



# Cardiff & Vale digital workstream observations

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Grant Thornton

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# 1. Background

Grant Thornton has been appointed by Cardiff and Vale University Health Board as its Strategic Advisor to support the University Hospital Wales 2 Programme, initially commissioned to develop the Programme Business Case (PBC), which will provide a clear articulation of the strategic case for the programme.

The PBC sets out the Board's vision for providing acute services to its local population in Cardiff and Vale of Glamorgan, explores options to allow for delivery of the Board's clinical strategy, discusses the role of the redeveloped UHW2 as an anchor institution in South Wales, as well as its broader strategic fit within the Welsh NHS: how it will work with its University hospital counterpart in Swansea for delivering tertiary services and its alignment with the other Health Boards.

As Grant Thornton's Digital Health partner, Channel 3 Consulting has been engaged to lead the digital/IT workstream for the PBC, specifically to:

- Provide a high-level view of what 'good looks like' with regard to digital and a view of the 'hospital of the future'.
- Support the Clinical Strategy workstream, providing observations and recommendations regarding digital enablers and considerations to be factored into the further development of the Clinical Strategy.
- Engage with stakeholders to identify the initial aspiration and direction for the digital strategy for UHW2.
- Work with stakeholders to understand how C&V's current digital strategy aligns with and enables strategic ambitions for UHW2 (and any perceived challenges/limitations) and make recommendations for its revision/enhancement through development of an ambitious, enabling digital strategy.

The scope of Channel 3's work has not included the development of the revised digital strategy, detailed discovery of current IT services (people, process, systems, assets, commercials), or detailed scoping, modelling or costing of technical solutions for the business case. It is anticipated that these activities will be undertaken through future investment case development (from Strategic, through Outline and Final Business Cases).

The following document outlines Channel 3's observations and recommendations, aligned to the scope above.

## 2. The role of digital in UHW2

In 2020, Cardiff and Vale UHB set out its initial vision for delivery of improved patient outcomes in 'Shaping Our Clinical Services 2020-2030', aligning with the Welsh Government's national strategy for health and care "A Healthier Wales".

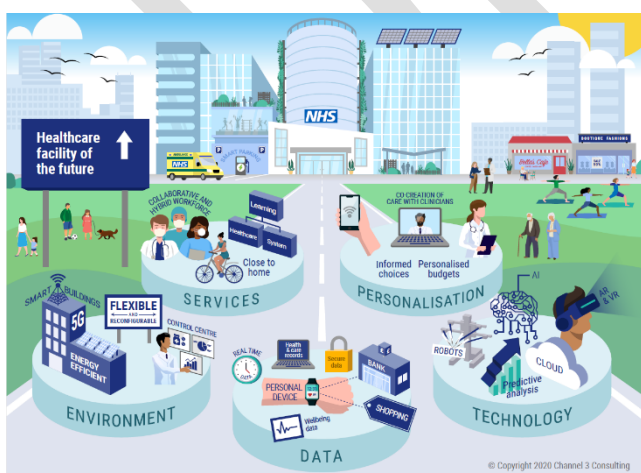
It is acknowledged that delivery of clinical care across Cardiff and Vale UHB requires radical redesign to ensure it can meet the requirements of the new clinical strategy and the demands of the wider system. The UHW2 programme provides a catalyst to transform the service delivery model of care that benefits the whole of the community. The role and reliance on digital will be integral in enabling the delivery of the clinical strategy including investing in a physical infrastructure to ensure it remains fit for the future. This will require a transformative holistic approach to delivery of care with digital as a key enabler.

The following illustrates what 'good' might look like for the Board and what should be considered as it further develops its Clinical Strategy and enabling digital plans, based on current global best practice and a considered view of how the technology will develop between now and 2030.

