## Contents

1. **Context** .......................................................................................................................................................... 3

2. **Changes in Health and Social Care Delivery** ............................................................................................ 3
   2.1. Services focused on individual needs and choices .................................................................................. 3
   2.2. Localise where possible, centralise where necessary .............................................................................. 3
   2.3. Truly integrated care and partnership working, maximising the contribution of the entire workforce .......................................................................................................................... 4
   2.4. Prevention is better than cure ................................................................................................................... 5
   2.5. A focus on health inequalities and diversity. ............................................................................................. 5

3. **Transforming Acute IT Services** .................................................................................................................. 5

4. **Supporting Adaptive, Personalised Health** .................................................................................................. 6
   4.1. Hybrid Interoperability Reality ............................................................................................................... 6
InterSystems is very pleased to provide its views to the Scottish Government’s draft Digital Health and Social Care Vision 2017-2022, and whether it will drive the necessary innovation and transformation to meet the needs of Health and Social Care.

1. **Context**

As a global organisation, with healthcare solutions operating in a number of diverse geographies, InterSystems perceives that all developed and developing health economies around the world are facing the same issues. They need to achieve three key objectives:

- Improve Productivity in the delivery of Health and Social Care (reduce the per capita cost)
- Improve Outcomes of Populations of Patients
- Improve the Patient Experience of Care.

Much of the research and policy on this is coming out of the US (in the Institute for Health Improvement [Triple Aim](http://www.ihi.org/Aim)). However, this does not reflect the reality for publicly funded Health and Social Care that must be delivered across the entire population within a finite budget. These constraints make driving innovation at the required scale more difficult but not insurmountable.

2. **Changes in Health and Social Care Delivery**

In order to deliver on these three key objectives, some fundamental changes in Health and Social Care delivery needs to happen and InterSystems can see the Health and Social Care system in Scotland already taking positive action in some of these areas. Many words have been written about the required changes to Health and Social Care delivery, but one of the best summaries of this, despite being written ten years ago, is from the Healthcare for London: A Framework for Action by Lord Arun Darzi[^1]. In its five key areas, changes are identified and each of these have a huge impact on the needs of eHealth to drive this innovation and support the necessary transformations. It is clearly just as applicable to Scotland, as it is to London.

2.1. **Services focused on individual needs and choices.**

*Provision should, wherever possible, be tailored to the particular needs of each individual. Patients should feel in control of their care and be able to make informed choices.*

This change of focus means moving patients from being passive recipients of care to being integrated into the care delivery team. It also means that their representatives should be at the heart of care too; whether they are the parents of under 16s, or the children (or grandchildren) of parents, or neighbours or others acting on behalf of adults with complex health and care needs. The most obvious example is the provision of digital tools to help patients and their representatives, manage their conditions better. Whether this is the ability to interact with their complete Patient Record, have a secure convenient capability to interact with members of their care team, or be given a choice of digital tools (apps) to help them manage their lifestyle in addition to, or instead of drug therapy, or need for hospital admission.

2.2. **Localise where possible, centralise where necessary.**

*Routine healthcare should take place as close to home as possible. More complex care should be centralised to ensure it is carried out by the most skilled professionals with the most cutting-edge equipment.*

[^1]: [http://www.nhshistory.net/darzilondon.pdf](http://www.nhshistory.net/darzilondon.pdf)
There has been a long debate on the need for specialisation versus the benefits of having generalists treating patients. What has been proven is that the centralisation of certain services improves outcomes and very cost-effectively. The centralisation of acute stroke care in which hyperacute care is provided to all patients with strokes across an entire metropolitan area, can reduce mortality and length of hospital stay and has been proven in London and Manchester.

This introduces some key considerations from an eHealth perspective. Sharing information for hyperacute services is not something that can be achieved through typical interoperability technologies, such as shared care records and portals. It is about sharing detailed information in real time, including information from other providers, paramedics etc. To this extent, the implementation of Acute Care systems, separately in each Health Board, implemented in different ways does not support this and does not support the real transformation that is required, especially in services like Oncology, Maternity and the Cardiovascular Services.

Localising Care is also vitally important and with the geographic spread and remoteness of its population, NHS Scotland has been taking the lead in pioneering areas such as telehealth and remote monitoring. InterSystems’ experience from around the world suggests that constructing a business case for Telehealth and Remote Monitoring is difficult, because each solution typically uses its own infrastructure. NHS Scotland needs to investigate how it can not only develop telehealth and remote monitoring services on more common, reusable platforms, but how the data captured can be made available to all in the multi-disciplinary teams who may require it, in order to deliver their specific element of patient care and management.

