise existing technologies that people use on a daily basis and harness fresh and exciting technology, including web 2.0 approaches, to leverage social capital and to meet patients’ desire for better interactions with health and care systems.

Patients should be given a choice of how they interact with the NHS. The Colleges need to reconsider their guidance on GPs using emails to interact with their patients and instead should find ways to embrace the new technologies and exploit their positive aspects. BT welcomes the announcement by NHS Medical Director, Professor Sir Bruce Keogh, that patients will be able to have online consultations with their doctors using technologies such as Skype as this is a step in the right direction. However, BT does recommend caution that technologies are used appropriately to ensure the security of patient identifiable data and confidentiality is not compromised.

At the root of most problems we can find issues related to ignorance and poor choices. Although humans are thought to be rational beings, the choices they make are heavily influenced by the choice architecture within which they take their decisions. Social media has the potential to present a bewildering array of choices for people and in the absence of a good choice architecture, the likelihood that most people will end up making poor choices only increases.

However, the NHS needs to exploit the potential of new media to nudge people gradually towards behaviour that promotes and preserves good health. This would involve adapting existing services for delivery through new channels, address emergent or unmet need through novel services that exploit the power of new media, and constantly evaluate the way people are making choices about their health in order to influence the choice architecture and nudge people towards better decisions.

By leveraging digital channels to deliver an increasing range of services, the NHS can reduce the delivery cost of these services down to negligible levels per head and do so with measurable impact. This will free up scarce NHS resources to address more complex, intractable requirements that need an intensive application of skilled resources.

The NHS does not have to try to solve these problems on its own. New media give the NHS the option to “crowd source” the problem analysis and the solutions as described in sections 3.1.4 and 3.1.5.

However, the techniques and technologies referred to in this section may not apply to the majority of policies and contexts. Hence, the NHS needs to make careful choices about the range of options it has to pursue a particular objective. New media provides the NHS with a useful tool to develop collective intelligence about the choices, and to refine and share that intelligence on a continuous basis.
References:


3.2 Action required by NHS at local level

3.2.1 Role of Regional Innovation Councils

Regional Innovation Councils (RIC) can help the NHS:

- Prioritise investment resources to focus on the development and adoption of innovations that address the most urgent or important local needs
- Operate as a network of networks, identifying innovations in one specialist network that may be of benefit to practitioners in another network
- Build stronger relationship with local government Health and Wellbeing Boards to introduce innovative services for public health and wellbeing
- Extend the above relationships to create Open Innovation models with national and local partners of the NHS, local social enterprise and members of the public.

Rather than leave it to each NHS organisation, whether Foundation Trust or Clinical Commissioning Group to figure out how to adopt innovations, the RIC’s can act as both a catalyst and an outreach organisation. In the catalyst role, the RIC needs to stimulate the creation, adoption and diffusion of innovation without actually doing any of the innovation itself. In the outreach role, the RIC provides guidance and specialist skills on tap to other NHS organisations to be successful at managing innovation. It is vitally important that all organisations in the NHS take responsibility for innovation if there is to be any hope for improvement in the diffusion and adoption of innovation. Else, people will think that innovation is somebody else’s job and will continue in the mind-set of resisting change.

3.2.2 Commissioning guidelines for innovative services

When an innovative technology or service is initially introduced, it may not perform as well as the status quo. This frequently results in the innovation being dismissed as not good enough. It is important for NHS commissioners and clinicians to consider such innovations very carefully because although they might not meet the most stringent performance requirements, the innovation may be good enough for a significant fraction of need, or may even serve an unmet need or underlying cause of current needs (e.g. the suggestion to use Skype for online consultations, mentioned in 3.1.9, may cause concern but there are likely to be many situations where it is a better option...
than seeing the patient in the surgery). Dismissing such innovations without due consideration, or delaying their adoption until they become acceptable to the majority, could exact a huge opportunity cost for the NHS.

Hence, commissioners need the skills to recognise and evaluate such innovations. They may need specialist support from NICE, special advisory groups or even crowd sourced expertise, to help with their decision process. If they decide to proceed with these innovations, they might need an economic stimulus during the transition period when the performance of the innovation may not match that of the status quo (see section on incentives below).

