GIG CYMRU NHS WALES
Bwrdd Iechyd Prifysgol
Abertawe Bro Morgannwg
University Health Board

CHANGING FOR THE BETTER

07

MAY 2017

NEWID ER GWELL
CHANGING FOR THE BETTER

Comisiynu ar gyfer Ansawdd
Commissioning for Quality

Destination: Digital
our digital strategy

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CONTENTS

FOREWORD

Welcome to the first digital strategy for this Health Board.

This document is especially for you if you are a citizen in our Health Board area, a patient with us, or an employee of our organisation or of any organisation with which we work.

Digital is a way for all of us to get jobs done that will help address the many challenges in health, care and well-being that we all face.

In the following pages, we hope to inspire you about the benefits that digital healthcare can bring you.

We also hope that you will be encouraged to make the most of the opportunities that digital offers.

We have produced this strategy now because we believe the time is right to be able to take the actions needed to make it a reality.

Looking forward to seeing you on the journey to Destination: Digital.

WHAT IS 'DIGITAL'?

Digital is about the means by which we all interact with each other and with everything around us, as shown in the model below. In healthcare, using digital technology, citizens and patients will be able to receive and share information online about their health and well-being, communicate by audio, video, secure email and messaging, and participate in peer-to-peer support groups, in trials, and in health and care decision-making with their clinicians. Health and care teams will use digital technology to become more data-driven and evidence-based, with a robust and ever-expanding decision-support capability.

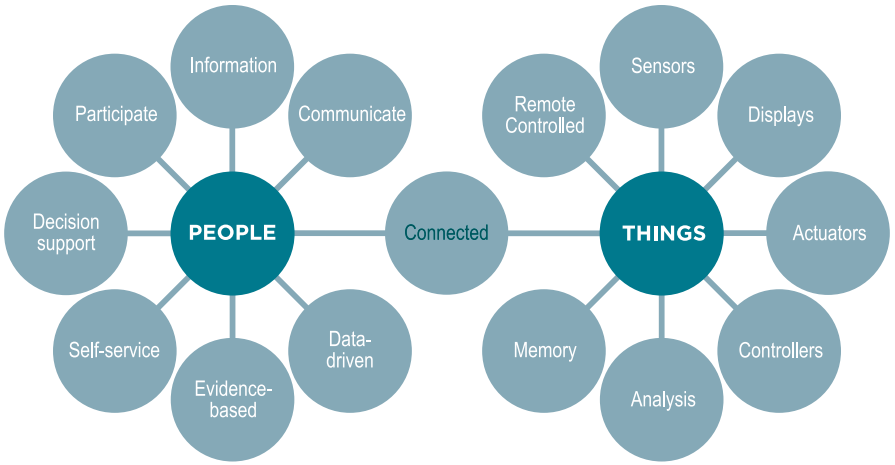


Figure 1: Model depicting the interaction of people and things in a digital context

At the same time, almost everything we can think of will be made digitally-interactive, with sensors, displays, moving parts and controls, on-board analysis and memory, and the ability for remote control. Most important, they will be connected to us, either attached or implanted for a specific purpose or more casually wearable, and able to transmit to central units for storage of data or further analysis possibly in real time e.g. to provide targeted advice, or to raise an alert about an urgent need or situation.

Management of our health and well-being is ideally suited to being served, and likely is only able to be supported sustainably, with digital technology. Digital technology can provide the capability for professionals to serve citizens and citizens to support themselves at times and in places which are more convenient for them and their families or carers.

To become a digitally-enabled organisation we will all need to adopt new health and care digital-related behaviours, in terms of the way we do things, and in terms of those with whom we work or interact. People's different life experiences with digital (our collective cognitive diversity) are vital to us helping each other to achieve the new health and care system that digital technology enables.

The use of digital technology spans a continuum from being a substitute for paper-based information to being an agent for valuable new services not possible by any other means. Digital technology is poor at just replicating the use of paper in a previously manual process. It can even increase non-value-adding processing time.

However, once information on paper needs to be comparable
customisable
editable
organisable
remotely accessible
reproducible
researchable
searchable
shareable
standardisable
storable
transportable, a digital alternative starts to create value. Blend digital technology ingredients and use digital technology to manipulate immense data repositories and large real-time data flows predictively and prescriptively, and achieve interoperability between digital systems and digital connectivity between people, and entirely new health and care capabilities emerge...

BLEND DIGITAL TECHNOLOGY INGREDIENTS:

- **Information**
  Healthy living, patient record, wayfinding maps, images, test results, prescriptions, item location, vital signs
- **Communication**
  Messages, interactive video, telecommunications, secure email, dictation
- **Entertainment**
  During care as an aid to recovery (using our own devices connected to free public WiFi)
- **Workflow**
  Clinical and business process documentation chain - asynchronous telemedicine, diagnostic and treatment record keeping, prescribing, bed and medicines management, rostering
- **Intelligence**
  Needed to run the organisation
- **Analytics**
  Needed to learn, adapt and improve
- **Device agnosticism, artificial intelligence, interoperability, connectivity, security, apps and bots**

... GET NEW HEALTH AND CARE CAPABILITIES:

- **Citizen/patient engagement**
  Self-service, self-help exercise/nutrition/control programmes, self-management of self-limiting conditions, more meaningful participation in health and care
- **Proactive health, care and well-being**
  Risk stratification by community, targeted advice, patient monitoring in real time, future state prediction
- **Coordinated care**
  View information at any time, transact remotely in real time, collaborate on care planning and scheduling
- **Systematic care**
  Clinical information decision support, knowledge management tools, standardised workflows, automation
- **Specialist access**
  Virtual clinics, professional-to-professional consultation
- **Resource management**
  Manage patient flow, match capacity to demand, push then pull, connect mobile community workers, organise action
- **Improvement and innovation**
  Continually earning organisations, better research and trials approache, increasingly indovidualised medicine

Figure 2: Blend digital technology components on the left hand side to get new health and care capabilities on the right hand side

WHY WE NEED A DIGITAL STRATEGY

There is a real and complex strategic issue that we face with digital, the nature of which is summarised in these bullet points:

We will examine some of these in more detail in the sections on considerations for the system and the Health Board in executing the strategy.