2.3. Truly integrated care and partnership working, maximising the contribution of the entire workforce.

Better communication and co-operation is essential – between the community and the hospital, between urgent and planned care, between health and social care – to prevent people from falling through the gaps. Care should be multidisciplinary, bringing together the valuable contributions of practitioners from different disciplines. The NHS should be committed to working in partnership with other organisations, including local government and the voluntary and private sectors to ensure that future solutions encompass all participants.

This is something that NHS Scotland has been very good at over the last ten years, when compared to many other health economies around the world. Its focus on Healthcare Interoperability has laid a foundation and strong culture of information sharing. This needs further development and greater integration into Health and Care Delivery.

As more care needs to be delivered at scale, NHS Scotland needs to find ways that with clinical decision support, applications can make suggestions to care workers on interventions that need to be made, or to identify where a clinical decision may in fact have a risk of harming a patient. This is why NHS Scotland looks to look at new types of interoperability. A clinical portal just provides a clinician a view of a complete record, but there is no automated reasoning on the information precluding its use within comprehensive clinical decision tools now becoming available.

Interoperability is now focussed on being able to exchange structured and coded information between systems and for the receiving system to be able to reason on that data and initiate additional actions based upon evidence. When that data can include validated remote monitoring data etc., this transforms how one can identify those who NEED care, rather than those who DEMAND care and means data can be exchanged between systems and devices in such a way that care and treatment is optimised.

http://www.bmj.com/content/349/bmj.g4757
2.4. Prevention is better than cure.

Health improvement, including proactive care for people with long-term conditions, should be embedded in everything the NHS does. Close working with local authority partners is needed to help people stay mentally and physically healthy.

Prevention has been partly addressed above and is crucial in the identification of patients who are at risk, before they develop a particular condition. InterSystems recognises the need to stratify populations of patients based on risk factors and to then be able to manage their care so they either remain stable with their condition(s) or so they can change their behaviour to prevent developing a condition. Medical science has developed significantly during the last one hundred years, such that the vast majority of risks associated with developing diseases and conditions are behaviour related; fundamentally consuming too many calories, drinking too much alcohol, or smoking too much. Educating and empowering people to feel confident that they can take control and that they can make a difference by changing their behaviour is key. This means giving people the ability to interact with their health and care record, to understand more about the conditions and what increases the risks of getting them and finally providing tools and strategies to allow them to take control. Again, a composite health and care record is key to this accessible through a Patient Portal. Through this Patient Portal, citizens, including both patients and carers, should have access to trusted, curated content of health information that they can query, rather than “going to Google”.

2.5. A focus on health inequalities and diversity.

As discussed above, the most deprived areas of London, with the greatest health needs, need better access to high-quality healthcare. The whole thrust of this report is to tackle health inequalities by improving services across London, giving everybody access to the best possible care. Healthcare should be intelligently commissioned to tackle health inequalities. Preventative and outreach work should focus on the most deprived populations and new facilities should be located in the areas of greatest need. Improvements also need to take into account London’s rich ethnic and cultural diversity. We are advocating that patients have more information to make choices about their care and this should be accessible to all.

Many of the considerations and solutions have been described above, but Scotland faces more extreme inequalities than London. In London the Lord Darzi report describes the 8-year difference in life expectancy between men in Westminster and men in Canning Town even though they are just separated by 8 stops on the London Underground system. However, there is 15-year gap in male life expectancy at birth across the 56 neighbourhoods in Glasgow. Scottish Governments draft Digital health and Social Care Vision 2017-2022 focusses quite rightly on health inequalities and the right of all to high quality and accessible care.