### 3.2.3 Incentives for diffusion and adoption of innovation

Commissioning guidelines should:

- Provide an incentive for commissioners to acquire or otherwise access the skills and expertise to recognise and adopt innovations that have the potential to improve performance and outcomes.

- Offer a framework of economic support to incentivise the adoption of immature innovations that need to be incubated and developed further through application in day to day practice.

In some situations the innovation may fundamentally disrupt incentives and budgets in a way that provider organisations may resist implementing the service (e.g. the innovation has the effect of reducing activity and therefore revenue). The commissioning guidelines should consider an early adopter incentive that would encourage some providers to change and improve their performance when compared to the others, which could result in late adopters losing that source of revenue altogether.

Each NHS Foundation Trust and Clinical Commissioning Group should have an Innovation Scorecard as part of their performance metrics. Greater weight should be given for successful adoption and championing of innovations. The innovation score should influence the size of the economic stimulus awarded to support the adoption of innovations that might currently have inferior performance but need to be developed further through practice to deliver greater benefit than the status quo. This will create a virtuous circle of incentives, with more money being available in the stimulus pot when the successful adoption of innovations improves the economic performance of the NHS’ services.

### 3.2.4 Closer integration with local government for reconfiguration of resources to deliver services in novel ways

The NHS needs to share more resources with Local Government to provide services closer to the community. There is an increasing desire to strengthen community resources, engage local social enterprises in delivering local services, and involve the public in the co-design and co-production of the public services they consume. This not only makes the services more relevant to the local populace, but also has the potential to make the delivery of these services more economical.
A number of services that require consultation can be delivered digitally through a self-service model or an assisted model where the skills required in the face-to-face role do not need to be of the highest specification. As a simple example, translation services have become more economical since they were available via the phone and the web. This has driven up the use of translation services in order to make the frontline delivery of services more effective and equitable.

Similarly, if a person requires a specialist consultation, they do not need to be face to face with the specialist in the same location. Modern technology such as video conferencing makes it possible to reduce the dimension of distance, saving travel time for all concerned. A patient in a remote location can have an out-patient follow-up appointment with a consultant without having to travel to a hospital. The patient could be assisted at a site in their community by a local nurse or GP. The video conference site does not have to be a dedicated site at a GP surgery – it could be a shared site at the local library, post office or other similar location where its use could be shared for other public services that can be similarly delivered over a digital channel.

A good place to start would be the Local Government Group - Ageing Well Programme. http://www.local.gov.uk/topic-ageing-well. The health needs of the elderly exact a high cost on the NHS budget and it has been long recognised that Health and Social Care need to work closer together. However, this working together generally operates only in the domain of the most acute need. The Ageing Well programme has a preventative, public health approach which has the potential to reduce future demand for NHS services. However, there is appears to little information in the public domain to suggest that the Ageing Well programme is working in association with the NHS to achieve what is undoubtedly a common strategic objective.

3.2.5 Closer integration with social enterprises to adopt, scale up and diffuse local innovations

Social enterprises (SE) are becoming a vital delivery arm of the NHS. SE service delivery needs to be linked into common service delivery platform for the NCB (section 3.1.1).

Benefits of integration include:

- SE’s deliver evidence based pathways. Legitimate deviations permitted to allow for innovation based on local knowledge and insight.
- Successful deviations / innovations can be absorbed into mainstream practice by becoming a legitimate variant of the evidence based pathways
- Integration into platform allows SE to scale up, using technology to leverage the knowledge otherwise held in the heads of skilled people
- Generate local employment for delivery of local services
- Sophisticated and scalable technology is made available to small organisations to accelerate innovation (otherwise it would have been unaffordable).
3.2.6 Connect into the whole local ecosystem of public and private services to create models of anticipatory healthcare

Ultimately, the unlocking of information, harnessing the wisdom of the crowd, providing infrastructure for an inter-connected web of services, creating an appropriate framework of incentives for diffusion and adoption of innovation and the other ideas described in this document, will help the NHS interconnect with other public services in novel ways to allow citizens participate in a process of proactive healthcare, an approach that maintains their health, minimises the impact of illness, helps them lead productive lives and supports dying with dignity.

