

Freedom of Information Request: Our Reference CTHB_327_17

You asked:

I wish to submit a new freedom of information request relating to the organisations internal plans and strategies around the following departments:

Information Technology

- IM&T, IS, ICT Department Org Chart
- IM&T, IS, ICT Strategy 2016 (Not Clinical Strategy)
- IM&T, IS, ICT Business/Departmental Plan 2017/18- Update/Version
- Also, a breakdown of the ICT capital budget in 2017/18:

Our Response:

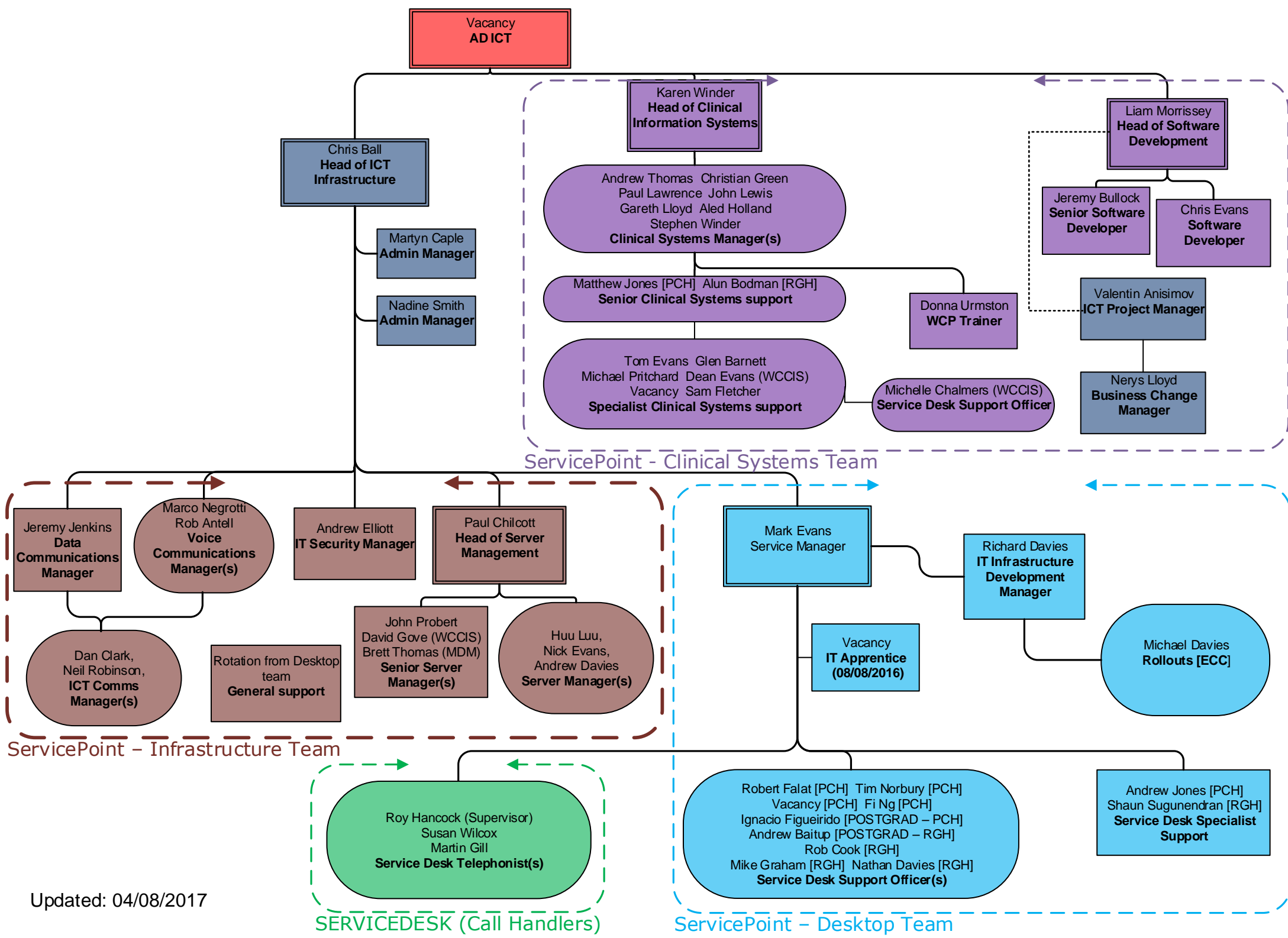
Please see the ICT Structure attached as document a).

