Integrated Health and Social Care
Digital Platform
Phase Two – Executive Summary

Scottish Government and the Local Government Digital Office

June 2018
Executive Summary

This report provides information to decision makers and key stakeholders regarding how Domain E and Domain F within the Digital Health and Care Strategy should be approached; what the critical success factors are and what the likely high-level roadmap could be for the target architecture. Delivery of the new Digital Platform (DP) and it’s integration with the existing Scottish health and care service footprint will be based on industry best practice digital transformation approaches, lessons learnt elsewhere and the latest industry research findings from Gartner.

The technical and operational context of health and social care across Scotland is very complex, with different stakeholders who have different views on the best way forward. To aid decision making and future developments, the Scottish Government (SG) Directorate for Health & Social Care and the Local Government Digital Office commissioned an independent and objective analysis of the options for a technical target landscape. The Analysis also outlined a direction of travel and roadmap.

Research and evidence from across the globe shows citizens and patients are becoming more demanding driven by expectations raised by better retail and consumer experiences. Populations are ageing and the demands being made on health and care institutions are growing. Scotland recognises that continuing with the same practices, using the same legacy systems and ways of working will not be sufficient to meet this demand.

Furthermore the rapid growth in data generation, the volume and veracity from an increasingly connected population of citizens, mobile devices and the Internet of Things (IoT) will overwhelm existing data management operations and healthcare systems. However, this also offers an opportunity. If this data can be harnessed, collated and distributed efficiently across the healthcare enterprise it could open up a world of new data sources and ‘big data.’ In turn this could be utilised to deliver real time healthcare services, support preventative and precision medicine and provide a rich source of analysis for population health and medical research.

The common thread across all of these data sources and healthcare operations is seamless, fluid Health Interoperability (HI). Evolution not revolution has been successful elsewhere once leading practices, effective change and innovative approaches were undertaken.
Executive Summary (cont.)

Much improved HI will be required to create a new, more comprehensive and detailed view of the patient/user context. A fully formed and implemented DP will provide the foundation for a Real Time Health & Care System (RTH&CS). The RTH&CS vision for the DP is the model of a health system that can see and act in real time to improve care delivery outcomes, patient/user engagement and administrative processes.

Key findings, leading practices from case studies and research findings provide a rich set of development methods that SG can use to de-risk its own DP roll out. This increases confidence and offers a strong platform to build Scotland’s capability when combined with the development of a new architecture, the use of secure cloud-based services and the use of common, shared international standards. The establishment of a national patient/citizen identifier with open healthcare systems built around APIs and semantic interoperability will un-lock new ways of working and early wins. However, lessons identified elsewhere mean early benefit realisation cannot be taken for granted. Continual engagement with stakeholders, careful interaction with vendors, agreeing semantic standards and the development of an in-house skilled resource pool are some of the more important areas for consideration. Failure to manage these and other challenges such as vague governance and unclear service ownership can hinder progress and undermine expectations. Therefore Scottish Government (SG) is strongly advised to following 11 Healthcare Digital Platform Leading Practices to ensure the right outputs are delivered to time, cost and quality. Adhering to these and the 6 critical success factors will maximise the DP’s potential, ensure the scalability required and deliver the positive outcomes needed for citizens across Scotland. The DP for Scotland should be delivered employing a proven digital transformation approach building on lessons identified elsewhere and a technical architecture that aligns with optimal digital design and principles.

The DP design should incorporate 6 core components around:

- **Interfacing**
- **Interoperability**
- **Integration**
- **Standards**
- **Strategic alliances**
- **Common initiatives**
Executive Summary (cont.)

NHS Boards System Observations

- The system survey highlighted commonality exists between the systems used by NHS boards across Scotland, particularly with regards to cornerstone systems such as TrakCare, EMIS, Vision and SCI Store. However, significant variation also exists across the country particularly with regards to the system used for community care, critical care, order communications, labs, clinical messaging, analytics and the many other smaller and more specialist systems used across health.

- Clinical portal solutions are key components in all health boards and are used as the primary interface for clinicians and health professionals to access patient data. The data sources which feed the portal solutions are dependent on the health board. However, it is common to find clinical portals pulling data from TrakCare, SCI Store and PACS.

- Interoperability is a key challenge for all health boards and integration is in all cases achieved using InterSystems Ensemble. The survey discovered the lack of semantic interoperability standards (such as SNOMED CT) lead to potential patient safety and clinical workflow issues due to incompatible systems being integrated together.

- A mixed response was received when the health boards were asked if nationally provisioned systems would provide a better solution than locally provisioned instances (TrakCare, for example). The main reservation to adopting a national system model is the challenge of version management and the migration effort required to consolidate the existing set of systems.