For a glimpse of this future, please refer to the document from the Rockefeller Foundation on “A planet of civic laboratories – the future of cities, information and inclusion. The scope of the document is much wider than Healthcare, but it puts forth a compelling narrative that is applicable for the future of the NHS and other public services.


3.3 Action required by NHS partners

The NHS needs to develop a model of co-innovation with its partners. In its 60 year relationship with the NHS, BT has developed several innovations that were widely adopted to great effect. The innovations range from the development of a hearing aid during the dawn of the relationship to more recent innovations in telemedicine and N3 videoconferencing.

BT’s philosophy is to innovate in partnership with customers like the NHS and other technology companies. Our ‘Open innovation’ ethos is focused on resolving key business issues identified by our customers, bringing in key strategic partners or specific innovators through a global innovation eco-system as necessary.

Through a global innovation presence BT is gaining a significant understanding of unmet business and consumer needs across many regions, cultures and contexts. BT firmly believes that an open innovation partnership with the NHS can build on our innovation programmes and will create value for both organisations.

3.3.1 Innovation Councils

To ensure that Innovation is a sustained effort throughout the relationship BT enjoys with the NHS, BT proposes to work closely with the NHS through the Regional Innovation Councils. BT is already closely engaged with the East of England Innovation Council and proposes to extend this model of working to other regions.

The Innovation Council would provide a forum for discussion and evaluation of the key drivers of performance of the NHS and would facilitate the effective management of the innovation process. A team consisting of regional and local NHS leaders, representatives from BT and other companies, and other key stakeholders would be responsible for the regular input and articulation of key performance issues and ensuring that innovation topics are rapidly assessed for relevance.
The Innovation Council not only provides a forum for discussion and evaluation of the key QIIPP drivers, but is also a means to coordinate resources and fund innovation projects. The engagement process ensures the exchange of ideas, technology developments, and the forming of value add and cost optimisation propositions, on an on-going basis between the NHS and the various companies participating in the Innovation Council.

The output of the Innovation Council approach is the identification of projects that will enable improvement in meeting QIIPP targets. The Innovation Council should be responsible for ensuring proposed innovation projects are evaluated against the key needs of the NHS in order to derive true value and return on investment. The responsibility for delivering the project would normally reside with a regional / local NHS leader with the requisite authority and resource to implement the change successfully.

The lightweight governance approach employed by the Council will ensure that agreed initiatives are rapidly assessed, approved and progressed. In this way all catalysts for change, whether derived from new technology, market dynamics or business evolution can be considered and applied to identified issues quickly, with minimum cost and maximum efficiency.

This Innovation Council will have the following draft terms of reference:

- Identifies strategic issues and priorities
- Reviews and prioritises relevant innovation topics.
- Ensures regular information and intelligence sharing
- Balances innovation activities between tactical and strategic deliveries
- Identifies and agrees funding and /or resource contribution to any joint activities
- Ensures match of budget and skills against any joint activity requirements throughout their lifetime
- Helps drive adoption and exploitation of programme outputs.
- Ensures innovation programme delivers expected and measurable return on investment.
3.3.2 Innovation Ecosystems

BT has an extensive track record of identifying, sourcing and successfully exploiting world-class innovation discovery and research in support of, and in partnership with, BT’s operating divisions, and our partners, suppliers and customers. The BT Customer Innovation Engagement programme uses BT’s wide range of global innovation capabilities with teams in the US, UK and Asia and has access to resources which include:

- More than 3,500 technologists dedicated to innovation and over £684 million spent on global Research and Development to financial year end 31st March 2011.
- A portfolio of some 6000+ patents and associated intellectual property rights
- Innovation scouting, with BT teams in the US, UK, Israel and Asia, identifying in excess of some 500 opportunities from the start-up communities per year.
- The Applied Technology Centre which develops innovation prototypes to demonstrate the complete ‘look and feel’ of the proposition or opportunity.
- Hot House facility to address business issues in a rapid, focussed and demonstrable way. Hot Housing is a well-defined intensive process which engenders close collaboration between stakeholders, allows iterative assessment of business needs and solutions and results in prototyping of the deliverables. Hot housing has revolutionised the way in which we develop our projects and meet customer needs. In some cases we have witnessed a 75% improvement in delivery time, particularly in concept to market.
- The BT in-house Applied Research programme is augmented by BT’s Strategic University Programme. This programme can provide access to thought leadership drawn from BT’s Strategic University relationships which
include partnerships with MIT, Cambridge and Tsinghua as well as collaborations with over 20 UK, US and Chinese university departments and Business Schools (Sloan at MIT, Judge at Cambridge, Warwick and INSEAD in Paris). BT has a long history of innovation with its academic partners; our research network across the world enables us to bring leading edge thinking in technology, human science and business models to our company.