### 2.1. What good looks like

The last decade has seen a rapid and inexorable advance in the use of digital technologies to support healthcare teams. The fully digitised healthcare provider of the future will be ever more focussed on the precise needs of each patient, seamlessly supporting clinicians and allowing them to concentrate on the individual. Equally important, care will continue to surround the patient at home after discharge. Over the coming decade, the new University Hospital of Wales could choose to harness digital technologies, evolving to become a 'hospital without walls' (as illustrated in figure 1), at the centre of a digitally-enabled Cardiff and Vale UHB, anchoring and powering the full range of services that the health board provides, from primary and community services to tertiary care and public health.

Figure 1 – Healthcare facilities of the future



For patients, Cardiff and Vale's digital transformation could result in their care rapidly feeling more holistic as they move between the Board's various services; for clinical teams and support staff, service delivery could be even more efficient, effective and collaborative, with increasing access to high quality information, automation of routine tasks, and flexible working. Any such transformation would be dependent on a number of enabling foundations, including smart sensors, ubiquitous and fast wireless networks, artificial intelligence,

automation and shared records, all enabled by digital data standards that allow devices and software to interconnect seamlessly.

Sensitive, internet-connected smart sensors enable the gathering of a range of physiological data from patients and environmental data about the infrastructure of the hospital. Information drawn from

this data will give clinicians a much richer picture of the patient, whether they are being cared for in the hospital, in the community or at home, enabling early intervention should their condition deteriorate and supporting the seamless transfer of care from home to ambulance, ED to ward, hospital to community, and clinic to practice. Clinical insight and decision-making will be enhanced and expedited by automated alerts triggered by patterns in the physiological data. The potential of these technologies has been explored in recent workshops supporting the development of the Clinical Strategy, where attendees acknowledged their particular value in the promotion of self-care for long-term conditions and point of care diagnostics that could rule out the need for urgent care attendances.

A critical part of the infrastructure will be a reliable and fast wireless network, available to staff wherever they work so that they always have access to patient records when they need them. The flexibility and scalability offered by cloud computing over this network would open the door to increased sharing of clinical records and applications across Cardiff and Vale and beyond, with collaboration on clinical activities such as imaging becoming more and more frequent. The Diagnostics Clinical Strategy Workshop has discussed the integration of hospital and community-based diagnostics services and was enthusiastic about the efficiencies and greater patient choice that this would bring. Fast and ubiquitous connectivity is essential to achieving this.

Artificial intelligence and the Board's rapidly growing ability to generate actionable insights and knowledge from the data it gathers will be able to facilitate far more personalised care – with precision diagnosis and therapy reducing the volume of routine tasks that staff grapple with daily. It could also provide the platform of data that Cardiff and Vale needs to become the 'learning health system' at the heart of the NHS that has been highlighted in recent discussions. In this model, teams will identify problems of interest; they will collect rich data; the Board will then use its developing sophistication in advanced analytical processing to create knowledge and turn this into new clinical practice.

The Board might choose to centralise this processing and data analysis in a 'nerve centre' where the operational efficiency of UHW2 and the wider organisation could be monitored using data flows, from environmental sensors embedded in buildings and equipment to remote patient monitoring. The Board could leverage the increasing use of 'digital twins' – both for the Board as a whole and for individual patients. These 'twins' would effectively be simulations that could be used to model different courses of action, either in the working of the hospital or in the care of patients. The Board's desire to drive primary research and innovation with its academic partners could be greatly enhanced by these new capabilities, as would the aim of effective population health management.

As noted above, digital technology offers an unprecedented opportunity to make the delivery of clinical services across Cardiff and Vale more efficient. One of the ways in which this is possible is through using machine learning techniques within software to complete routine administrative and clinical tasks – robotic process automation. This can be used in scenarios as diverse as reducing the workload associated with appointment administration or managing oxygen flows. Automation does not end there. Cleaning at UHW2, dispensary functions both within the hospital and in community pharmacies, and surgery are areas where physical robotics could save time and increase accuracy.

