Response to Questions in call for views from Health and Sport Committee

What do you consider have been the main successes of the existing Scottish Government’s eHealth and telecare/telehealth strategies and why?

Some of the main successes, in no particular order, are:

**Success - Emergency Care Summary (ECS) and Key Information Summary (KIS)**

**Why?**

The inclusion of the Key Information Summary (KIS) within the Emergency Care Summary (ECS) has enabled a richer picture of a patient’s conditions to be shared with others involved in their care, especially for those with Long term or complex conditions. This success was underpinned by the EHI Award for ‘excellence in major healthcare IT development’ that the KIS has previously received.

**Success - Introduction of the HePMA Framework**

**Why?**

It has been widely documented that the use of electronic prescribing and medicines administration provides the following benefits

- Improved patient safety
- Cost and efficiency savings
- Quality improvement.

It is to NHSScotland’s credit that the current HePMA Framework is multi-supplier and also enables new entrants to be added to the Framework. This shows an appetite to ensure that procurements are not considered as a door closing to up and coming providers.

**Success - SCI Store**

**Why?**

SCI Store and the other SCI Applications have been operating efficiently and effectively for almost two decades. This success has enabled SCI Store to provide an Electronic Health Record for each Health Board. This backbone is a great enabler for the future.

**Success - Clinical Change Leadership Group (CCLG)**

**Why?**

As with all things technological that impact on how people carry out their work, it is always beneficial to have them involved in the decision making process. It is to NHSScotland’s credit that the Clinical Change Leadership Group is well embedded within the national eHealth Board enabling the alignment of clinical processes and priorities with the eHealth IM&T Strategy.
Success - NHSScotland initiatives and eHealth engagement

Why?
The move to National procurements with engagement with eHealth leads across all Health Boards is a major success in terms of:

- Engagement with clinical staff in terms of requirements and outcomes
- Joining up services and information flows across Health Boards
- Reducing the ongoing cost of procurement and service for locally procured systems
- Achieving national benefits where patients interact with different service providers and associated systems.

Success - Prescribing and Fulfilment data repository

Why?
Few national governments have developed a data repository comprising prescribing and dispensing data. The opportunities this presents for surveillance, research and improving patient care are numerous. However, there is one usage that addresses the Triple Aim objectives of the Institute for Healthcare Improvement (IHI), which is addressed in the next section.

1.2 What do you consider have been the main failures of the existing Scottish Government’s eHealth and telecare/telehealth strategies and why?

Some of the main failures, in no particular order, are:

Failure - Vendor Lock in

Why?
Some of the main applications that NHSScotland relies on are proprietary; this can result in vendor lock-in.

This is why CGI supports ‘openEHR’ which is a semantically-enabled, vendor-independent health computing platform the benefits of openEHR are as follows:

- It offers the most comprehensive semantic framework available in eHealth, combining formal clinical modelling, terminology, and a services infrastructure.
- It deals directly with the very difficult challenges of eHealth, including semantic scalability - handling complex and constantly changing information and clinical workflows.
- It supports the establishment of a platform-based economic ecosystem, in which the customer retains control of purchasing at a component level, using platform specifications (information models, APIs, clinical models etc) as conformance points for procurement.
- It also ensures that the customer retains control and ownership of the data, ensuring it does not incur unexpected costs in the future for its long term use.
- It provides a direct way for clinical experts to be involved in the specification and steady state development of the system into the future.
**Failure - Mobility**

*Why?*

Some of the biggest improvements to clinical efficiency and patient safety we have seen have been realised by giving users real-time information in the right format on the right device, in the right place and at the right time. This can help the drive to paperless working, streamline encounters at home and across multiple sites, ensure that patient flows are managed efficiently and alert clinicians to significant events.

**Failure - Patient and Citizen Access**

*Why?*

Patient and Carer access and updates to clinical records can result in significant benefits around:

- Improved confidence in the service and patient empowerment and engagement
- A shift to more out of hospital care
- Improved outcomes through home monitoring with appropriate alerting
- Better support for care pathway management for long-term conditions.

Investing in a patient portal solution as an extension to mygov.scot would be a major step forward in driving out these benefits.