Please see attached the Digital Health Strategy as document b).

IM&T, IS, ICT Business/Departmental Plan 2017/18- Update/Version contained within the Organisational Integrated Medium term plan p158 http://cwmtaf.wales/how-we-work/plans-and-reports/integrated-medium-term-plans/?drawer=Integrated_Medium_Term_Plans*IMTP_2017-20 and [Annex B10](#)

The current spend on capital schemes is shown in the table below:

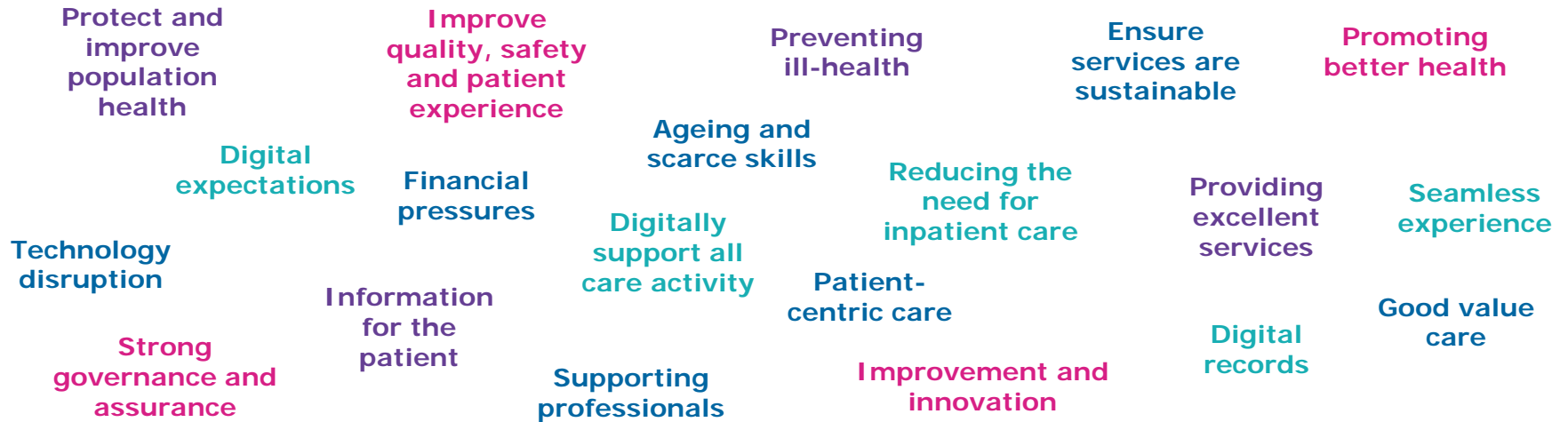
| Scheme | Current Year Forecast Spend |
|---------------------------------------|--------------------------------|
| | £ |
| <u>Discretionary Programme</u> | |
| <u>I.T</u> | |
| Telecom System at RGH | 267,972.60 |
| Rolling Replacement Programme | 647,500.00 |
| New staff equip. & re-allocation fund | 51,000.00 |
| WCCIS | 630,603.00 |
| e-Dal | 29,727.55 |
| LIMS/WCP | 6,264.00 |
| NCCU | 6,811.98 |
| Partial booking system | 82,000.00 |
| Costing System | 31,000.00 |
| Total - IT | 1,752,879.13 |



1

Executive Summary

The strategy sets out a vision which addresses the array of influences and challenges that CTUHB are facing



Digital Health Vision:

CTUHB will aim to become a digital exemplar within NHS Wales, as an innovator and early adopter of digital technologies and approaches, to enhance care quality, better engage with patients and deliver sustainable services