The final foundation of the 'hospital without walls' at the centre of a digitally-enabled Cardiff and Vale UHB, is the opportunity to leverage shared care records, both within the organisation and across the wider NHS. Less likely to be provided by a single, all-encompassing clinical record system, the Board's shared care record of the future should be designed to be interoperable with other systems,

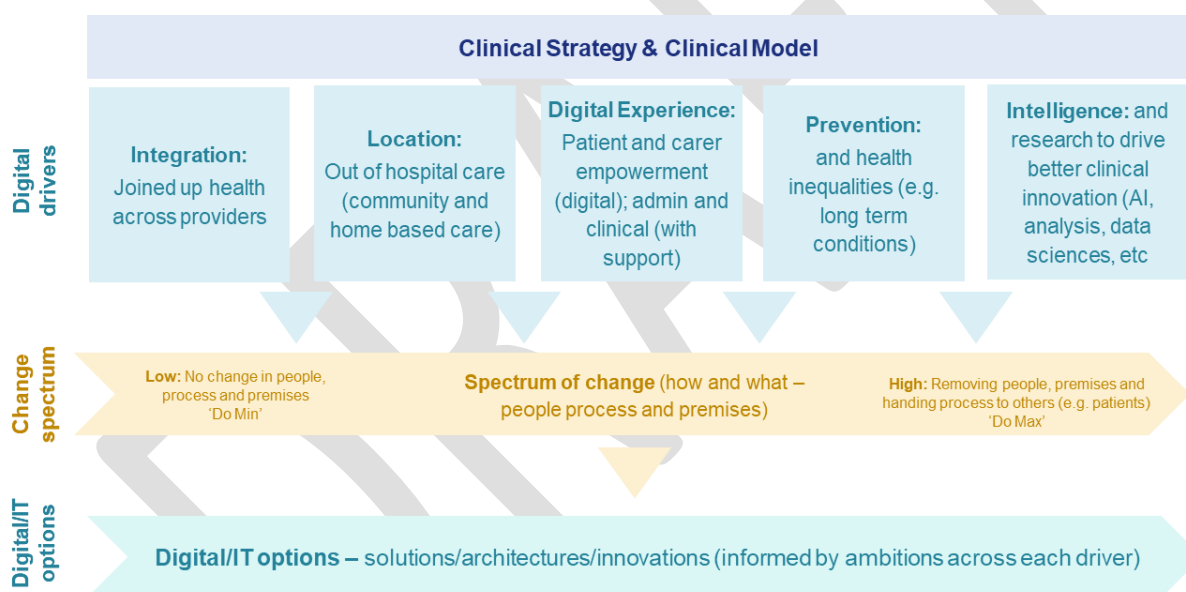
founded on patient-centred consent to share, and co-created by professionals and the patient. Shared care records underpin the vision of precision medicine and full integration that has been articulated in each of the Clinical Strategy workshops: clinical teams and other professions involved in the holistic care of the Board's patients, need to be able to access the same record and see each other's inputs, across primary, community, secondary and tertiary services.

### 3. Enabling the clinical strategy

#### 3.1. The link between the clinical and digital strategies

There is a strong dependence on digital technology to enable the clinical strategy, and UHW2 provides Cardiff and Vale with the unique opportunity to fundamentally rethink how health and care is delivered across the entire Health Board.

The clinical strategy ultimately provides the operating model for the UHB setting out the key digital drivers to that need to be enabled through supporting digital solutions and technologies (as illustrated in the diagram below).



The above drivers, that have emerged through the clinical workshops informing the development of the clinical strategy, will need further consideration and development as the programme progresses. Cardiff and Vale UHB needs to consider each driver (supported by on-going digital workstream expertise to bring an understanding of the 'art of the possible' from a digital perspective – solutions/architectures/innovations) and consider how and what it wants to change across people, process and premises that will ultimately lead to changes required to make it possible from a systems and technologies perspective.