- The comprehensive application of digital technology to healthcare is relatively new as prospective components are evolving rapidly. More collaboration, research, development and integration are needed over time to influence, drive and benefit from a digitally-enabled health and care system and future digital technologies, with significant regional economic development potential as a result
- Much has been achieved by our Health Board in conjunction with Welsh Government and the NHS Wales Informatics Service in deploying digital services so far, but there are limited resources to execute a digital strategy alongside other priorities
- The current approach is programme- and project-based, not holistic or strategic, and often opportunistic. The strategy must be executed as part of an organisation change programme
- Digital access (to the internet and possession of the basic skills to use it) and participation levels are varied, both between urban and rural areas, and within urban areas, for a variety of reasons including age, ability, outlook and inequity e.g.. in network coverage, discretionary disposable income and/or education level
- There are many 'pockets of enthusiasm' for digital in the Health Board, and some exemplars that outstrip the Health Board's ability to fully exploit at this stage, but also many areas of limited engagement and implementations not sufficiently driven by or designed with the service users to achieve intended adoption and utilisation levels
- There is little visibility, and therefore understanding, of what becoming a digitally-enabled organisation entails or how and to what extent digital technology can address the challenges the organisation faces
- Public sector budget constraints and the current financial position of the Health Board impede cross-sector digital initiatives, acquisition of digital talent, front line time to participate in digital design, configuration and testing, and taking a longer term view in favour of short term imperatives.

Assessment of the issue that we face with digital has identified four requirements as critical:

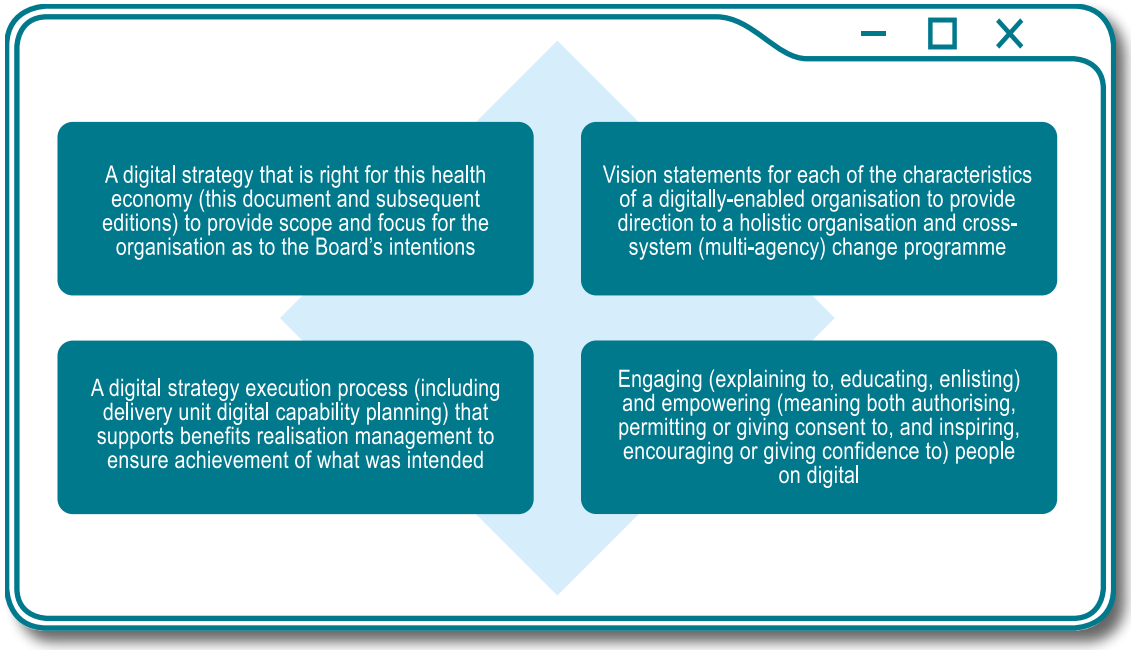


Figure 3: Four critical requirements to address the digital issue

These four requirements are related: a strategy only has value with its counterpart, execution; the two together enabling the delivery of intended results through a realisation methodology. Achievement of the aims of an effectively formulated strategy depends wholly on the quality of the strategy execution process and the excellence of the operational activity in support of the strategy. At the core of effective strategy execution management is the creation of a performance culture that engages people to lead, develop and operate with intent to achieve.

Digital is a means to an end, an enabler of improved health and care. Digital is not a patient or citizen health or care benefit, so a digital strategy is not an end in itself. A digital strategy is intended to fit with other strategies, supporting the organisation strategy, and guiding a portfolio of long term organisation-wide changes.

The contention that is shaping a digital strategy that will support our organisation strategy is that once the organisation is digitally-enabled, it will be more empowered, efficient and effective in realising the benefits intended from implementing the new health and care system, as shown in the diagram on the right. People with access to digital technology are more empowered, people following digital processes are more effective, and digital processes powered by digital technology are more efficient.

Our digital strategy also reflects our belief that, based on work already achieved in our health economy and by learning from others, it is possible to leapfrog some phases towards the advanced position that the organisations that have pioneered the digital health and care system globally have taken over 20 years to achieve. Some key characteristics of a digital health and care system are listed in the table below:

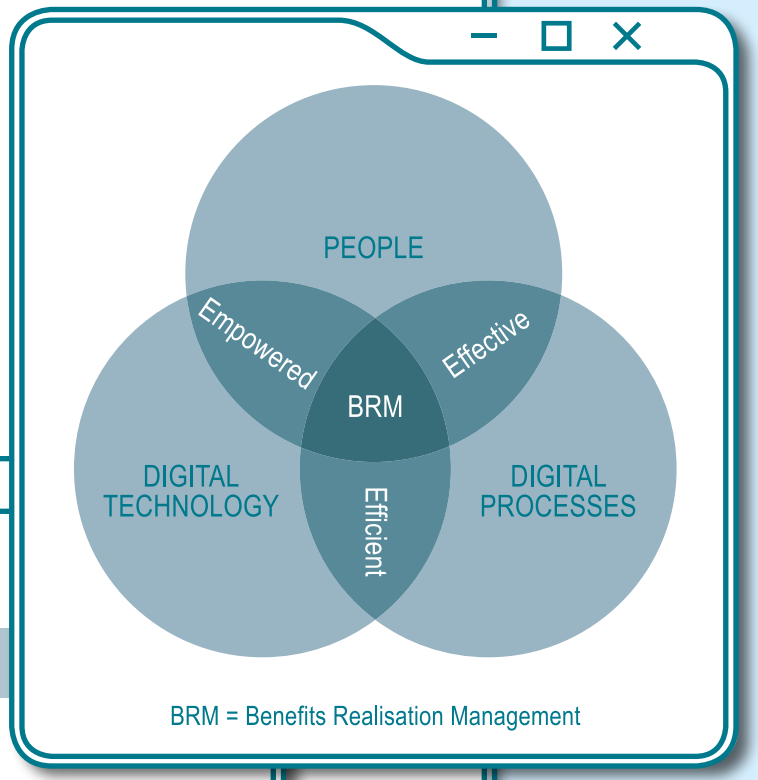


Figure 4: The benefit of digital: more empowered, efficient and effective

Figure 5: Key characteristics of a digital health & care system

KEY CHARACTERISTICS OF A DIGITAL HEALTH AND CARE SYSTEM
Increased participation by citizens in their health and well-being, and reduced non-attendance
More effective frailty and mental health self-care and long term condition self-management
Improved care coordination, reduced variation, waste and harm, and safer handovers between health and care professionals
Improved point of care decision support (real-world real-time data and evidence) and management of acutely ill or deteriorating patients
Accurate, agile analysis of population health data at community level for service commissioning and research
Run the system process and performance intelligence, and improve the system analysis and innovation

OUR DIGITAL STRATEGY

Our digital strategy has the following three components:

The strategy statement:
This is a brief sentence that summarises how we intend to respond to the strategic issue that we face with digital, and should be straightforward to remember and recall to help guide our day-to-day actions in accordance with our purpose, mission and values.

The high level aim of the strategy:
This explains what this response is intended to deliver. In executing the strategy, we expect to keep asking the question "Which objective will achieve that objective?" in order to create actionable digital capability plans for each of us.

The vision:
This is presented in the form of a digital maturity chart. For many reasons, there is a wide disparity in our current use of digital technology across our health economy. Some of our staff have no access to digital technology in the work they do for us, but are highly proficient with digital outside work. Our use of some of the more recently mainstream digital technology capabilities such as smart and mobile is limited even though we will soon be the first Health Board in Wales to provide free public Wi-Fi in all our hospitals. Therefore, we have sought to show from a strongest and weakest perspective where we are now and where we need to get to. Our vision is deliberately limited to five years in recognition that we should not pre-suppose what the digital landscape will be a decade from now, and therefore to emphasise the need to act now on delivering digital, and on improving our ability to influence, drive and benefit from new digital technology that is in the early stages of development now.

Our strategy statement is:

"HEALTH, CARE AND WELL-BEING ACTIVITIES CARRIED OUT BY EVERYONE IN OUR HEALTH ECONOMY WILL, WITH PACE AND SCALABILITY, BE ENABLED USING DIGITAL TECHNOLOGY WHEREVER OPTIMAL"

The **triple aim of our strategy** is to:

1

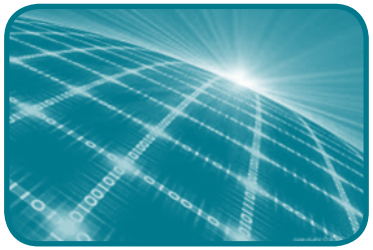
Enable, with pace and scalability, our health and care teams to use digital technology to spend more time on their core competency – working with citizens and patients to improve outcomes – not managing paper or digital processes

2

Realise the 'efficient productivity'* benefits of digital technology investments already made and to come

*actually doing more at the same or higher quality level with the same or fewer resources

3



Better position this health economy to influence, drive and benefit from new digital technology, achieving the required ongoing cost economies

Figure 6: The triple aim of our digital strategy

Our vision for five years' time is a transformed digital maturity level for this health economy. The following chart plots the likely respective journeys required of the currently weakest (red lines) and strongest (green lines) components of each of the organisational elements listed

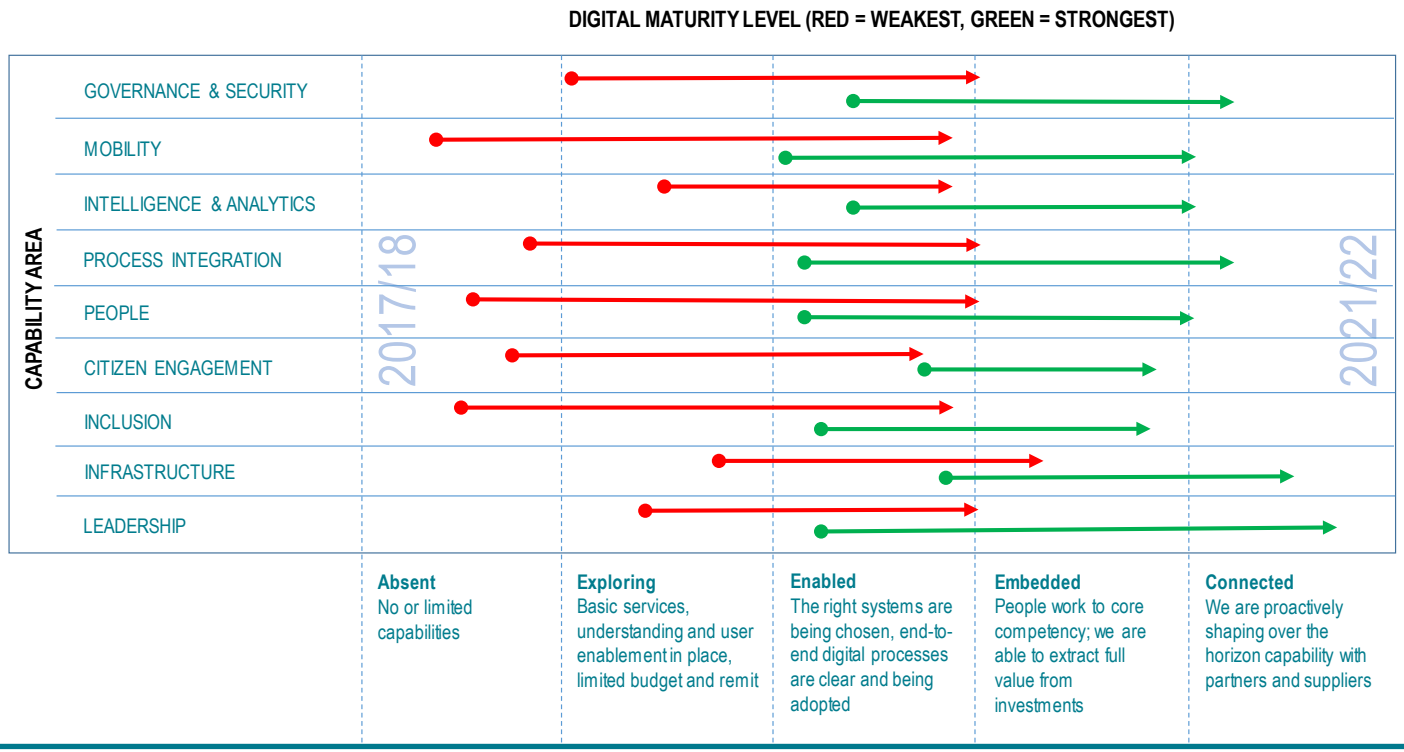


Figure 7: ABMU digital maturity - the left hand end of each line is the current position; the right hand end is the desired position

