

Public health reform



A Scotland where everybody thrives

# Public Health Reform Programme Interim IT & Digital Strategy Draft 0.4

Including Future Requirements (PID Objective 3)



**Author:** PHR IT Core Team  
**Contact:** andy.robertson@abrconsulting.co.uk

**Date Published:** 15 Jan 2019  
**Version:** v0.4

**DOCUMENT CONTROL SHEET:**

**Key Information:**

<b>Title:</b>	Interim PHR IT & Digital Strategy
<b>Date Published/Issued:</b>	
<b>Date Effective From:</b>	
<b>Version/Issue Number:</b>	0.4
<b>Document Type:</b>	
<b>Document Status:</b>	Draft under development
<b>Author:</b>	A Robertson
<b>Owner:</b>	P Couser
<b>Approver:</b>	PHR Programme Board
<b>Approved by and Date:</b>	
<b>Contact:</b>	
<b>File Location:</b>	

**Revision History:**

<b>Version:</b>	<b>Date:</b>	<b>Summary of Changes:</b>	<b>Name:</b>	<b>Changes Marked:</b>

**Approvals:** This document requires the following signed approvals.

<b>Name:</b>	<b>Signature:</b>	<b>Title:</b>	<b>Date:</b>	<b>Version:</b>

**Distribution:** This document has been distributed to

<b>Name:</b>	<b>Title/Division:</b>	<b>Date of Issue:</b>	<b>Version:</b>

**Linked Documentation:**

<b>Document Title:</b>	<b>Document File Path:</b>

## 1. INTRODUCTION

This deliverable was originally specified to be a set of future looking (3-5 year) business requirements of the IT & Digital thread within the PHR Reform Programme. Indeed, section 3 of this document is still very much focused on these although they are expressed at a fairly high level. This is understandable given where the rest of the commissions are at in terms of levels of detail on operating models, key capabilities and potential opportunities to better leverage digital technologies. The immediate priorities in preparing for the launch of the new organisation have been identified and are already 'work in progress' (see section 1.2 below). However, the approach to date has left a gap in terms of the strategic aspects of how IT & Digital considerations need to be built into the fabric of the new organisation. It is important to define the current 'strategic digital intent' of the new organisation so that we can inform work on the target operating models (governance, structure, service models, performance management etc), organisational development (communications, culture, training etc) and corporate services model (SLAs, retained roles, supplier management etc) which are all due to make major decisions in early 2019.

Information Technology platforms and Digital tools will offer new ways to gather and analyse data, engage within PHS and with the many stakeholders, and ultimately improve public health. New technology can offer many opportunities but also some challenges to public health. It will require new thinking about public health provision models, data, governance, partnership and engagement. This interim IT and Digital strategy is designed to lay the foundations for a robust approach to technology innovation, adoption and exploitation for the new PHS organisation as it emerges from the PHR Programme work currently in progress. The more definitive 'product based' digital requirements are expressed within a shell of assumptions around how PHS will look to deliver this increased digital capability more generally. It is assumed that this more rounded view of an IT & Digital future for the new organisation will have some value at this time.

*It should be noted that this draft has not at this stage been put through the new interim governance (PHR IT & Digital Governance Group) and has not been consulted on across the PHR programme, NSS PHI, Health Scotland or any of the other IT & Digital stakeholders. The intent here is to develop the working assumptions around strategy which will inform other key commissions as mentioned above.*

### 1.1. Context

Public health reform is a partnership between Scottish Government and the Convention of Scottish Local Authorities (COSLA). However, the vision for Scotland's health cannot be achieved by any one organisation working alone. It will take the combined efforts of partners from across the public, private and third sectors and, importantly, from within local communities.

Public health reform aims to challenge our current ways of working, put more decisions directly in the hands of citizens and provide support to local communities to develop their own approaches and solutions to local population health challenges.

To deliver the vision for public health reform, Scottish Government and COSLA will

- agree public health priorities for Scotland that are important public health concerns and that we can do something about
- establish a new national public health body for Scotland bringing together expertise from NHS Health Scotland, NSS/PHI Health Protection Scotland and NSS/PHI Information Services Division
- support different ways of working to develop a whole system approach to improve health and reduce health inequalities.

The theme of 'new ways of working' is strongly reflected in the detailed steps to deliver on the vision and it is clear that the more innovative and effective deployment of modern information and digital technologies can play a vital role in enabling the type of change being sought.

Work done to date has identified six public health priorities for Scotland, where by working together we can improve healthy life expectancy and reduce inequalities, the priorities are:

- A Scotland where we live in vibrant, healthy and safe places and communities.
- A Scotland where we flourish in our early years.
- A Scotland where we have good mental wellbeing.
- A Scotland where we reduce the use of and harm from alcohol, tobacco and other drugs.
- A Scotland where we have a sustainable, inclusive economy with equality of outcomes for all.
- A Scotland where we eat well, have a healthy weight and are physically active.