We also draw on partnerships with other consortia, governmental organisations and NGOs. Much of the work in BT’s own Innovate & Design department is in the <1-3 year time horizon. Closer still, the focus shifts to our External innovation capability and collaboration with commercial partners.

To continue and sustain growth and innovation in BT we’ve established our Open Innovation model. This is BT’s organisational capability to discover and exploit globally innovation throughout the world for the benefit of shareholders, employees and customers. The open innovation model in effect means BT can draw on external resources and best practices to complement the value of our own “internal” innovation assets – and achieve greater real returns on their overall investment in innovation.

This approach allows BTs innovation practices to provide an ideal environment to work with other partners and supplier companies as part of a wider innovation effort on behalf our customers. BT has a history of cultivating close links with other innovation partners who can add value to each step of the process and BT’s partners include strategic business and technology partnerships with other companies. Examples of these partnerships include HP, Microsoft and Intel.

BT has operated an Open Innovation model for some time and has built a centre of excellence around innovation management. It has used this model both within its own organisation as well as providing successful external consultancy to its clients. Whilst this is a proven model, it does take time to initiate and progress. What is often required is a short, structured, professional services-led engagement with a customer to quickly get to the heart of their business challenges and identify potential solutions. BT has developed such offerings called Quick Starts and offers one for Innovation.

Key benefits include providing customers with a quick way to identify opportunities to tap into new markets, create, articulate and validate new product and propositions through the application of BT brain power and technology “know how” focussed on their most difficult and persistent problems helping them to improve their own innovation capability by advising on new processes, methods and tools.

BT recommends that the NHS engages with innovative partners like BT at a national and regional level to co-develop and exploit innovations that will help the NHS meet its high priority performance objectives.
4 Challenges for innovation in the NHS

The NHS needs to overcome certain challenges that currently stifle innovation.

- Endless pilots being conducted without a clear objective. All pilots that are not going to generate any new insight or evidence should be stopped right away. They are a waste of time and money. Approval for a pilot should be given only when there are clear success criteria and there exists a clear business case to implement the findings of the pilot should it be successful, and that it is not replicating what has been done elsewhere.

- Current procurement models are geared towards buying predictable rather than innovative products and services. This behaviour rewards Sustaining Innovations that improve productivity and efficiency in small steps rather than Disruptive Innovations that can radically transform the performance economics.

- NHS organisations are generally too small to take the first step towards implementing a disruptive innovation. The market is too fragmented for industry to effectively engage with it – we find it easier to do innovative work with / for larger corporations. NHS is getting innovations that have worked elsewhere first, and hence tends to be a laggard.

- ICT is the key enabling infrastructure for the vast majority of disruptive innovations in the market today. NHS has invested in some enabling infrastructure (Spine, N3, RiO, etc.), which it now needs to leverage to create a new generation of services. However, it needs to overcome some of the negativity that tends to surround ICT in the NHS and recognise the potential value of the enabling infrastructure it has created.

- Healthcare for long-term conditions is delivered through a very complex supply chain (integrated care pathway). But there is no supply chain management system and no single person responsible for supply chain planning and optimisation. Merely asking commissioners to do this without giving them the tools to do it is setting them up to fail. The NHS is changing organisation structure without addressing the process problems. Systemic problems are the outcome of faulty processes. The NHS needs to urgently rethink how it is commissioning services for long-term conditions and how these services might eventually be delivered.

- The NHS tends to think about services attached to bits of the built environment whether that is hospitals, specialist treatment centres, walk-in clinics, GP surgeries or even call-centres. Modern technology has the capability to virtualise most interactions and locations and the NHS needs to think carefully about exactly which interactions require a high-cost, high-resource face to face interaction.

~O~ END OF REPORT ~O~