Our intention is two-fold. In five years, we intend all capability areas to have reached at least the 'Enabled' stage. In five years, we also intend to have established an ability to influence, drive and benefit from new digital technology by coherently developing the strongest components of our leadership, process integration, infrastructure and governance and security capabilities.

FROM STRATEGY TO ACTION

Achievement of the aims of an effectively formulated strategy depends wholly on the quality of the strategy execution process and the excellence and completeness of the tactical activity in support of the chosen business change initiatives. At the core of effective strategy execution (benefits realisation) management is the creation of a storyline to the future and a performance culture that engages people to lead, develop and operate with intent to achieve.

Principles:
With regard to this digital strategy, for execution of it to contribute effectively to achievement of the organisation strategy, there are some principles specific to becoming and being a digitally-enabled organisation that need to be incorporated in this unified approach. The diagram on the right lists three principles to be applied in using digital to support achievement of the Board's organisation strategy. It will be important to invest at least as much resources (time, quality of effort, and money) into the 'soft' aspects of:

- **user-centred design** – solving the problems of those who will use the digital technology
- achieving a digitally-enabled **culture**
- **process innovation** - rigorously and consistently applying a methodical approach to innovating the replacement of existing processes and tools with digital ones as into the technology itself, implementation, system interoperability, and governance and security of the data involved.

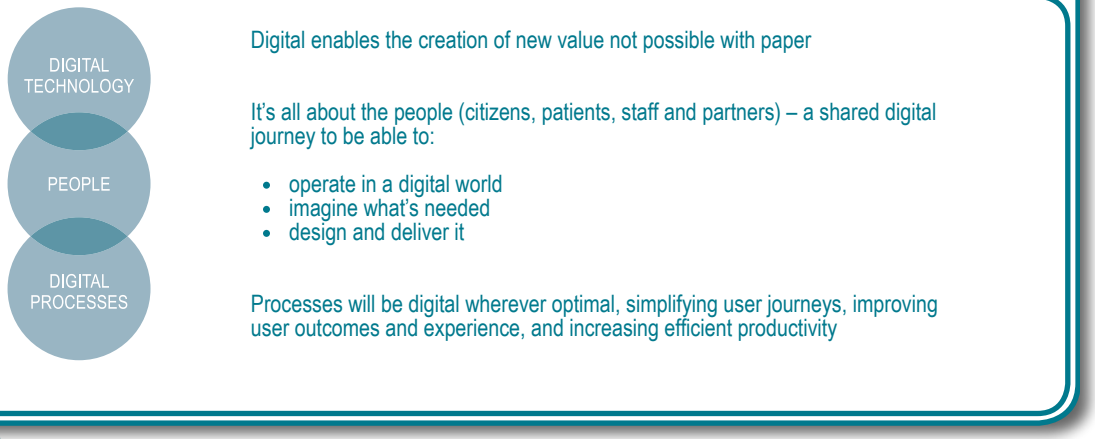


Figure 8: Key principles to apply in executing a digital strategy

To show how the principles might be used to guide action to execute the digital strategy, in the following pages the Board has set out what the outcome of a digital strategy delivered following those principles might look like. Our reference point was a unique health and well-being system model, in which our citizens will try to improve or consistently maintain their health and well-being with our support to do so, and assessment, care or treatment and coaching whenever needed. Guided by that model, we created digital user journeys intended to achieve our organisation strategy and arranged them in four groups, to be accessed on any device:

- **SUPPORT ME** - an online interactive whole life health and well-being support planner
- **ASSESS ME** - an online interactive assessment and care plan creation manager
- **TREAT ME** - an online interactive care and treatment delivery coordinator
- **COACH ME** - an online interactive recovery, self-care or management coach

Some of the services are currently available but not consistently or comprehensively deployed, adopted and utilised in our health economy. Others are in development and expected to be deployed by NHS Wales organisations or their partners, or expected to be brought into public use by other organisations, in the next five years. In the next section, the digital user journeys in each group that **Citizens/Patients** will be able to undertake are described. The subsequent section shows the implications of these services for **Health and Care Teams**, together with digital user journeys that help those teams to do their work.