3. Transforming Acute IT Services

Transforming Health and Care in Scotland needs NHS Scotland to consider its current arrangement of IT system provision. If NHS Scotland is going to increase the specialisation in some specialties, as is happening in England and parts of the rest of the world, it should use the opportunity for the renewing of the PMS contract to consider if the current configuration of systems will support Acute Care in the future. Should each Health Board have its own instance of TrakCare each with its own configuration? What should be the topology of TrakCare in Scotland to support, in particular, hyperacute services? This is more important as Health Boards are looking to rollout more clinical modules of TrakCare. With the Health Board consolidation initiative now progressing, NHS Scotland has the ability to look at its delivery model and ensure that is aligned with meeting the key priorities contained within the 2017-2022 vision.

http://www.gcph.co.uk/assets/0000/5516/Glasgow_-_health_in_a_changing_city_final.pdf
4. Supporting Adaptive, Personalised Health

NHS Scotland has been a leader in developing new models of care, and these always have a big impact on Interoperability, as new models of care involve multi-disciplinary teams from different organisations all who typically have their own IT systems. NHS Scotland has done a lot of work on providing key information to those who need it, such as Emergency Care Summary (ECS) and SCI Gateway, but these are limited in what they can deliver.

NHS Scotland ultimately needs a unified Health Record for Patients that includes both documents and structured data. Within InterSystems this is named a composite health and care record. In the past, NHS Scotland has delivered this through a Portal, but today as the digital maturity of health and care systems increases, citizens have access to technology though smartphones and tablets to access information themselves and citizens want to have access to health and care information, clearly a portal is not enough. Instead a Composite Health and Care Record is required that is accessible through multiple channels which can deliver and present far richer information in an intuitive and structured manner.

4.1. Hybrid Interoperability Reality

Within eHealth there is a lot of talk of interoperability standards and in the last two to three years there has been a lot of excitement generated by the development of HL7 FHIR (Fast Healthcare Interoperability Resources). InterSystems is at the centre of its development and recognises that it has many advantages. In addition, InterSystems provides counsel for organisations to help them to understand what FHIR will allow a Health Economy such as Scotland to achieve. Even with HL7 FHIR, NHS Scotland faces a hybrid interoperability reality of many standards being in place for a long time to come:

![Interoperability Landscape](image)

There is still valuable data stored in V2, V3, and CDA formats. Whilst new solutions may be able to use HL7 FHIR, NHS Scotland needs to be able to enable new solutions with ‘old’ data. This includes being able to:

- Normalise, Aggregate, Send out as FHIR
- Enable document and V2 based systems to use data from FHIR
- Recognise that just focusing on unstructured document exchange is not exploiting richness of what you have and does not drive clinical adoption or clinical utility.
InterSystems believes that going forward, NHS Scotland needs an architecture for Interoperability that is more aligned to the following:

A Composite Health and Care Record can be populated from any data. This can include:

- GP Systems
- Community Systems
- Acute Systems
- HEPMA solutions
- Social care
- Remote Monitoring Solutions
- Other Patient generated data
- etc.

Today the Interoperability landscape is more exciting than ever, GP and Community Systems are developing standards-based APIs (many based on HL7 FHIR) for access by third party applications. Development of information models in Social Care are starting to emerge, this is the first stage in defining standard APIs – for example the Assessment, Discharge and Withdrawal work being carried out by NHS Digital in England for the Acute Care / Social Care integration.

With all the information about a patient; documents, other unstructured and structured data in a single composite health and care record, it can then be made available in a controlled way by different technical means and open APIs. This is how innovation can be unleashed in Scotland.

In delivering the 2017-2022 vision, NHS Scotland will need to establish a greater level of standardisation across systems, and within multiple instances of the same system, in order to optimise those features that rely on coded and structured data. As stated previously, one of the key considerations in information sharing is an appreciation of the overall objective in order that data can be used to its fullest value and that it can harness the sophistication now available in many applications.

The same information in the Health Information Exchange that is shared by care professionals can also be shared with Patients in a controlled way.
For example, Discharge Summaries, Outpatient Letters, Appointment Reminders across all points of care.

The same Health Information Exchange can be used to capture patient generated data, such as from remote monitoring devices. What is key, is that the Health Information Exchange can do near real-time analysis on received data without it all going into the clinicians' primary system (and being awash with even more data). Instead, using Health Insight, HealthShare can identify when action is needed based on result and trends.

A platform with Open APIs and supporting standards like SMART on FHIR, HealthShare is able to support an eco-system of innovators in an open and transparent way. SMART on FHIR is already generating innovative solutions in the US and with FHIR being adopted so wholeheartedly in England, InterSystems believes that this provides the best standards based path to innovation.

The architecture defined provides a set of re-usable solutions. For example, the composite health and care record will already contain all the data currently in the Emergency Care Summary and SCI Gateway. Not only does it mean that the number of systems being used can be rationalised, but the information can be accessed in the same way, thereby simplifying the management and development of interoperable solutions.