The agreed priorities reflect public health challenges that are important to focus on over the next decade to improve the health of the nation and we need to ensure that information and digital technologies / capabilities are fully exploited in support of these key priorities.

PHS will have a national leadership role in developing new models of public health together with national and local government, the NHS, the voluntary and community sector, industry, the scientific and academic community and global public health partners, and presenting these directly to the public.

User needs, data and the latest technology are essential when developing approaches to prevention. The rapid increase in types and complexity of population health information will require significant advances in PHS approaches to data generation, access, analysis and use, including new data science techniques. The challenge for PHS is to keep abreast of the opportunities created by digital technology, to implement the SG Digital First Service Strategy, and to ensure that the public health principles of equity and access are maintained and developed in this new digital world.

One of the 6 PHS priorities is focused on aim to reduce health inequalities. At present PHS does not comply with many accessibility standards and requirements. Service standard requirements challenge us to think about people with different needs so that we do not increase the digital divide and perhaps, with assisted digital and well-designed services, help to close it. The UK government's Digital Inclusion Strategy sets out how government and external partners will get people online. PHS should play a leading role in increasing health literacy and promoting digital inclusion.

## **1.2. Work in Progress**

Digital change is already underway within both Health Scotland and NHS PHI with examples of digital work in many areas:

- Both NHS HS and NSS/PHI are well on the way to completing a transition of legacy and new websites to modern platforms with linkages to NHS Inform where applicable
- tracking the epidemiology of outbreaks has new approaches which can include real time tracking via mobile phones
- the Cancer Intelligence service run by PHI is already exploiting new data virtualisation tools to facilitate increased information access
- Agile development teams have been established in several parts of NSS/PHI and HS in support of Digital Transformation objectives.
- Re-platforming of HPS core web estate
- Health Scotland Corporate Planning Tool (CPT) base on Microsoft Dynamics CRM base

Work has already started also on work packages governed from within the PHR Programme designed to assist in preparing the IT/Digital foundations required to support the new PHS organisation from day 1 operations onwards starting in December 2019. The outline scope / deliverable for each is listed below:

- **IT Infrastructure Convergence**
  - Networks, Desktop, Productivity / Collaboration, MS 365, File Servers, Telephony, Directory Services, Helpdesk etc
  - Deliverable = Infrastructure convergence roadmap, day 1 target environment
  
- **Website / Digital Channel Development**
  - Web Stack / Hosting, Web Development, Digital Identity etc
  - Deliverable = Digital channel convergence roadmap, day 1 target web estate
  
- **Data Platforms Roadmap**
  - National Digital Platform for Health, SG Public Sector Data Sharing, HDR-UK Research linkage, etc
  - Deliverable = Data Platforms migration roadmap, day 1 target data platforms architecture

### 1.3. Change Journey

The challenge for the new organisation will be to develop a new operating model for public health in Scotland that includes digital tools and incorporates data science techniques, other innovations and new learning.

This strategy sets out some basic principles and foundations for accelerating digital change as the new organisation is established. As well as setting out the ambition, it describes the role and contribution for digital leadership within PHS. It sets out a proposal for a common approach for digital work including principles, clear roles, responsibilities and standards for digital development across PHS.

Investment will need to be prioritised to ensure that the most strategically important pieces of work are addressed first. Multi-disciplinary working, recruitment and staff development will be needed to ensure that we have the right skills in PHS, and new kinds of partnerships will be required.

This change journey for PHS will involve clear communications and an organisational development plan to ensure PHS and its employees can build on the new skills and capabilities required and engage effectively with our partners and the public.

Change in a phased manner will ensure that PHS can continue to carry out its mandated responsibilities while bringing in new capabilities and working practices. A particular challenge we will address is managing risk and enabling transformation that is safe in the clinical context of our work. We aim to understand both the benefits and the harms that may arise from the change triggered by digital technology including how to mitigate digital exclusion.

The next steps will be to develop a framework and operating plan for how we will complete these changes across the organisation after vesting day. This will include our approach to change management, recruitment and skills development, prioritisation and investment to help us decide where to allocate resources, decision-making about technology and tools, data architecture and governance and partnerships for success. This is a living strategy, one that will need to be updated regularly as the work progresses.

## 1.4. Important Definitions

We can be separated by a common language if the words we use are not consistently defined or understood. Some important terms and concepts are therefore described below.

### Digital technology

Digital technology is the latest fundamental technology shift and it may be the greatest. Social, mobile, analytics and cloud (SMAC) technologies have been joined by advances in automation and sensors, 3D printing, robotics, wearables, and technology that may still be fringe today but won't be tomorrow, including machine learning, augmented reality and artificial intelligence.

### Digital

Digital can be defined as "[applying the culture, practices, processes and technologies of the Internet-era to respond to people's raised expectations.](#)"

Customers and stakeholders are rapidly adopting digital approaches and mobile and smart devices are now commonly used. People no longer read maps in advance of travelling but now expect to look at a map on a smartphone and navigate towards their destination, banking is almost entirely done online and many solutions in daily life are crowd-sourced via digital channels. Digital is best seen as a way of doing things rather than just a list of technologies and tools. Above all digital refers to working in a different way and putting users and people in the middle of what we do. Digital is about generating and using new kinds of data properly. It is about an open, faster culture and it is about learning by doing.