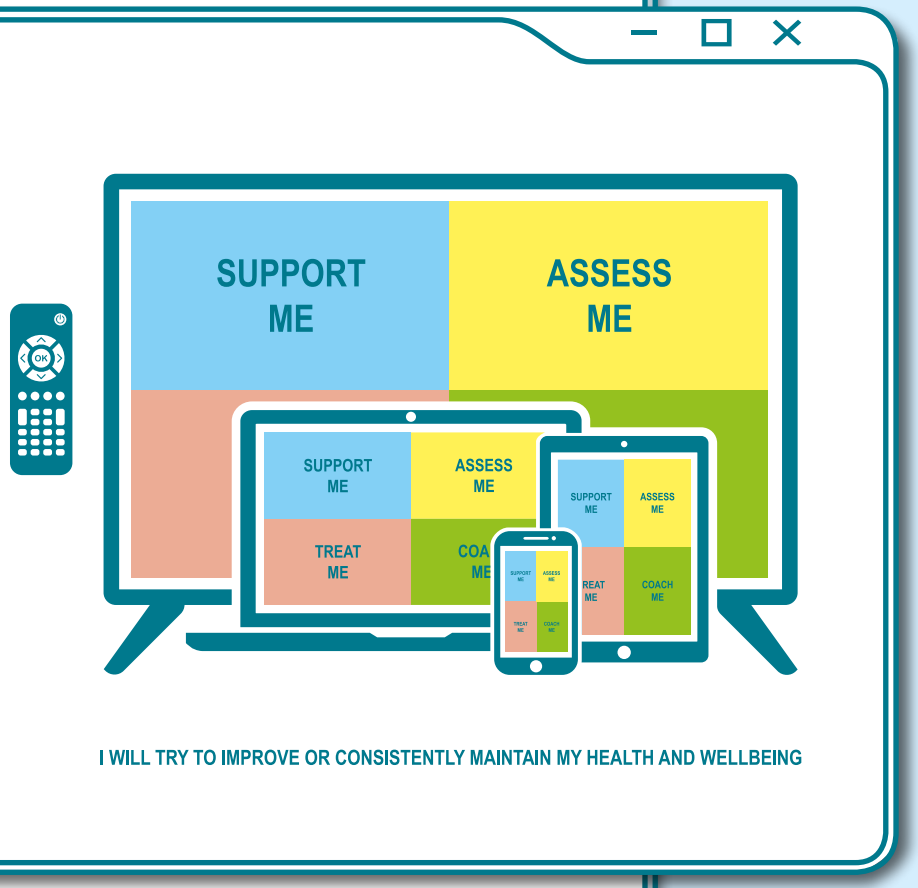


Figure 9: A platform for digital services

FOR CITIZENS/PATIENTS

SUPPORT ME makes it simple for citizens to become actively involved in their health and well-being. A suite of purpose-designed tools, apps and bots increase health literacy and capability, and extend integrated care to a population health approach with targeted interventions:

SUPPORT ME	ASSESS ME	TREAT ME	COACH ME
I can view the record of my medical history and update my personal details, lifestyle choices and how I wish to be cared for in the future and maintain a personal health journal	With live assistance if needed, I am able to build my own self-help programme for physical and mental exercise, nutrition, and condition and medicine management, with reminders to keep me on track and rewards for success	There is a library of accredited health information and updates on public health that I can read and understand in order to be better informed about risks, conditions and care or treatment options	
There are activities that help me to learn about avoiding avoidable harms and positive steps to take to keep myself and my family healthy	We, and any devices that are wearable or installed around us, or attached to or implanted in us, can monitor progress against our self-help programme and add to our record as needed	Health and well-being support is provided proactively in accordance with my history and current status, or I can get help any time I feel unwell and am unsure what to do	
My history and state of health and well-being are compared with that of other people to provide specific information about my risk of health issues and what I can do to optimise my health over my whole life span	There are tools, activities and information for self-care and self-management that help me to have more confidence, capability and support to live a fuller life with my status and condition(s)	A community resources guide to places, groups, activities, opportunities, events and services reduces my social isolation and facilitates peer support contact	

ASSESS ME is the one-stop shop for all assessment requirements. It is as relevant to citizens attending a GP consultation as to patients who need assistive living services provided to enable them to return home, or to prevent them having to go into hospital or care in the first place:

SUPPORT ME	**ASSESS ME**	TREAT ME	COACH ME
I can choose with whom I share the record of my medical history, lifestyle choices and how I would like to be cared for in the future	The screening guides me through booking an appointment with the right person when it's necessary, with reminders in a format I can choose, and the ability to postpone or cancel so someone else can use the appointment slot		The outcome of the assessment is added to my record and discussed with me so that I understand risks, conditions, care or treatment options, and next steps, and we agree and put in place a care plan
I can complete self-assessment and pre-visit screening is available, in order to help identify any condition I have that is self-limiting, so that I can actively resolve it myself	As needed or at my convenience, the assessment can be at a clinic or the assessor can visit where I am, or will be, living, or it can be audio-visual during which I can transmit photographs or other information to aid the assessment		Information relating to next steps is provided, including waiting times for treatment and experience measures at treatment centres in my area, and outcome measures for treatments relevant to my condition/status
I may proactively be invited to a health and well-being assessment based on my history and current status or on an anomaly in data sent from a device or reported by me	I can receive updates as the assessment and care planning process progresses, and communicate with the health and care team via secure email and messaging as well as phone or face-to-face		In an emergency or following an accident you can access my record if I am unable to choose to share it with you

TREAT ME underpins the use of joined-up health and care treatment plans and care co-ordination centres for the purpose of delivering more types of treatment outside hospital, enabling hospitals to focus on emergency and acute treatment:

SUPPORT ME	ASSESS ME	**TREAT ME**	COACH ME
My relevant medical history, latest clinical statistics, lifestyle choices and how I wish to be cared for are curated for each point of care for a smooth process, a positive experience, and the best outcome	During my treatment and convalescence away from home, there is free public wi-fi so that I may use my device to view my choice of entertainment, or connect with family and friends as an aid to recuperation	If my health status is now lower, I can co-create a long term condition or palliative plan to better prepare me to return to and stay at home, and maintain my self-reliance or have help
I am able to view my care plan which meets clinical and humanitarian standards for my circumstances, and amend bookings if essential	I can process a prescription for collection or delivery, get information on the next steps in my care plan to understand and be better prepared to play my part, and select my meals while in care	My care plan is available to everyone in real time in order to help them prepare so that the care process is smooth and effective, and I can report on my experience and outcome
If I am self-reliant, self-check in, way-finder, and information and consent tools are available to help expedite the care or treatment process	I can co-create my discharge-to-enablement plan for my condition-related needs, medicines management, nurse and care visits, follow-up appointments and reablement tools that will help me regain my previous health status	Following assessment, any digital assistive living needs I have are implemented by the relevant body in collaboration with me, to integrate with any of my own lifestyle management equipment

COACH ME is intended to support people's potential to self-manage their recovery or adjustment or to change their behaviours, or to increase their confidence in their ability to do so. Likewise it is intended to improve the self-efficacy of a person caring for someone:

SUPPORT ME	ASSESS ME	TREAT ME	**COACH ME**
My record of my medical history and lifestyle choices helps inform any coaching I or my carer need in order to help me to recover or to adjust to my new health status	I am actively participating in running my condition-customised post-discharge programme to minimise the number of follow up appointments I need to attend and reduce my risk of needing readmission	I can learn how to use digital technology to increase my self-reliance or seek support, and my GP can prescribe internet connection and equipment if I need it to support me
I can access self-help information sources in order to aid my recovery or adjust to my new health status and revise my self-help programme in my health and well-being planner	There is telephone or audio-visual access to nurse-led health coaching, tailored advice and emotional support to help me recover or adjust to my new health status	A unified assistive living process covering case management, telehealth and health coaching helps me to understand my entitlement to and get and use the right services as my health status changes
There are devices and applications that can help me re-mobilise from bed to day room to outdoors and with coaching I gain confidence to use them routinely in future	I can order repeat dispensing of medicine and am reminded about my responsibility for ensuring that my medicine provides the maximum assistance for my condition, which my self-help programme can support me to discharge	I can readily take part in research and trials, and provide timely input or feedback for my future benefit