**Failure - Not leveraging the Prescribing and Dispensing datastore for Pharmacogenomics**

*Why?*

It is clear that people metabolise drugs according to their genetic composition. Many of the standard drugs used for treating chronic disease are sensitive to the various versions of the Cytochrome P450 (CYP) gene. The opportunity to traverse the data store and stratify patients according to CYP risk, and then undertake a simple single nucleotide polymorphism (SNP) test, would enable Scotland to reduce the cost associated with unnecessary medications and avoid significant adverse drug events.

**1.3** How well does the Scottish Government’s draft Digital Health and Social Care Vision 2017-2022 address the future requirements of the NHS and social care sector?

The draft Digital Health and Social Care Vision 2017 – 2022 seems to address the future requirements of the NHS and social care sector well. The vision of enhancing citizen and patient engagement and safely and securely sharing information across public services is a key driver across multiple health economy geographies with which we work.

**1.4** Do you think there are any significant omissions in the Scottish Government’s draft Digital Health and Social Care vision 2017-2022?

Significant omissions are:
Inclusion of Carers and Preferred Contacts

It would be good to see the inclusion of appointed carers or others as defined by the data subject. Whilst it is important that data subjects are in control of data held about them, there is often both the need and the wish that data subjects can devolve either all or some of the data held about them to others of their choosing.

Use of Telemedicine for ICU, Stroke and Emergency Care

Whilst many healthcare enterprises have attempted various telemedicine initiatives, the ones that are generally considered to be the most effective in the United States are those relating to the projection of expertise from a centre of excellence to another part of the healthcare system.

In Scotland, a country with a dispersed population, there is an undoubted opportunity to use these experiences to reduce unnecessary helicopter transportations from remote geographies. We also believe that by supporting clinicians in remote areas it will be easier to recruit and retain clinical staff in remote areas such as the Highlands and Islands.

1.5 What key opportunities exist for the use of technology in health and social care over the next 10 years?

The key opportunities for the use of technology and social care over the next 10 years are:

Big Data/Population Health

Organisations need to manage data more effectively, gain more value from analytics, and reduce complexity. We have seen that Data Analytics/BI is among our clients’ top 5 areas for IT improvement and investment. This has driven us to ensure that our services mirror our clients’ needs, were we have combined technical skills with industry domain knowledge to engineer solutions that get real value from data. Ensuring that Big Data/BI leverage the following 3 aspects: - Wide (longitudinal) Data: continuous monitoring over time, Deep data: more detailed information than ever before, Dense Data: Big Data pattern recognition.

It is generally considered that the emerging genomic domain (and its associated domains relating to the proteome, the immunome) will challenge everyone’s perceptions of Big Data. Many countries are already undertaking large scale sequencing programmes, such as the 100,000 Genome project in the UK, and the Moonshot Programe in the US, administered by MD Anderson. Scotland has similar initiatives underway and these initiatives are of great importance for future research.

However, as highlighted earlier, Scotland already has the opportunity to reduce the cost of delivery and improve the citizen’s experience of care. In particular, for polyprescribed older citizens, there will be high levels of adverse drug –drug-gene interactions. The research from the United States, whilst at low sample sizes, clearly indicates significant reductions in emergency admissions, resulting lengths of stay and the costs associated with a reduction in acute demand. In addition, there is evidence of reductions in mortality.

It is clear that Scotland, with the natural data resource at its disposition, has the opportunity to undertake a large-scale demonstration of the application of genomic science to its population of older citizens. The research benefits for Scotland would be significant, and its population’s experience of the healthcare system would be radically altered for the better. Such an initiative would place Scotland firmly alongside the world’s leading health economies, and provide opportunities to retain the best academic talent.
Platform / Re-Use approaches to Architecture that span multiple point solution procurements

We would recommend a shift to an enabling platform based approach for solutions across Scotland where key services can be shared across multiple applications including user identity management, consent, audit and security and an open standards based platform for data capture, storage and analytics.

This would greatly enhance the ability to safely and securely share information, capture new data sets and support semantic interoperability, analytics and research. In addition to this the platform can deliver new features in a more cost effective way by sharing existing warranted services whilst providing a platform based ecosystem for small and medium enterprises to build on.

Mobile and out of Hospital care

Employees are your most valuable asset, but in an age of dramatically increased expectations from a Digitally-enabled Public, coupled with budget cuts and increased governance demands, they need access to the necessary tools and information wherever and whenever it is required. Critical to providing your employees with this capability is an effective, flexible, and secure mobile strategy. Our clients often struggle with providing fit-for-purpose mobile apps to their staff, because business and IT platforms are complex, and have been built up and enhanced over the years to address point-in-time needs.