### Digital transformation

Digital transformation involves the end-to-end redesign / change of services founded strongly on user needs. For public health in a digital world we need to harness and create innovative, non-traditional partnerships across government, academia, the technology industry and scientific bodies. Digital ways of working can bring together the many skills and resources to carry out this journey of transformation. Digital approaches can also help drive efficiency and deliver value for money across PHS and the broader system.

### Digital public health

Digital public health is therefore a re-imagining of public health using these new ways of working, blending established public health wisdom with new digital concepts and tools. It recognises the rapidly changing context of changing technology, exploring new models of public health using technology, and introducing flexibility and resilience that will allow us to adapt our public health practice, and improve outcomes. However, in all the digital work we do, we must always be careful not to exclude people who cannot easily access the Internet.

Within PHS, IT/Digital services and products include (but are not restricted to):

- **Infrastructure**
  - Networks, Desktops, PCs / Laptops, Productivity / Collaboration tools, MS Office / 365, E-mail, File Servers, Telephony, Video, Directory Services, Mobile Access, Helpdesk etc
- **Digital Channels**
  - Web sites, Social Media, Digital publishing, Open data platforms, External facing applications, Mobile apps etc
- **Data Platforms / Analytics / Business Intelligence**
  - Data warehousing, Analytics Platforms, Data Virtualisation platforms, Data Visualisation tools, Statistics tools etc
- **Line of Business Applications**
  - Clinical Audit Systems, Screening Systems, Data Registration systems, Health Protection systems, GP data, Immunisation systems etc

Some of these will be internal (for PHS staff) and others will be external, including other stakeholders, partners and the public.

## 2. DIGITAL VISION

It is expected that PHS will need to work over the coming year on a clear vision for the role of digital transformation in public health. This is likely to include elements such as:

- Taking advantage of new technologies and use digital techniques and 'big data' to protect and improve health, analysing and presenting our information in a way that people can readily engage with, from supporting the NHS on reducing antibiotic prescribing to informing the public about the sugar in their food and drink. PHS will look to provide local organisations with personalised data that allows them to tailor services to specific needs.
- Our ability to access the latest technology is also vital to our work in keeping the nation safe from environmental hazards and infectious disease.

PHS's digital strategy will guide this work and we will look to publish regular updates. The core elements will be shared with stakeholders and tested with them. PHS's digital lead will be responsible for ensuring the strategy is current and for publishing updates and related case studies.

### 2.1. Aims

PHS will take a 'digital-first' approach to protecting and improving the nation's health and wellbeing and reducing health inequalities.

### 2.2. Objectives

By the end of 2020/21 (one year into the new organisation) we expect that PHS will have:

1. demonstrated public health leadership by developing and delivering new models of digital public health provision
2. improved digital awareness and understanding across PHS
3. embedded digital-first planning by integrating digital ways of working into the design of external and internal products, services and business processes
4. built and continuously improved some important underpinning digital platforms for PHS
5. increased digital skills across PHS, embedding learning and development for digital ways of working and designing new digital roles

For each of these 5 areas, the internal IT/Digital team and relevant business units within PHS will jointly develop a work plan as part of the annual business planning process.

### 2.3. Principles

All of our digital public health work will be based on the following principles:

#### **User-focused**

We will base our work on user needs and consider creation of a dedicated digital user research team. We will blend innovation and research into digital user needs with more established public health user needs, so that we can be sure our work meets those needs, and learn and adapt quickly. This will allow more dynamic engagement with our stakeholders and with local partners.

#### **Promote digital inclusion**

Our work will promote and improve digital inclusion. The challenges of digital inclusion are well documented in the SG Digital First strategy. PHS will need to rise to these challenges and ensure that all of our digital work is truly for everyone.



### **Data driven**

Having access to multiple, joined up streams of data, including those generated by the public and users, means we can tailor our work more effectively and generate new knowledge.

### **Connected to the public, government and partners**

This means having two-way, rich conversations so that we can respond more flexibly, learn and work together, and can both lead and support public health change.

### **Open and transparent**

We will be transparent in how we set priorities for digital work, telling people what we are doing and showing how we work.

### **Able to measure impact, learn and iterate change**

Having better, real time metrics that are delivered in a joined up and accessible way across PHS will help us better determine investment and develop and promote new models of public health.

### **Efficient, with streamlined business processes**

By automating some of our work processes we can reduce the time they take, simplify decision making and free up time to spend on higher level tasks

### **Provide value for money**

We will use digital to reduce transaction costs and introduce new ways of working.