FOR HEALTH AND CARE TEAMS

SUPPORT ME is about the citizen/patient having the right information at the right time to increase their knowledge and understanding of their health matters, and the right tools at the right time to enable them to take action for their own, or their family's benefit:

SUPPORT ME	ASSESS ME	TREAT ME	COACH ME
Public Health Wales commissions this national system for health and well-being and runs the campaign for its adoption and utilisation by citizens	A national live assistance service assists people to build their own self-help programme for physical and mental exercise, nutrition, and condition and medicine management	All health and care organisations in Wales have a single 'shop window' in this planner in which to present accredited information to citizens
The Red Book online is part of this planner and we register citizens at birth or on first contact with health and care, and promote planner use	We can view the record of the individual's medical history, lifestyle choices and how he/she wishes to be cared for in the future at any time once he/she has chosen to share it with us	We can pool resources and form multi-disciplinary teams to help in designing and developing this well-being planner for citizen/patients and their carers
Welsh population health information is segmented for health status, need and priority by community to provide specific information about the risk of health issues for individuals in this planner	Through this planner we can initiate and manage new proactive health and well-being support services and provide responsive services e.g. a 24/7 health and social care hub (or by telephone)	Public Health Wales works with local public services and the third sector to enhance and standardise information, advice and assistance provision

ASSESS ME covers all assessment activities across general practice, hospitals, community, nursing home and social care, and mental health and learning disabilities, involving investigation, diagnosis, suggested treatment options and communication during assessment processes:

SUPPORT ME	**ASSESS ME**	TREAT ME	COACH ME
Clinicians have access to information and e-library services for the best up to date information to facilitate diagnosis	Point-of-care testing uses advanced devices with digital upload integration with the health record reducing assessment recording steps and increasing citizen/patient throughput	Clinician letters, and referrals and records transfer including cross-border are electronic, reducing process time and errors through process integration and automated process completion
Primary care staff view citizen/ patients' pre-visit screening information to ensure they see the right clinician for their needs	Clinicians use electronic test requesting, secure store and forward technologies, asynchronous telemedicine for image and test result reviews, and professional-professional telehealth consultation	Information is provided to me via a performance dashboard, including outcome comparisons with my peers and experience, to support appraisal and improvement
New proactive assessment services emerge from combining community level analytics, medical history, current status and anomalies in data sent from a device or reported by a citizen/ patient	We can add the assessment outcome to the person's record and discuss risks, conditions, care or treatment options and next steps in order to agree and create a whole pathway care plan for his/ her clinical or support needs with metrics	Digital collaborative community assessment protocols for Primary Care, District and Community Nurses, Mental Health and Learning Disabilities, Social Services, Assistive Living staff facilitate timely care plans

TREAT ME is principally about the professionals saying ‘it’s our job now’, where the citizen/patient has entrusted him/herself to them. Confidently spoken, those four words impart huge reassurance, and the digital services here are intended to improve outcome and experience:

SUPPORT ME	ASSESS ME	**TREAT ME**	COACH ME
Clinical coordination centres with common care and referral protocols support information-sharing, need-capacity matching, admission, referral and community care bookings, and early discharge reviews	A stabilisation and treatment management system combining test results, ECG/physiological testing records and images with decision support helps identify patients requiring urgent/specialist care, prepares rapid admission pathways and books clinical expertise needed	We co-create discharge-to-enablement, long term condition management or palliative plans for condition-related needs, medicines management, nurse and care visits, follow-up appointments and reablement tools
Clinical workflow tools allow more time with patients, with reliability and standardisation increased, scheduling and decision support improved, ordering/prescribing automated, and handover risk reduced	Intervention requirement prediction improves our ability to identify deteriorating patients and those at risk of infection earlier so we can collaborate to intervene preventively minimising divergence from the optimal care pathway	Data coding is automated and validated by clinicians and patients and in a standard format to inform audit, commissioning, clinical governance and quality improvement
Whole pathway care plans let us manage the flow and performance of services end-to-end in real time	Asset, inventory and procurement management, and staff rostering and deployment tools remove administrative tasks from clinical staff	Community care, clinic and hospital management systems enable information needed at every level to be generated in real time or as required

COACH ME requires a different kind of conversation to increase health-related quality of life and improve patient experience of the health system. For care providers, it covers coaching systems, and tools and training through academies and Health and Well-being campuses:

SUPPORT ME	ASSESS ME	TREAT ME	**COACH ME**
The individual's record of medical history and lifestyle choices helps inform my coaching decisions for recovery or adjustment to his/her new health status	Health and well-being centres include audio-visual and walk-in consultation facilities for digital health coaches to provide transition coaching including the use of technology-enabled care to help citizen/patients re-able	Real-time reflective practice tools using smartphones (audio-visual recordings) and internet e.g. forums enable staff to reflect on delivered care and build reflective practice into training, facilitating improvement
All post-discharge coaching and rehabilitation services needed are included in the integrated care plan and scheduled automatically	The voluntary sector can align availability with demand through peer-to-peer brokerage services, and clinical partners can access and engage population cohorts to undertake research or trials for their future benefit	The creation of health and well-being campuses as a hospital/ business infrastructure/education and skills development testbed can innovate coaching
Using audio-visual or telephony we provide nurse-led health coaching, tailored advice and emotional support to help citizens/patients recover or adjust to their new status and reduce readmission risk	Coaching systems for healthcare organisation staff facilitate selection and prescribing of personalised content and tools e.g. care simulators, virtual coaching programmes etc	Assessment and diagnostic academies, and digitally-integrated genetics, pathology and surgical centres of excellence convert science to advanced clinical practice

CONSIDERATIONS FOR THE DESIGN OF THE SYSTEM

The intention is to provide services to citizens and professionals that are as intuitive and convenient to use as those in other aspects of their lives, and which they feel add value for them, in order to drive adoption and enduring use. This has system-level implications:

SUPPORT ME	ASSESS ME	TREAT ME	COACH ME
There is cross-care settings access to citizen/patient information (which we keep online, with access logging) relevant to the point of care including child protection and mental health information	National clinical workflow systems will be used wherever optimal e.g. for consultations, referrals, orders, results and medicines management, increasing virtual capacity and availability in general practice and clinician interoperability	Whole system intelligence brings together financial, operational and clinical outcome data centred around patients to support population health management, effective commissioning, service re-design and research	
Device-software combinations are designed with and for the user and are touch-sensitive, responsive or assistive as needed for place-based working, with data capture, aggregation, analysis and response/command	Business management systems are interoperable where needed e.g. for need-capacity matching, planning, performance management and audit, and enable a comparable citizen/patient experience across equivalent care settings	There is a multi-agency approach to citizen identification across public service board organisations facilitating timely push or pull through their whole care pathway (e.g. using unique electronic identification wrist tags)	
A single set of information-sharing agreements is in place and all assessment outcome, treatment and discharge or withdrawal and transfer records, letters and notices are generated in a standardised and shareable way	A clear direction exists for the use of web portals and patient self-care/management exists so that technology-enabled care can be comprehensively available and consistently selected and deployed, and coaches consistently trained	The internet is there for all whenever required, information governance and cyber-security is resolved nationally so that records follow patients across borders, and staff are consistently trained for their protection	

For these system-level implications alignment with national and regional strategy and initiatives e.g. digital services, data centres etc., and collaboration e.g. on inter-operability and cross-organisational data-sharing, are essential, for economies of scale, to share scarce resources or to achieve best practice. We will examine some critical dependencies for our Health Board's digital strategy:

Mitigating or resolving digital exclusion:
Becoming digitally-enabled requires system users to have access (available internet and the skills to use it), and system providers e.g. our Public Service Board member organisations, to encourage ever-increasing digital participation by all citizens. On access, a Once for Wales approach to rapidly addressing internet availability and digital skills training in conjunction with Public Service Board member organisations providing assisted digital support to those who can't, don't or won't access digital services themselves should be adopted. On participation, imperatives for this Health Board to accelerate digital participation are growing:

- Trying to continue serving the rising demand and expectations and addressing the health inequities without digitally-enabled ways of working will become unaffordable for a reducing number of taxpayers to bear

- The current manual/paper-based ways of working will become operationally unsupportable due to the impact of demographics on our Health Board workforce, and the difficulties of attracting and retaining staff (yet there is more than enough capacity already if our staff are able to do just those things that only people can do, and we use technology to do the rest)

- As the use of digital technology becomes more pervasive in health and care, it is foreseen (Gartner, Dec 2016) that organisations not keeping up in utilising digital technology in the provision of individual health and care services will leave themselves open to medical malpractice litigation.

In this context, digital participation may be accelerated by (i) increasing and enhancing multi-agency collaboration in consistent user-centred design, (ii) expanding and augmenting current approaches to achieving participation, and (iii) mobilising more partner organisation staff in support.

Digitising and sharing health records:
Much of the digital strategy is dependent on the digitisation and sharing of each citizen's full health record, and on determining the correct information to be presented at each point of care, or enabling the health and care professional to access it. A single plan for full health record digitisation and sharing should be prepared.

Information, intelligence and analytics:
As our health and care economy evolves, we need a robust set of methodologies, processes, architectures and technologies to capture and transform raw data into meaningful and useful information. An organisation-wide business intelligence and analytics capability is integral to the successful realisation of the benefits of investment in a digital strategy. This capability involves always being able provide the right information in the right format to the right people throughout our learning organisation at the right time, for the creation, accumulation or enhancement, management and use of knowledge for health and care services.

It is envisaged that business intelligence and analytics processes will uncover insights about clinical pathways, experience and outcomes, and population health needs from the underlying data. By using information and analytics to support decision-making across health and care, our workforce will be able to transform knowledge into actions which reduce variation and improve our services and the health and well-being of our population. Population health intelligence will enable both increased health and well-being awareness and participation by our population by supporting informed citizen/ patient interactions with targeted health and well-being campaigns, and improved health management by directing development of service provision where needed.

Currently deployed intelligence and analytics technology is primarily applied to structured data. However, as shown in the diagram to the right, emerging healthcare questions require implementation of newer technologies which allow deeper investigation of large volumes of semi-structured and unstructured data. At the same time, business users and clinicians increasingly need to test hypotheses and explore data before knowing exactly what they need. New data discovery and visual analysis tools give non-technical users capabilities for performing what-if analysis and creating visualisations themselves, driving demand for access to suitable data. However, results of analytics are often hard for users to consume without appropriate context. Dashboards and performance metrics can help users understand the significance of analytics for their roles, responsibilities and decisions.

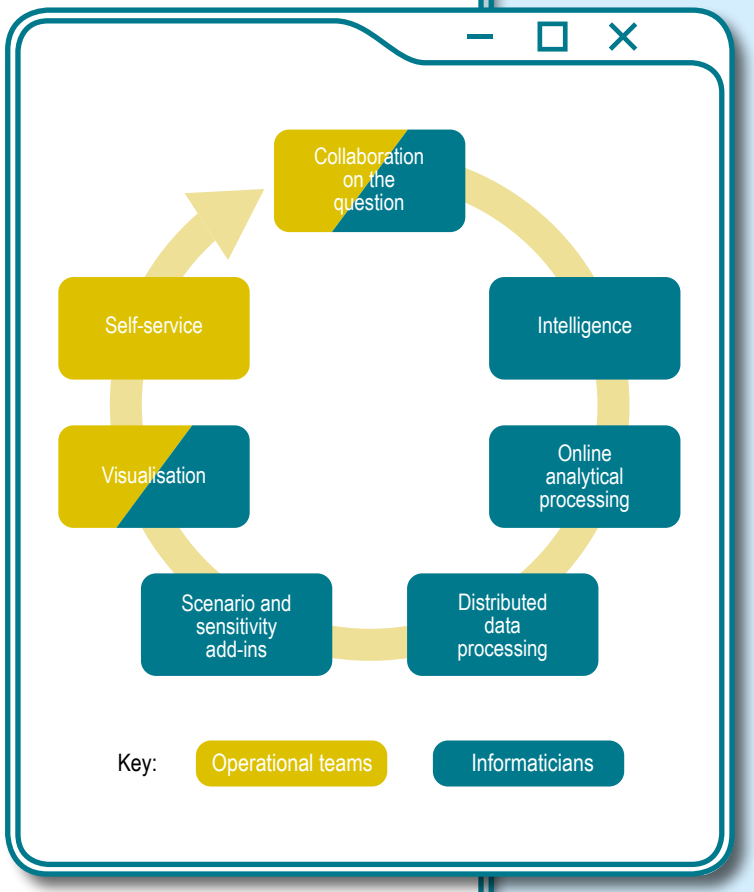


Figure 10: Development of information services

Digital technology infrastructure:
We rely on a combination of local and national infrastructure comprised of the underlying utilities and components, together with network resilience, cyber security and management of the technology, for the provision of digital services. The strategic remit includes the evolution (modernisation and standardisation) of our infrastructure and the introduction of new technology.