The change spectrum ranges from no change in people, process and premises to removing people, premises and handing process to others (e.g. patients) and will ultimately inform the digital and technology options required by the UHB.

Further refinement of the digital strategy will be required to articulate and support the ambitions across these drivers, and to determine how these drivers will be addressed. Creating the right operating model that is needed to deliver and support them is crucial, as there are a wide range of technical options and organisational approaches available. From a strategic planning perspective, factors such as Cardiff & Vale's existing portfolio of change, its approach to delivery risk, the types of skills and experience in the organisation, and the partnership strategy will also inform how this evolves.

The following section sets out the high-level digital aspiration for UHW2 as per the emerging digital drivers and clinical strategy discussions.

### 3.2. The emerging digital vision

From discussions at a series of clinical workshops based on five key areas: Children and Women's Services; Diagnostics; Urgent and Emergency Care; Long Term Conditions and Elective Care, along with individual stakeholder discussions, it is clear there is a desire to ensure that the future clinical strategy is supported and underpinned by a strong digital capability, and that **information and data are used and shared to provide the most effective and efficient care for patients, regardless of setting.**

Through strong digital delivery the future Health Board, as well as the UHW2 facility, could be radically different, providing care both in the acute setting, but also in a much more decentralised way for areas such as outpatients and diagnostics, as well as a range of prevention and long term condition management activities that increasingly empower the patient with the skills and knowledge to manage their conditions.

As part of the response to COVID-19, there has been a step change in the use of digital channels and technology to preserve, where possible, the continuity of the delivery of care. The impact of COVID work practices has created an environment even more reliant upon digital solutions such as remote monitoring, remote consultation and virtual multi-disciplinary teams (MDT) meetings. The discussions at the Clinical Strategy workshops reflected on the success of this and there was consensus that digital solutions are a key enabler for clinicians to deliver care in a way that is more efficient and more in line with patient preference.

It is important to note that there was also a distinct level of frustration concerning the lack of the current digital provision and poor digital capabilities that was deemed to be holding clinicians back in terms of the ability to work efficiently and deliver the best care, e.g. the lack of basic digital systems for patient alerts identified in the Elective Care workshop, and the existence across the organisation of PCs without sound cards or webcams.

Recurring themes of the advances in science and technology, specifically in areas supporting decision aids, machine learning, artificial intelligence (AI), precision diagnosis, prognosis and treatment were all considered as critical to the future delivery of care and identified as wholly reliant upon digital enablement and maturity.

Integration and sharing of data across all parts of the health and care ecosystem is an important driver, allowing both patient and clinician to interact with the whole system in ways that are familiar to them. Combining a modern digital user experience with technologies such as remote monitoring, wearable technology, data analytics and machine learning, will mean much more precise and tailored prevention and care can be provided with a higher degree of efficacy.

In the medium term, the ambition is to ***move to a wholly paperless operation, enabled by a fully featured digital Electronic Patient Record (EPR), providing a robust digital foundation for the Health Board as a whole, including the future UHW2 hospital.*** Taking advantage of innovations such as cloud computing, mobile technology, wearables and the Internet of things (IoT), along with foundational technologies such as 5G and AI will support innovations such as remote and virtual surgery, better management of long term conditions in the community and virtual ward settings and delivering efficient and joined up health and social care data and systems that improve patient outcomes while maintaining the principle of Prudent Healthcare.

The emerging clinical strategy is underpinned by the Learning Health and Social Care concept, using data to drive insight, which in turn drives improvement to practice. Closing the loop by evaluating the efficacy of the change then allows further adaptation and refinement.

The current digital strategy explicitly supports this approach, and through the deployment of technologies such as data integration, fast, ubiquitous networking and data analytics, the phases of data, analysis, knowledge generation and change to practice can be optimised.