## **2.4. Governance & Decision Making**

We will base our decisions around internal digital work on PHS business priorities. Digital work should be supported as part of the business planning process and should adhere to good practice for digital development. Integration with existing systems and taking a platform approach will be important. We will also need to ensure decisions are taken with an eye to future sustainability and relevance.

Before PHS decides to invest resources in an external digital project, we must be able to show that:

- the government has a clear and unambiguous mandate to do this work
- it will support the delivery of PHS's corporate priorities
- it should add public health value (we will need to constantly learn how digital can add value to public health)
- our stakeholders are telling us that this is important and there is digital user needs evidence to support the proposition
- the work is sustainable in terms of human and financial resources; there is a clear owner and a plan for the product over its life cycle
- it will be carried out in line with SG Digital First design principles and standards
- there is a clear way of measuring the impact of the work and engaging user feedback

## **2.5. Approach to delivery**

A range of approaches can be adopted by PHS, or by teams within the organisation. The options we will consider for external digital work are set out in Table 1 below, together with some decision points and illustrative examples:

**Table 1: PHS approach to digital work**

<b>Approach</b>	<b>When would we choose this approach</b>	<b>Example</b>
1. Advocate	To support another partner (for example	Communication about a new public

Approach	When would we choose this approach	Example
	NHS Boards , SG Directorates, local authorities, voluntary sector). It should be within our communications policy and plan. There is a clear plan for what methods of advocacy will be used and who will do it	health project or tool through presentations, publications, papers, blogs, social media, conferences and other methods. Supporting a digital public health activity of one of our partners
2. Strategic partnership	To explore new areas of work and contribute to innovation and research; also, to lead in digital public health new thinking	Build an alliance across government, industry, user groups, education / research bodies and other groups
3. Explore and develop a new business area	We may be able to shape entirely new public health interventions that arise from new digital tools, trials, or research	Digital public health is a new area and, as we learn more, new opportunities will emerge
4. Develop standards and create guidelines	When we need to adapt or adjust SG standards to make them operational within PHS. To clarify the role of different part of PHS. It will raise the quality of something we do. It will make things easier for colleagues and partners by setting out clear ways of working	Promoting a platform approach to development rather than multiple standalone projects. Digital content strategy and guidelines. Digital procurement guidelines. Digital spend control process
5. Endorse (apply PHS 'brand' or using our reputation on it)	Where our brand or reputation is the valuable asset. As a way to influence the commercial market	Something like a mobile app endorsement programme?
6. Invest (we invest money to get a public health return)	Cross-cutting projects with other partners. When we understand the return in investment (such as measurable public health change, skills or training)	Working with partners / suppliers where appropriate on cross-cutting projects (Eg: with NSS or NES Digital teams)
7. Buy it in / Do not customise	It is a commodity and makes sense to buy it in rather than to build it	Infrastructure, Data Platforms, Corporate Applications, Productivity and Collaboration tools. Data Science / Analytics, Visualisation tools , Virtualisation tools. Core hosting tools. Others ?
8. Buy it in / Customise as required	When this is not something the market can do and is within our mandate. It is important that we learn from this process including how to generate and use data.	Line of business PHS platforms (external parties may be able to build services on top of them).
9. Revenue generation	Enhancing the sales of products we develop. As part of a business development plan for PHS ?	Online sales tools for PHS products?

## 2.6. Key Roles / PHS IT & Digital team

Digital transformation is a shared responsibility across all of PHS. A digital-first approach requires all sections of the business to understand, consider and apply digital ways of working. The PHS IT/Digital team will have a role to promote and aid this change across the organisation. Setting out standards and designing guidelines will help guide this change.

The overall strategy assumption is that PHS will effectively 'buy in' most of the services required to serve 'back office' functions and this will include core IT and Digital services. However, it is also assumed that there will be a small but strategic Digital team within the new PHS organisation. The key objectives / functions of this team will be as follows:

- develop and maintain a digital strategy, roadmap and plan for PHS
- facilitate digital governance, design authority and investment decision making across PHS
- establish and manage funding streams / budget for IT and digital services across PHS
- management of IT and digital suppliers and all associated contracts / SLAs
- manage / assure strategic core digital projects and services for PHS
- work together within PHS and with a wide range of government, industry, academic and other partners to enable innovation process and associated development of digital public health tools and ways of working

Some consideration will also be given (through the PHR Corporate Services commission) to other areas of overall IT/Digital management which could be provided internally or 'outsourced'. These will include:

- IT/Digital service management (including detailed management of demand)
- IT/Digital Project Management / Agile Practitioning
- Business analysis
- IT /Digital consulting
- Digital channel development / content management

The PHS digital team should also look to increase digital capacity across the organisation and should promote the adoption of digital tools where appropriate. These should be built using a platform approach, by making sure each project adds to the one before. The next logical step would be to consolidate these platforms, develop them further and create exemplar models of change.