The core network connects and provides access to computers, telephony, video conferencing, medical equipment, surveillance cameras, building management systems and alarms, on a fixed line or wireless basis. It needs to be robust and resilient, and the equipment replaced and software updated regularly.

Computer servers provide access to email, document storage, administrative systems, clinical systems and business intelligence. Our own servers are kept in secure data centres with failover, and software patched with the latest security updates between new version releases. Cloud-hosted services offer an overall reduced total cost of ownership of ICT infrastructure and services together with improved performance, reliability and scalability. They often facilitate the provision of the 'at home' services described earlier.

A key deliverable envisaged in our digital strategy is the wide-scale move from traditional desktop and laptop devices (there are around 9,350 devices and 16,800 staff) to mobile devices and mobile applications. As described earlier, this will better enable staff to communicate, learn, do their work and participate in helping to tackle digital exclusion.

Our Wi-Fi platform is vitally important in delivering access to information and collection of data at the point of care as well as providing unified communications (telephony, video, instant messaging) across the Health Board. Our surveys show it enhances patient experience. To communicate with staff without access to their own Health Board computers (junior doctors, nurses, porters, estates staff etc.), we are giving Wi-Fi access to essential services such as email, intranet and other NHS web applications on individuals' own devices.

The use of video conferencing in administrative and clinical environments provides opportunities to transform patient care by enabling professionals to see citizens/patients at home remotely, supporting virtual multi-disciplinary team meetings, allowing two or more people to collaborate on the same information in a single system at the same time, and incorporating real-time presence information to let staff working in the community know which colleagues are available to provide advice or assistance.

Protecting our systems from cybercriminals involves educating staff, using modern security technical infrastructure, ensuring devices, networks and computer systems are operating on supported platforms with the latest security patches applied, and developing cyber-attack resilience plans to protect information assets should an attack occur.

CONSIDERATIONS FOR THE HEALTH BOARD

As well as system-level implications, there are some important considerations for the Health Board in executing this strategy:

Digital maturity:
In conducting its current state assessment as input to this digital strategy, the Health Board completed an initial digital maturity self-assessment to evaluate how well developed different aspects of the organisation's infrastructure, capability and readiness are. Some systems require further user-centred design revisions and development, however current limitations are principally in the capabilities of the organisation and its readiness to engage. Likewise, an initial baseline self-assessment undertaken against the Advisory Board business intelligence maturity model shows that in most aspects our Health Board is currently operating at an enterprise perspective level (in line with the majority of similar organisations), and the areas not achieving this level are data culture and the wider organisation's approach to data and analytics.

Pace and scalability:
The digital strategy flows from the organisation strategy and has been developed to deliver the organisation's strategic objectives by guiding digital capability planning by and for the Health Board's Delivery Units. While we build the new digital capability, we will need to redevelop existing capability to overcome both generic and specific factors that will constrain the rate of progress in delivering this strategy, including:

- People – workforce development, risk attitude, availability of resources/skills, capacity in the context of the ambition of the strategy
- Process – change engagement, coordination of change, timeliness of components/decisions
- Technology – legacy systems, enterprise architecture, vendor engagement, increasing confluence of digital and medical technology

Communication:
There is little visibility, and therefore understanding, of what becoming a digitally-enabled organisation entails or how and to what extent digital technology can address the challenges the organisation faces. At the same time, digital is an enabler of the new health and care system, not an end in itself. Whether to include an action under the DESTINATION: DIGITAL banner, or under a different organisation initiative requires consideration.

As well as the quality of the strategy execution process and the excellence and completeness of the tactical activity in support of the chosen business change initiatives, executing this digital strategy effectively requires deciding which user journeys to make digital and in what order. It also requires establishing a robust digital platform in and for the user community and an ecosystem for rapid, scalable experimentation and collaboration among provider organisations in our health economy and nationally in order to address dependencies explained earlier. The execution process will therefore need to identify the relevant collective milestones and codify and agree benefits realisation management. Where appropriate, this should include making progress in delivering and operating digital technology a part of commissioner and provider assurance, assessment and inspection regimes and provider assurance, assessment and inspection regimes.

HOW THE STRATEGY WILL BE...

Communicated:
This Digital Strategy will be promoted widely by the Board using existing internal and external communication channels, and the DESTINATION: DIGITAL name and logo were developed to facilitate this. Digital familiarisation will be part of induction and training, and referenced in job descriptions, objectives and appraisals. A webpage, Team Brief and regular bulletins will be used to update staff and our public of progress.

Implemented:
We have developed and will undertake a robust execution process to translate strategy into actionable plans for all, with priorities set out in the Integrated Medium Term Plan, coupled to a rigorous benefits realisation management process intended to achieve the planned outcomes.

Delivered:
The Executive Team will lead the delivery of this strategy through a portfolio of programmes which will complement the national initiatives underpinning 'Once for Wales'. They will exploit the capabilities of our strategic and tactical regional partnerships e.g. Swansea University and ARCH through a digital collaboration network that will address the broader determinants of health and well-being to increase gross value added.

Monitored for delivery:
The Board has overall accountability for strategy but has delegated responsibility for the regular and detailed scrutiny of this area to its Strategy Committee. It will have oversight of how we will:

- Utilise a Digital Portfolio Board (which will include representatives from each Delivery Unit, each Commissioning Board, Primary Care, the voluntary sector and the key partnerships outlined above) to drive a service-led, benefits-driven Destination: Digital portfolio;
- Agree, implement and keep aligned prioritised work programmes comprising current and new projects, together with culture change, promotional activity, education, training, and workforce development;
- Evaluate the capability and capacity of our Informatics Directorate in order to create and then implement a development plan for it; and
- Determine success metrics and measure a baseline against them, manage progress and show at each review the extent to which the progress made is taking us towards becoming digitally-enabled.

Reviewed and evaluated:
This Strategy will be reviewed and evaluated in accordance with NHS Wales guidance and Health Board practice.

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