## 4. Cardiff and Vale's digital strategy

### 4.1. Current digital landscape

The current Cardiff & Vale UHB digital portfolio comprises of a range of Nationally provided applications (e.g. Welsh Clinical Portal and the National Data Resource), as well as a variety of locally provided capabilities, all contributing to the strategic plans for the organisation. Like many public sector organisations, IT infrastructure has historically suffered from under-investment and driven a need to sweat existing infrastructure and technology assets. This has resulted in problems with both technical capability and resourcing capacity to support change activity and IT operations.

While the COVID pandemic has driven considerable beneficial change in terms of mobile working and adoption of digital applications, the wider infrastructure still requires investment to get to a wholly stable foundation. In order to fully achieve its digital ambitions for UHW2 and beyond, further investment is needed to increase the digital maturity of the applications, infrastructure and its technical foundations. This is identified in the digital strategy, although not commented on further.

The existing plans and workstreams that contribute to digital outcomes provide a range of benefits across the Health Board and are a mix of implementation activity combined with investment and remediation of the existing application and infrastructure portfolio.

A digital strategy has been developed to give the Cardiff and Vale further clarity on the where and how digital technology and change will contribute to the Health Board's long term goals. This has been reviewed in the context of the UHW2 programme, with the observations detailed below.

### 4.2. Current digital strategy observations

The current digital strategy was created at a time where the digital ambition of the organisation lacked a cohesive focus and represents a significant step forward for the Health Board's vision for digital. It has been developed as a high level strategy, with a view to providing the strategic digital framework for Cardiff and Vale, and subsequent development is planned to provide further clarity



and detail as the Health Board's strategic position regarding digital evolves. Overall, the digital strategy provides an initial pragmatic vision that sets some digital foundations for Cardiff & Vale UHB. The strategy is divided into two main sections: the first sets out the digital vision for the Health Board, what the digital experience will be like in 5 years' time, and the guiding principles behind the strategy. The second section describes the areas that digital transformation needs to consider, and at a high level identifies the types of organisation and culture that are needed.

The digital strategy identifies broad themes and areas of enablement that support the vision for UHW2, but there are a number of important considerations and gaps that need to be addressed and developed further in order to provide a clear strategy for the programme, and the wider Health Board.

The strategy has been developed on a 5-year timeframe, and whilst its purpose is not to talk directly to the digital opportunities provided by the UHW2 programme, it is aligned and provides the direction of travel towards a fully formed Learning Health and Social Care System (LHCS) by explicitly identifying the need for high quality and timely data in order to generate actionable insights for clinicians. In addition the provision of, and exploitation of data to drive improved patient outcomes across the Health Board comes across clearly.

Leading the strategy with the overall vision of being a 'Digital First' organisation, centred around a LHCS provides a firm basis of alignment with the clinical strategy; real examples may bring it to life and resonate with a wider audience.

In relation to the overall digital interaction with wider NHS Wales National initiatives, the implications and decision needed to be made are less clear – the different National, Regional and Local perspectives outlined in the strategy could be expanded to clarify why having some specific National services are important to Cardiff & Vale (e.g. the Electronic Master Patient Index, National Data Resource, IG and Cyber standard), but equally why local and regional innovation is so vital to Cardiff & Vale's mission. This could in turn further explain and reinforce the 'open system' thread that flows through the document.

The strategy breaks down digital interaction into Patient, Clinician and Analyst 'channels' that represent the broad user and stakeholder groups. This 'channel' concept provides a good foundation for digital thinking as helps focus on user experience, and the fact that patients are central to the concept aligns strongly with both Board and National strategy; it could be further developed pictorially to show real scenarios in the future UHW2 facility and its role in healthcare across C&V. The Health Board has developed a clear governance structure aligned to this approach, along with enabling programmes that are aligned to these concepts; this will help in embedding the approach across the organisation, although it is worth noting that a more formal digital communication and engagement strategy will be needed to take full benefit.