To meet our customers mobile need, we have designed and implemented CGI’s Mobile NOW approach which delivers incremental mobile platforming to get staff mobile quickly.

The benefits of Mobile NOW are:

- Significantly improves response times, both for enabling end users and delivering a better service to consumers and the Public
- Provides new and effective ways of working
- Increased employee satisfaction leading to improved employee retention
- Allows full view of relevant information in context – e.g. at a patient bedside in an NHS environment.

We have successfully used our Mobile NOW approach in delivering the ‘FindMyPatient’ application, successfully implemented at four Healthcare clients, where clinicians are saving up to 1 hour per day.

1.6 What actions are needed to improve the accessibility and sharing of the electronic patient record?

The actions needed to improve the accessibility and sharing of the electronic patient record are:

Interoperability

We believe in the benefits of an open approach to meeting the healthcare challenges of the next decade and beyond.

‘openEHR’ is a well-established open specification which allows the creation of interoperable electronic health and care record in a vendor and technology neutral open format, where the organisations have a shared semantic understanding of the complex clinical information. It is this vendor and technological neutrality that we believe the best healthcare data standard today is openEHR, and this is why it is fundamental to our strategy.


In Scotland, there are a number of separate national registry solutions for specific condition groups including renal, COPD, cancer and stroke. The establishment of a national registry platform based on open standards would help to provision data capture, analytics and monitoring services in a much more cost-effective way with anonymised data also available for clinical audit and research.

**Connectivity**

Accessibility to electronic patient records is highly dependent on connectivity, whether that be from within a hospital via SWAN or in the community via mobile access. With the ubiquity of the internet and most people’s expectation of broadband speed connectivity, it is important that access to electronic patient records either by staff or the citizen, is easy and fast.

Now that more clinical IT applications are less tied to a desk and have become more mobile, it is important that the proper infrastructure is in place to meet the demands of multiple ways of working. Therefore, it is important to ensure that the appropriate supporting infrastructure is in place, throughout Scotland, to ensure sufficient connectivity to electronic patient records.

**1.7 What are the barriers to innovation in health and social care?**

Some of the barriers to innovation are:

**Healthcare Data Interoperability**

Healthcare data is complex. Our ontologies are large and multi-dimensional, and whilst initiatives such as SNOMED have sought to standardise the complex nomenclatures, the systems that support healthcare delivery are based on proprietary interpretations of older standards. It is difficult to drive innovation across multiple different data standards, especially when the interfaces to these data sources are not based on modern standards.

**Healthcare Systems**

Generally, the systems supporting the delivery of healthcare have evolved on a departmental basis (LIMS, RIS, PACS, PAS). As healthcare becomes more complex, many innovative developments require the orchestration of clinical and non-clinical processes. This is very difficult to achieve when the underlying systems have little concept of workflow or orchestration beyond the basic business processes they are supporting.

**Funding**

The old adage of ‘You get what you incentivise’ is more appropriate in healthcare than anywhere else. Healthcare reimbursements have traditionally been focussed on activity, not on quality outcomes based on the patient’s experience of the healthcare system. The net result is that innovation has been constrained to narrow aspects of healthcare delivery. Most disruptive innovations in industrial history have arisen from the democratisation of a service to the consumer (IBM PCs for computing, Model T for cars etc.). Traditionally in healthcare, there has been no consideration of the citizen as a stakeholder in the industry, and hence innovation has never been turned toward this more disruptive perspective.
**Legislation**

Healthcare is the most human of industries; people do things to other people and as such it is rightly regulated. However, technology change, and the potential positive disruption that comes with this, evolves at a rate much faster than our legislative frameworks. As a result innovation is often tempered through legislation directly, or by change agents avoiding working in this industry because of concerns associated with the legal framework. As Healthcare is a public service in most countries, we also have procurement processes that are the antithesis of innovative.

**Culture Change**

As stated previously, healthcare is an industry where people do things to other people. It is rightly our most senior talent who are responsible for the most complex tasks, and inevitably the decision makers in organisations tend toward an older demographic. Outside of the academic domain (where fresh thinking is key) it is difficult for the organisational leadership to understand the disruptive nature of innovation and therefore how best to leverage and nurture it. This also requires very busy health professionals to have the space and time to innovate and to adapt to new ways of working.