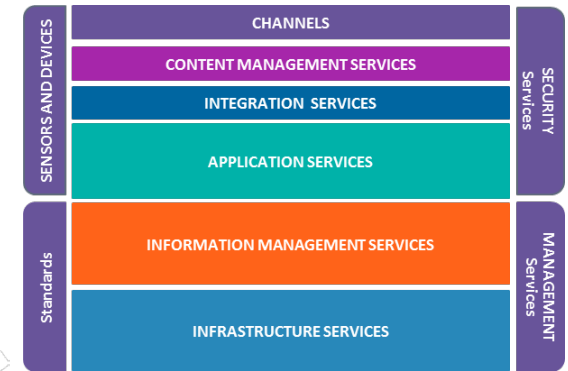
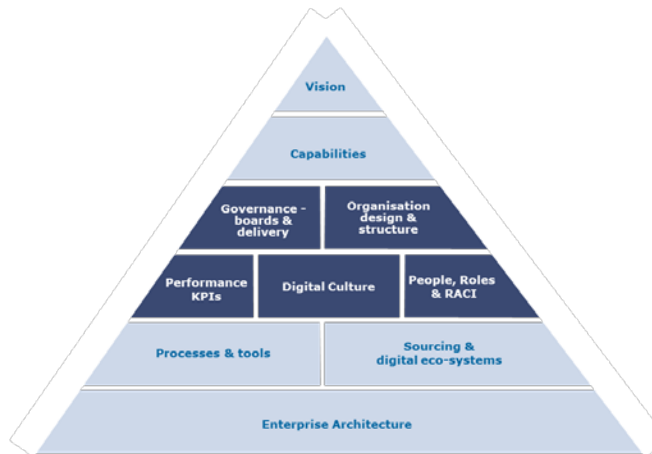
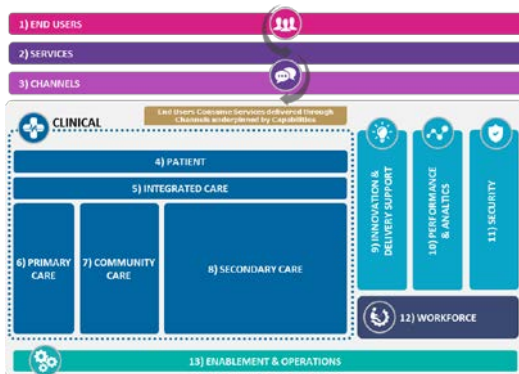
To realise the vision, strategic solutions are defined which will transform CTUHB into a digital healthcare leader

| | | |
|---|---|--|
| 1 |  Digital health board | Digitising the processes across the health board that support patients and employees across all care settings, removing manual effort, eliminating paper and capturing valuable, reusable data as standard |
| 2 |  Insights-driven healthcare | Providing the platform to interrogate and analyse multi-source data, surfacing previously unknown insights on performance and driving optimal decision making |
| 3 |  Single patient view | Managing a single, digital view of a patient's care and history across Primary, Community and Secondary services, improving patient centric care, reducing delays in information seeking and removing re-keying errors |
| 4 |  Intelligently integrated healthcare | Intelligently integrating processes and systems, providing two-way communications across silos and implementing smart workflow to automate key process interactions across care settings, removing manual effort and baking in zero-error processing |
| 5 |  Digital workforce | Providing the digital tools to support employees in their day to day activity, reducing admin and travel time and enabling increased clinical contact |
| 6 |  Adoption and exploitation | Providing the resources, structures and toolkits to properly manage identification, implementation and adoption of new solutions; and supporting staff in exploiting the systems they have access to |
| 7 |  Managing innovation | Managing and encouraging innovation with innovation forums and idea receptors; as well as a governance and funding model to turn them into reality |
| 8 |  Digital enablers | Putting in place the enabling infrastructure and maturing the key supporting capabilities needed to deliver the strategy |

Executive Summary

To determine how the strategic solutions will be implemented, three perspectives were considered

The vision, principles and strategic solutions are developed into a practical plan of action for Cwm Taf. To define this, the current state is understood for each aspect, target states defined and recommendations to make the transition developed.