The strategy directly addresses the need for digital inclusion as being fundamental to engaging with and ensuring that the under-served parts of the community could benefit. This is a key area of development across the public sector currently, and the fact that this is specifically acknowledged in the digital strategy and by ensuring that the needs of all of its service users are designed into the digital ecosystem from the start, has the potential to considerably improve outcomes. This is becoming an increasingly important area of focus, and explicitly responding to this need within strategic thinking will help to ensure it pervades the service as a whole. It is also worth noting that the need for digital inclusion extends to staff, albeit to a lesser degree, as well as patients and the wider public. The digital leadership recognises the need for closer 'whole system' working across not only the health domain, but the wider social care system in South Wales. They see the digital

strategy, and UHW2, as an opportunity to 'take the lead' in enabling this, building stronger partnerships with academia, research, other public sector organisations, and potentially commercial organisations, in a broad digital health ecosystem.

One area within the strategy that is somewhat under-developed is how this strategy may impact Cardiff & Vale in becoming 'more digital', and in particular the need to develop and implement a more digitally mature Operating Model that will impact on the structure and function of the organisation:

- How will Cardiff & Vale culture and change management respond to the demands of a more digitally focussed organisation whilst retaining the core mission of delivering healthcare outcomes? This is particularly relevant in the content of agile and collaborative design of the future digital services, as it will require engagement and buy-in and participation from a wide range of users and stakeholders, something which requires a considerable cultural shift. Ensuring that all levels of the organisation are engaged and fully support and buy into digital transformation is paramount. Without this, transformation will tend to stall in the middle tiers of the organisation structure.
- Does Cardiff & Vale's attitude to digital delivery risk need to be revised, and if so how, with what implications? Specifically, the strategy should identify that digital delivery has a different risk profile, and while value can be delivered into operation earlier and with higher engagement and buy-in than through traditional methods, there is a need to be more flexible with regard to aspects such as timescale or cost.
- What are the new capabilities needed to deliver the digital strategy over the next 5, 10, 15 years?
- What further training, support, and upskilling will be needed for staff across Cardiff & Vale to reach the level of digital maturity that is aspired to?

It's worth acknowledging or capturing these, as they can help set the parameters of digital change and crucially how it is delivered (and particularly begin the discussion on what Cardiff & Vale is prepared to undertake, and what are its 'red lines').

The strategy talks to some high level approaches to delivering digital change differently, but without a specific Cardiff & Vale context, the relevance may be lost on some audiences; the co-creation/design thinking type approach can be difficult to visualise – explicit examples can help demonstrate the value.

Funding and investment is not addressed in the strategy and in particular how adopting a digital first paradigm will need to shift the discussion from capital and revenue cost to, for example, a total cost of ownership approach, allowing longitudinal benefits to be more clearly realised. It is worth noting that through the draft roadmap, the digital team is developing a number of business cases to deliver key aspects of the planned digital change. As detailed above, however, there is a critical need for further investment in some of the fundamental underpinning digital technology (e.g. networking, single sign-on, EPR, etc) in order to provide a robust foundation for the future.

The themes and supporting material contained in the digital strategy align to the wider vision, and although not included in the strategy currently, the digital team has developed an ambitious draft five-year roadmap and strategic investment case that describes the key digital changes needed to provide a strong foundation for the Health Board. Although much of the change is focussed at a whole-enterprise level, crucially much of this will be required to successfully deliver UHW2. Without

including this roadmap in the strategy, and a longer term view that describes how both the fundamental foundations and the transformation may be achieved over the coming years, it will be difficult to determine how to prioritise and sequence change. Without this roadmap to act as a baseline, the Health Board is at risk of not delivering the foundational or strategic changes, set out by the digital team, that are needed to realise the wider clinical vision, and risks simply delivering incremental, tactical change. The current roadmap represents an important step in providing the necessary digital foundations and transformation required by UHW2 but will need to evolve to address aspects such as funding, delivery approach, prioritisation, dependencies and the partnering strategies needed to realise the digital vision for UHW2 and beyond.