- There are multiple examples of successful and effective data sharing between health boards and Local Authorities predominantly led through data sharing partnerships. Establishing data sharing agreements were cited as a key challenge to sharing data with other organisations, however, this was not a consistent finding and there were examples such as the NHS Ayrshire & Arran Board who reported they had no challenges following the process to put these in place.

- Staff identity was found to be a mix of localised solutions and there were no real centralised system which allows identity to be used across health boards. MyAccount exists as a country wide citizen identity provider, however, this was found to not to be heavily adopted and local based citizen identity solutions are in place to access online services.

- Limited resources, budget and ageing systems are reported as the biggest challenges in supporting current systems. The responsiveness of vendors and the ability to keep eHealth staff adequately trained were also cited as challenges health boards face.
Executive Summary (cont.)

Local Authorities Observations:

- SWIFT and CareFirst were identified as the most common systems used to provide social care capability among the Local Authorities surveyed, with systems such as Tunstall PNC also being utilised to provide telecare capability. Almost half of all Local Authorities surveyed stated they have plans to replace their social care system within the next three years.

- Most of the organisations surveyed have integration capabilities and the social care products in use do support APIs. However, the use of these APIs was found to be fairly low and system integration was often achieved using bespoke development techniques.

- The survey respondents were generally receptive to having a nationally run core social care system as long as the policies and procedures could be aligned across different Local Authorities.

- Data sharing agreements are common place among the organisations surveyed with most having data sharing in place with NHS boards, other Local Authorities, government and/or police. While the agreements were in place, practically applying it had come with its challenges.

- No common identity provider for staff exists across Local Authorities, the most common is active directory based solutions which have been implemented locally or at the system level. MyAccount has been adopted by multiple online services offered by the Local Authorities to citizens, however, it is common that a system level identifier is used to identify citizens and not CHI.

- Limited resources is reported as the biggest challenge in supporting current systems.
Transforming a national health system to adopt digital best practices and accelerate interoperability has been and continues to be a global challenge. No single nation, region or healthcare organisation has found this change to be fast, inexpensive or quick. Most nations have taken 10 years or more to transform their health and care services on the back of integrated data exchange and have spent many millions in the process. Modernising and deploying fluid, real time healthcare interoperability is complicated and requires the nation to build a complex often novel capability. This is invariably against a backdrop of ongoing legacy refresh, existing modernisation programmes and tight fiscal conditions. To that end Scotland will need to ready itself for a long, evolving transformation that may go through numerous philosophical, operational and technological changes.

Delivering the DP and transition requires novel thinking. It needs executives, clinicians, front line practitioners and political leaders to break existing health/social care paradigms and look at the national rather than local picture. This is not a money saving exercise and most organisations attempting these programmes have difficulty articulating the immediate benefits during the investment appraisal stage. It requires real innovation which means taking risks. Proper health and care interoperability means developing new ways of working, challenging tacit assumptions, stepping outside of a clinical hierarchy mind-set and really challenging long established biases. Health and social care planning, service provision and delivery needs to move to an integrated, citizen-centric model that maximises limited resources to deliver optimal health and care outcomes.

Interoperability delivered by the DP will make it possible for disparate, heterogeneous systems to share patient/citizen-related information. This facilitates the support of improved workflow and business processes across system and organisational boundaries. Interfacing — a loosely coupled, asynchronous form of application integration — is at the heart of healthcare interoperability. Healthcare provider CIOs and interfacing/interoperability specialists must ensure that their interfaces are properly designed, tested, versioned, deployed and supported. Otherwise, a fragile and unreliable information exchange environment that lacks integrity will result.

Another key area requiring prolonged effort and examination is that of effective and workable semantic data exchange. Semantic interoperability* issues will persist for years to come. According to Gartner’s research the consistent semantics of shared health information will surface as the next big “interoperability problem.” This needs to be addressed urgently to ensure investments and technology choices are aligned to support DP across Scotland and do not allow different standards to persist across the nation. True population health management will need effective semantic interoperability.

*Semantic interoperability is the ability of computer systems to exchange data with unambiguous, shared meaning. Semantic interoperability is a requirement to enable machine computable logic, inferencing, knowledge discovery, and data federation between information systems.
What does this mean for an Integrated Health and Social Care Digital Platform in Scotland?