Each of these platforms will include:

- a common design pattern
- a common data standard and information architecture, with adherence to data governance and security
- shared infrastructure, such as hosting
- common code components that can be re-used and shared
- a centrally-developed product on top of which third parties can build and provide further services or local areas can adopt for their populations

PHS should apply shared standards, share code where possible and reuse as much as we can with each product that is built. This platform approach will allow parts of this digital 'jigsaw' to be updated as needed, and this will be an efficient way to control development costs in the future.

### **3. PLAN / ROADMAP**

PHS will take a 'digital-first' approach to protecting and improving the nation's health and wellbeing and reducing health inequalities. Each of the major PHR Commissions (Data & Intelligence Improving Health, Improving Services and Protecting Health) is working on their core operating models and it is expected that a clearer set of IT/Digital priorities will emerge as this comes together early in 2019. In the meantime, the PHR IT/Digital team has worked with the commissions to agree draft priorities for future transformational change. These build upon the foundation work being done to prepare for the launch of the new organisation in December 2019 (see section 1.2).

#### **3.1. Change Leadership**

PHS will have a role across the Scottish public health system to support change by working in partnership, encouraging and enabling innovation, promoting case studies and examples, setting standards, influencing and creating new models of public health. This leadership role includes external communications and working with partners.

Early priorities will include:

- maintain and develop the PHS digital strategy with regular updates
- develop new partnerships with innovators, academia, industry and others
- influence the development of a target operating model (TOM) for PHS that will allow sustainable and rapid digital innovation
- communicate learning on new public health models incorporating digital practice
- identify scientific and research opportunities in public health generated by new digital ways of working
- support the development of data science opportunities arising from digital projects
- promote and support best practice for tackling the issue of digital inclusion, investigating partnership approaches to support the cross-government work on digital exclusion

#### **3.2. Digital Awareness**

An essential part of developing digital transformation in public health is to build a common understanding of how to approach this work and also what is happening within PHS. Internal communication will be important to ensure there is a change in thinking and ways of working.

Actions for future (working with the PHR OD project team) to include:

- communicate the digital strategy, standards, guidelines and examples of innovative work across PHS
- implement PHS's agreed digital content strategy
- promote examples of what is already being done and is working within PHS, across government, in the health sector and in industry via digital days, blogs, case studies, and through reports published articles as appropriate

#### **3.3. Planning & Delivery**

It is proposed that Digital-first approaches will become mainstream across the new PHS organisation and embedded in the business planning process. The PHS IT/Digital team (and associated Design Authority) will publicise existing standards for digital products, develop guidelines tailored to PHS to guide decision making and product development across PHS, and help design ways of prioritising spend. They also maintain a list of planned and existing projects and will help create a system of prioritisation to better align with both corporate priorities and technical capacity within PHS. There will be a need to further clarify roles and responsibilities between the PHS IT/Digital team and the core suppliers as agreed through the PHR Corporate Services project.

Actions for future to include:

- refine the role and target operating model for the IT/Digital team within PHS and clarify expectations of support for other internal PHS teams and directorates
- integrate digital work into the annual business planning cycle,
- build on the current digital spend controls pipeline to create a model of priority-setting for digital investment in PHS and a clear governance structure for decision-making
- improve the digital spend control process to ensure it aligns with other spend controls within PHS and work with sponsoring organisations to have a more devolved model of approval
- design and develop an operational 'product owner' model for PHS which clearly sets out roles and responsibilities for each stage of the digital product cycle and ensures that the strategic roll out of digital products lies with the business leads within PHS
- create a multi-disciplinary 'Digital Design Authority' within PHS which can guide and authorise the introduction of new technology and help balance considerations around GDPR / information governance compliance and open data / flexible access
- consider creation of a user research capability within PHS to support major projects and provide consultancy and advice across PHS
- use the SG Digital First standard and checklist when endorsing or building a product to allow us to track the impact on digital exclusion and better understand the support needs of our users

### 3.4. Foundational Platforms / Requirements

The PHS IT/Digital team will work with partners / suppliers to build or develop a platform approach to enabling new digital capabilities. This new way of working will ensure that we are able to share and reuse the knowledge, skills and products or services that are created where they are most appropriate, rather than following a one-size-fits-all model. This work will lead to the identification / continued use / development / adoption of a set of core products that can be used across the organisation and as a basis for public health change and for new models of public health. Key requirements and initial approach / intent for each of the main 4 domains for public health digital are listed below.....

#### Infrastructure

Scope here covers Networks, Desktops, PCs / Laptops, Productivity / Collaboration tools, MS Office / 365, E-mail, File Servers, Telephony, Video, Directory Services, Mobile Access, Helpdesk etc

##### ➤ Assumptions

- Based in same locations as Gyle Square and Meridian Court
- Existing IT and Digital shared services will continue for PHS
- Converge all services on a shared infrastructure
- PHS staff require flexibility to work anywhere within the current locations
- PHS staff will increasingly require flexibility to work from remote locations

##### ➤ Approach

- Setup project team for each service area
- Refine requirements with stakeholders
- Existing HS IT and NSS IT staff will implement technical solutions

##### ➤ Key considerations (at this stage)

- PHS will be priority for O365 implementation
- PHR IT and Digital Governance group signs off overall plan for requirements, resources and timelines

##### ➤ Assuring Business Continuity

- Broader Access: Access to same resources as before plus defined resources from the broader PHS organisation by developing trusts between relevant networks / domains.