As detailed above, in support of the strategy, the digital organisation has established a governance structure and management and delivery boards to support the four digital delivery programmes. This structure oversees the steering, prioritisation, funding, and delivery to ensure that planned outcomes are achieved. This structure is currently in the relatively early stages of operation and is supported by the Health Board leadership.

## 5. Recommendations and next steps

### 5.1. Recommendations

It is accepted that Cardiff & Vale is not a digitally mature organisation though it aspires to be. The digital strategy has been approved by the Board and requires investment and support to enable a team to deliver the strategy and more critically begin to lay the foundations for the strategic vision of UHW2.

The digital strategy should be revised to focus on the robust digital foundations for the future, and specifically those that support the delivery of the UHW2 strategic vision and the clinical model. It should therefore:

- Explicitly make reference to the UHW2 context, elaborating how digitally supported healthcare delivery could be radically different with a wholly different benefit profile.

Large scale technological and digital change requires a considerable shift in both the capability, capacity, and skills mix. This is something that many public sector organisations have struggled to deliver, in-house, in an economically viable way due to the cost and complexity of building a diverse range of digital capabilities. Consequently, acknowledging in the digital strategy that there is a need to explore capability requirements and the various sourcing/delivery options (e.g. partnering vision and strategy), is vital to the successful implementation of the digital change.

- Further develop the current roadmap to define the scope and sequence of both the longer-term strategic goals and the more immediate actions that can be planned and delivered ahead of UHW2 and will provide a robust foundation for the Health Board's future clinical strategy (e.g. mature IT infrastructure, comprehensive Electronic Patient Record).

To further aid strategic thinking and planning, the timeframe of the strategy should be widened to include the longer-term vision and the overarching roadmap or high level transformation view over a longer period (e.g. 10-15 years). This will determine the types of capabilities and actions needed

to support and enable the strategic benefits afforded by the UHW2 programme, would allow readers to better understand the scope and scale of the strategy.

- Include some concrete examples of how the both the patient and clinician experience will be different, why digital is important, and how it directly supports the Learning Health & Care System vision and clinical strategy.
- Develop the 'channel' vision and be clear where dependencies exist on other capabilities (e.g. National and Regional)
- Be clear on what is required of Cardiff & Vale to make this happen, and how staff and stakeholders will be supported. The overall stance of C&V with regard to both pace of adoption of digital technology against risk appetite, particularly in the context of UHW2, is not explicit, could benefit from acknowledgement, and further exploration and definition

## 5.2. Next steps

The priority actions to prepare for UHW2 need to start now. The benefits of digital and technology can only be realised if strong foundations are built, based on a clear strategy and roadmap. Establishing and embedding strong digital foundations is critical to the transition to digitally enabled health and care provision.

In order to build the cultural, organisational and digital foundations necessary, the following next steps should be initiated:

- Refresh the digital strategy, including the further development of the roadmap that shows both the longer term strategic activities, including those needed for UHW2, and more immediate foundational and tactical activities that can also provide value in the short term.
- Further develop the digital Target Operating Model – The operating model defines how the digital organisation works; digital transformation is not just about delivering technical changes, but also embedding the enduring cultural and operational changes across all digital aspects of the Health Board. Without this, it will prove difficult to deliver the benefits of the digital strategy, including those directly relating to UHW2.
- Detailed digital portfolio planning, aligned to the roadmap, to assess delivery options and to determine what activities to start, what to continue to deliver, and what activities to stop. This planning should identify the scale and potential sources of funding.
- Develop a digital communication and engagement plan to ensure that all staff and impacted stakeholders are aware of the strategy and its impact and are consulted and engaged regarding these changes.



These steps are not exhaustive, but represent the immediate crucial activities needed to prepare the Health Board for the digital changes needed to support its future strategy and that of UHW2.