Are Scottish health and care organisations technically fit and ready to develop the Digital Platform?
Not quite ready. From a technology perspective, Scotland has a number of reusable platforms and capabilities that could be woven into the DP architecture. These capabilities may be relevant and applicable for tactical DP initiatives in certain parts of the country such as proving the first candidate Use Cases, however, their suitability for use across the whole country are questionable. A fitness for purpose and use assessment will need to be conducted against each of the potential reuse capabilities in line with the selected DP option chosen and vendor stack adopted. The level of interoperability maturity is low overall. Therefore a number of local initiatives and actions will need to be addressed to ensure the early DP capability can be built and deployed effectively e.g. governance, skilled resources, operational processes and security. This is especially important for candidate sites that will be nominated to test and deploy the initial Use Cases and Minimum Viable Product (MVP).

Are stakeholders engaged and ready?
Increasingly so. The commitment to a DP and appetite to engage further was obvious and continues to grow among clinicians and social care groups (demand side) as they become more aware of the direction of travel and the potential benefits the DP can enable. Technologists and stakeholders within the ‘supply’ side of the community are keen to investigate technology options especially where there are opportunities to reuse existing portals and healthcare infrastructure. This group are understandably more cautious when exploring the potential impacts of service delivery and how the DP will change operating models given this group will require more change against a backup of ongoing high tempo BAU operations.

Is Scotland ready to move to the next stage of development?
Overall yes. Once a suitable number of Use Cases, MVP requirement and supporting vendor stack has been agreed there is no reason why an MVP could not be designed and deployed within 12 months. Developing a suitably empowered and skilled team with the right mix of resources, decision rights, knowledge and risk management awareness will be key. Testing a Use Case that has low impact, is relatively easy to implement and likely to demonstrate some quick wins is eminently achievable. Continual engagement and two way communication with stakeholders so they all have a voice will help build trust and confidence.

Questions need answering:
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Executive Summary (cont.)
Recommendations

1. Define a prioritised order of delivery:
   - Determine what parts of your shared vision can be completed quickly, through Use Cases, to help mobilise and build the partnership.
   - Ensure that attention is given to those areas of maximum business benefit or where there are known quality or clinical risk/safeguarding issues.

2. Adapting a national instance of SCI Store would reduce maintenance at the health board level and facilitate easier data sharing at a national level. However, the survey established that SCI Store does have issues such as how it interlinks with CHI and in regards to scalability. Replacing SCI Store with the digital platform should therefore be considered given the functional overlap the platform has with SCI Store. Similarly, the technology and capabilities of the platform offer a natural successor for SCI Gateway. The opportunity to re-build SCI Gateway in an open and scalable manner should therefore be considered.

3. Consider moving cornerstone systems, such as TrakCare and JAC, to a centrally provisioned model. The existing regional approach does not maximise the potential economic benefits of scale and adds to the complexity associated with interoperability.

4. Assess and record the care pathways, business processes and information flows that are required to support and communicate:
   - Prioritise and establish which are essential and which would be nice to have.
   - Understand how these will support business drivers and problems.

5. The survey identified a trend where the more flexibility organisations have with regards to product choice, the greater the variation in systems results. This also leads to greater variation in integration requirements and therefore greater development and maintenance costs. This trend is particularly prevalent in the social care setting since they have complete control over the products they adopt. Interoperability standards should be adopted and mandated to all parties involved in the health and social care ecosystem to eliminate the need for bespoke integration and customisation.
Executive Summary (cont.)

Recommendations

7. Continue momentum and build on the positive contribution already made by the clinical, care and technology community using the forums and workshop groups already established.

8. Commit to making an early decision on the six common components of the DP itself and get all parties to support establishing a team that can deliver the MVP.

9. Determine what level of standards compliance you aspire to at different stages of your interoperability journey.

10. Identify and establish an empowered governance group that has explicit decision rights. Identify those key subject matter expert groups that can provide guidance and inputs to the key decision board. Don’t confuse decision rights, which should rest with one body or nominated leader, with input rights which are purely advisory.

11. Understand the cultural challenges. Determine if or how much resistance to sharing data from some partners will emerge and have an engagement strategy to manage this challenge.

12. Establish which care pathways, business processes and information workflows need to be modified as a result of the use case selection and gather agreement for this.

The survey found semantic interoperability will be a continuing challenge due to the difficulties integrating disparate, proprietary systems and clinicians who interpret standards such as SNOMED CT and ICD10 differently. These incompatibilities can lead to safety and clinical workflow issues. The digital platform should be used to address semantic interoperability challenges and provide standardisation. Clinicians will need to agree on standard interpretation with health and across social care stakeholder groups.

13. Map out the most appropriate interoperability standards for semantics, content, messaging, security etc and use independent assurance to help make an objective decision. Don’t be swayed by interest groups or vendor specific agendas. This needs to be established from the start and will have a significant impact on the DP, wider Scottish health and social care in the future.