- Core Services: Customer Support via Service Now portal; Endpoint Support via SCCM; Hosted Desktop for select staff; Server support; Videoconferencing; Firewall and Internet; Follow Me Printing
- Corporate Applications: Access available to all PHS staff as required
- **New look / feel (work in progress)**
  - Accommodation: Re-configuration of physical infrastructure within existing locations
  - Identity: O365 initial drop / mail address options
- **Transformational (new requirements)**
  - Collaboration: O365 full collaboration suite – Teams, SharePoint focus?
  - Extended Reach: Infrastructure and identity federation
  - Access / Availability: Cloud hosting – mobile access to scalable core services across internet
  - Communications: Telephony (fixed and mobile) – hybrid cloud / internet connectivity

## Digital Channels

Scope here covers Web sites, Social Media, Digital publishing, Open data platforms, External facing applications etc

- **Assumptions**
  - PHS intention is to be a Digital First organisation - must reflect this in its approach and methods.
  - Define an Information Architecture (IA) on themes from a User's perspective (not org structure)
  - Existing user research for Health Protection, ISD and Health Scotland professional services is still fresh and valid
  - PHS website target audience are decision & policy makers, health professionals and practitioners.
- **Approach**
  - Apply Digital First standards in line with H&SC strategy
  - Best practice from key stakeholders e.g. PHE, Gov.UK, Digital First standard etc
  - Engage with commissions to support digital service re-design (Core commissions); branding (Branding); social media (Comms, Engagement & Marketing)
  - New content will require some user research - long cycles of user research not possible
- **Key considerations (at this stage)**
  - Potential requirement for services to be provided direct to the public (via NHS Inform)
  - Is a Corporate Intranet required for Day 1 to promote new corporate culture?
- **Assuring Business Continuity**
  - Existing Services: Existing service convergence – content migration & closure
  - Technical Environment: Hosting strategy – Cloud First
  - Mandatory Maintenance: Legal requirement for existing sites for April 2019 (Privacy policies etc)
- **New look / feel (work in progress)**
  - Internal Resources: PHS corporate website / intranet – tech stack, infrastructure & design
  - Channel Platforms: Discovery phase to include identifying existing infrastructure, migrate services already worked up to converge into themes from the 3 existing main sites
  - New Content: Will require some user research within time available
  - Digital Identity: Register domain for PHS website, support initial branding and identity objectives
- **Transformational (new requirements)**
  - Digital Awareness: PHS needs Digital Service delivery to be part of every staff job role & digital channels maintained by all staff.
  - Digital Skills: Need to have roles / skills which support objectives (e.g. Digital Content Strategist)

- Expand Channels: Social Media channel strategy incl. community collaborative space for services
- Mobile Apps: Service transformation opportunities

## Data Platforms

Scope here covers Data warehousing, Analytics Platforms, Data Virtualisation platforms, Data Visualisation tools, Statistics tools etc

### ➤ Assumptions

- Retained PHS access to existing data platforms such as NSS Corporate Data Warehouse.

### ➤ Approach

- Work closely with Data & Intelligence commission to agree requirements
- Gather requirements via a series of workshops for completely new data sources from third sector and social care
- Engage with national level groups – Scottish Data & Informatics Partnership; National Digital Platform for Health, HDR UK, etc.
- Exploration of the Data Trust model (see Open Data Institute pilots)
- Agree and develop systems in accordance with data standards e.g. Open EHR and FHIR

### ➤ Key considerations (at this stage)

- Will PHS manage the Open Data platform for Public Health data from PHS publications and partners.

### ➤ Assuring Business Continuity

- Access / Security: Continued access to NSS Corporate Data Warehouse
- Assess Current Capabilities: Review of data analytic tools and standards
- Upgrade Core Platform: Tableau upgrade requirement

### ➤ New look / feel (work in progress)

- Expand Environment: Agile infrastructure to safely test out new tools / service transformation
- Data Access: Different Data User Persona research to influence accessible data strategy
- Data Science: Enable Data Science initiatives (AI, machine learning, synthetic data, geospatial)
- Extend Access: Expand use of Data Virtualisation platform for new data sources and linked data

### ➤ Transformational (new requirements)

- Digital Platforms: National Level Data Platforms for new data sources with new stakeholders
- Research & Innovation Support: In support of Data & Intelligence service initiatives
- IAM Service: Self-service access to all PHS information assets via Identity & Access Management
- Citizen Access: Link with any national solution for online identity for the public e.g. citizen portal
- Digital Skills: Data driven organisation – more roles for user focused digital design and development; data scientists; data engineers; support for Whole System Modelling
- Mobile Apps: Service transformation opportunities

## Line of Business Applications

Scope here covers Clinical Audit Systems, Screening Systems, Data Registration systems, Health Protection systems, GP data, Immunisation systems etc

### ➤ Assumptions

- PHS will retain ownership of existing Application Estate if relevant to public health priorities
- PHS IT Application resources will be aligned with the PHS IT Governance model
- **Approach**
  - Building capabilities and infrastructure to support a Digital First organisation.
  - Support identification of new data sources and uses that require application development
  - Ensure compliance including legislative, security and Information Governance
  - Engage with Technology Office architects on technical strategy of LOB Application Estate
- **Key considerations (at this stage)**
  - What systems will PHS no longer retain and require new owners
  - What are the resource implications of Digital First and Agile delivery for business teams, i.e. increased level of involvement in agile / scrum
- **Assuring Business Continuity**
  - Current workplan: Technical development teams tied to the PHS business objectives / priorities
  - Resource Levels: No degradation of resource and service levels for dedicated application resources
- **New look / feel (work in progress)**
  - Planning: Continue to develop a converged Application Strategy and roadmap
  - Convergence: Manage shareable resources and development tools for consistent look and feel
  - Modernisation: Shift Application estate to renewed infrastructure / cloud as appropriate
- **Transformational (new requirements)**
  - Separation: Disaggregation of the Application estate from the shared NSS infrastructure where appropriate
  - Agile Development: building new capabilities and platform e.g. DevOPs, Agile Dev/Test, CI/CD
  - Digital Skills: New roles and skills – Client side and IT / Digital Supplier side
  - Relationships: Joint partnership model that is necessary to support Digital First approach

### 3.5. Longer term priorities by business function

Although section 3.4 lays out the more generic PHS level requirements by IT/Digital domain it is also helpful to understand the longer-term priorities and likely focus areas by core public health function. Areas highlighted to the IT/Digital project team through use of a structured questionnaire for future consideration / prioritisation / funding are listed here by business domain:

#### Protecting Health

Focused on the development of capabilities in support of health surveillance and protection.

- Pathogen Genome Sequencing data management / linkage capability
- Next generation surveillance system / modernisation of HP Zone
- Single Health Protection data repository / linkages in to NSS/CDW and other sources
- Territorial board ICNet based standardised interface
- Join up of broader datasets from SEPA, Food Stds, Env Health, Water Scotland etc
- Social media refresh / use to both collect and disseminate information
- Open data strategy deployed for HP data
- Website collaboration with NHS24 / NHS Inform channel

#### Improving Health



Focused on supporting development of health policy, health research / consulting and advocacy.

- Knowledge sharing / dissemination tools improvement linked to digital channels
- More effective deployment of file sharing / management capabilities (incl external)
- Improved research commissioning database functionality
- Media monitoring / web scanning service
- Increased 2-way social media capability generally
- Knowledge / Research Document Repository – improved support for Knowledge Services
- Publications influence and impact analytics toolset
- Enquiry management workflow tool (through something like Service Now)
- CRM platform investment / expansion – build on existing HS Corporate planning Tool (CPT)

### **Improving Services**

Focused on providing intelligence to support clinical service improvement across health and care

- Multiple channel delivery shift for data / intelligence-based services – consumer led
- Collaboration toolset federation with partner organisations
- Offer services based on major phases within Data Lifecycle model – more flexible services
- Re-architecting of relationship with NHS Acute sector – better leverage of TrakCare etc
- Acceleration of existing tool stack upgrades – eg Tableau
- Acceleration of rollout and availability of currently restricted capabilities – eg Data Virtualisation
- Full commitment to increasing agile development capability
- Commitment to more focused user experience function for new product development
- Test / evaluation environments to support innovation approach

### **Underpinning Data & Intelligence**

Focused on the support of above functions with reliable, high quality data / information. May also be a service area in own right for datasets not considered to be in public health domain.

- Improved portfolio of supported data science / statistical analytics tools
- Robust user access system / management environment
- Greater access to cloud-based capabilities / deployments of statistics / analytics tools
- Investigate use of Machine Learning, AI and Predictive analytics tools
- Improved data linkage toolsets
- Big data platforms to supplement existing capabilities – eg Hadoop, Apache Spark etc
- Acceleration of roadmaps and upgrades for core tools – eg SPSS, Boxi, STATA, R
- Acceleration of rollout and availability of restricted capabilities – eg Data Virtualisation
- Code repository and document sharing / collaboration environment (eg GitHub or similar)
- Access to / collaboration with new national digital platform

### **3.6. Digital Skills**

The new PHS organisation will need access to expanded skills and resources to manage the development, roll-out and ongoing support of new digital capabilities. It will need to embed learning and development for digital ways of working across the organisation so that staff at all levels can become 'digital natives' and ensure that there are some core technological capabilities and skills in the workforce that will support the entire structure and vision of PHS. Agile project management is required for digital products and this sits uncomfortably at times with the traditional 'waterfall' approach to project management.

Actions for 2019 (in conjunction with PHR OD work thread) include:

- updated learning and development / OD plan for PHS to include digital skills and Agile programme delivery skills
- an updated approach to workforce planning to include new roles and skills within PHS
- revised approach to recruitment including approval of job descriptions for new roles as needed and new approaches to recruitment
- a programme of online learning and webinars

### 3.7. Measuring Progress / Maturity

Organisations can be ranked according to their digital maturity, ranging from beginner, to adopter, master and digital native. This benchmarking can be used to help PHS as a whole or individual directorates should be able to benchmark their progress and to increase awareness of digital maturity. Table 2 below shows a model of a digital maturity index for PHS that supports the IT/ Digital direction of travel.

**Table 2: Digital maturity index for Public Health Scotland**

Themes in digital maturity	Beginner	Adopter	Master	Digital native
<b>1. Public health leadership</b>	A few isolated models of digital public health. Absences of clear joined up tech and data strategy	Digital public health begins to cross PHS's organisational boundaries, internally and externally. Tech and data strategies are merged	Research and innovation is widespread, with clear partnerships in place, and some clear proofs of concept for new models. Clear, linked tech and data strategies in place and working	Innovative models of public health embedded, co-designed and partnered across the public health system, disseminated and constantly being tested and evaluated. Strong tech leadership in PHS allied to public health practice
<b>2. Digital awareness and understanding</b>	Limited understanding among staff of impact of digital on PHS and public health landscape	Base level of digital awareness and some opportunities to use digital to support PHS objectives	Comprehensive awareness of digital opportunities to transform public health and strong partnerships in place	Clear ability and competence to identify and pursue new strategic opportunities for PHS using digital expertise and collaborative work with partners across PHS
<b>3. Digital-first planning</b>	Digital not considered or an afterthought for employee, public and partner services	Digital options for services considered on a case by case basis and embedded in annual business planning. Prioritisation approach developed for investment	Digital designed as the default option for the majority of products and services within PHS and investment based on agreed priorities	All internal and external products and services designed, where appropriate, as digital and fully based on user needs
<b>4. Use of</b>	Little or no	Limited or patchy	Increased	Digital platforms and

Themes in digital maturity	Beginner	Adopter	Master	Digital native
<b>strategic digital tools and platforms</b>	availability of digital platforms and tools and limited connection with ICT and others strategies	use of digital platforms and tools and limited use of data. Agreed approach to technology across PHS	organisational efficiency and effectiveness from general use of digital platforms and tools generating joined up data	tools enabling smarter ways of working, with joined up technology, tools and data across PHS
<b>5. Digital skills</b>	Low levels of digital skills	Important digital skills and roles defined and basic digital competency in some areas	Advanced digital skills, clear workforce and recruitment development plan	Digitally 'native' with an implemented recruitment and development plan

Most parts of PHS currently rank as either a beginner or adopter in these areas, with some areas of higher achievement and excellence. The actions taken against the objectives will help build digital maturity across PHS, and we will also develop some self-administered guides for individuals, teams and projects to help measure progress.

## 4 DIGITAL PARTNERS & RELEVANT STRATEGIES

### 4.1. Linkages to other PHR Programme projects / commissions

The requirements in section 3.4 are largely focused on the more 'technical' aspects of the IT / Digital requirements for the new PHS organisation and work needs to continue to refine these as the overall TOM for the new organisation starts to emerge. These requirements and future needs will be subject to refinement and revision based on the additional work completed and inputs received from other commissions through vesting day. Work being done now is more focused on longer term IT / Digital needs of the new organisation, but it is likely that new day 1 requirements will emerge from the engagement with other commissions which are at different stages of their own considerations. To provide some insight into what may be subject to change, the key IT / Digital linkages and dependencies on other commission works are listed below.

- **Core Commissions** (Protecting Health, Improving Services, Improving Health)
  - High level functional requirements for IT / digital services
- **Underpinning Data & Intelligence Commission**
  - Detailed data platforms / data science environment needs
- **Innovation & Data Science / Evidence Based Research Projects**
  - Requirements for support of research and innovation work
- **Corporate Services Project**
  - IT and digital service providers / SLA definitions / Supplier linkages
- **Workforce / OD Project**
  - Infrastructure needs to support new / modern ways of working
- **Target Operating Model Project**
  - Overall Governance, Finances / Funding, Structure
- **Estates Project**
  - Physical infrastructure / mobility requirements

### 4.2. Linkages to key strategies

- SG Health & Social Care Digital Transformation Strategy
- COSLA / Local Authority Digital Strategy
- Scottish Government Digital Strategy
- Scottish Data Linkage / SILC strategy

### 4.3. Linkages to key IT / Digital suppliers

- NSS IT / Digital Teams
- Health Scotland IT / Digital Teams
- NES Digital Team
- SG eHealth Team
- Local Authorities Improvement Service
- Local Authorities Digital Office
- HDR-UK Scotland / EPCC Team
- SG Digital Directorate