1) Business Capability model

Defining the business capabilities that the health board needs to achieve the vision

2) Digital IT Operating Model

Defining how CTUHB will deliver, maintain and govern the transformed organisation

3) Enterprise Architecture

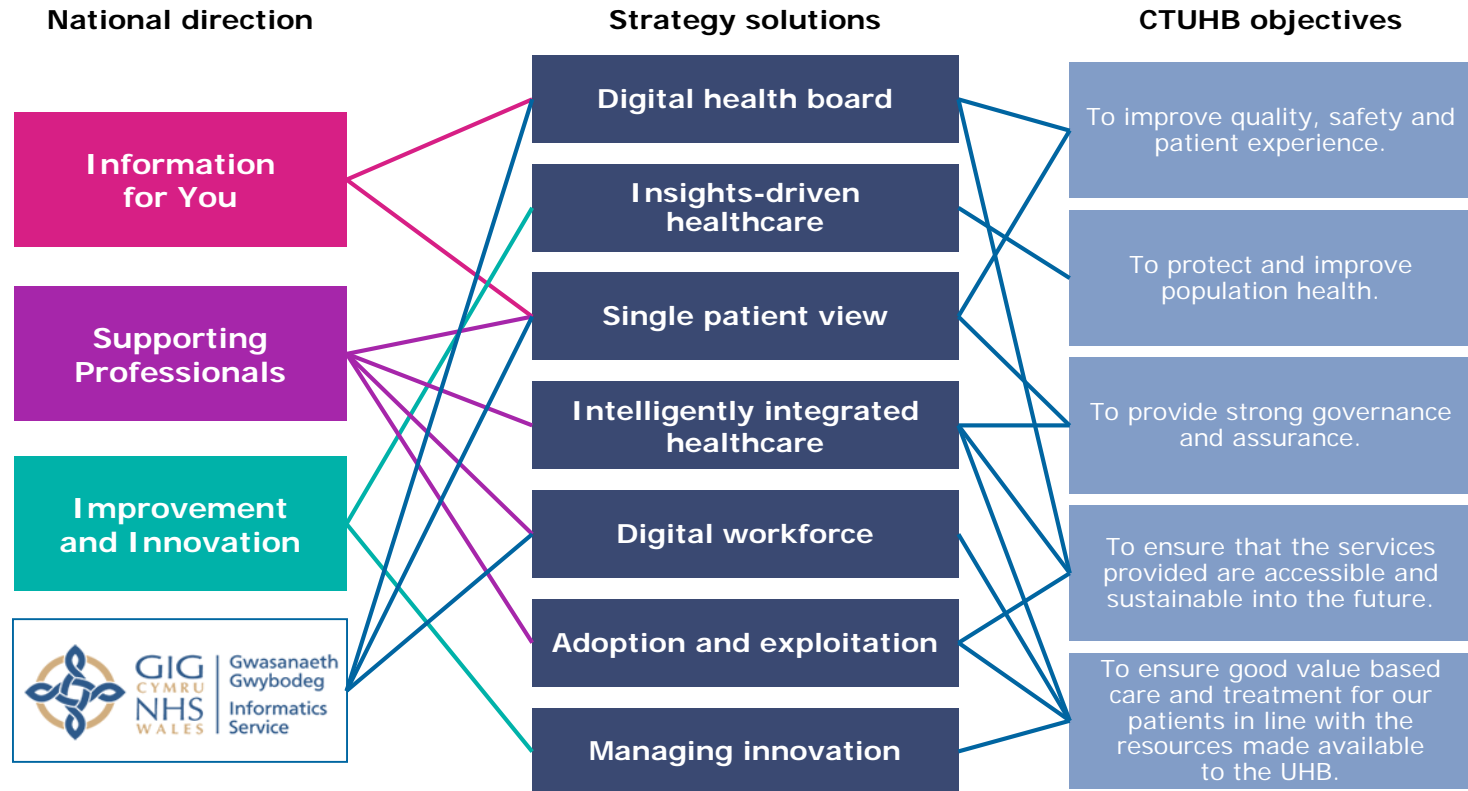
Defining the technical capabilities needed to achieve the vision

The capabilities, architecture and operating model analysis led to a programme of initiatives to implement the strategic solutions

| | | |
|---|--|--|
| 1 |  Digital health board | Welsh Patient Referral Service, Welsh Community Care Information Solution, Welsh Hospital Electronic Prescribing and Medicines Administration, Welsh Clinical Portal extensions, Interim acute medicine, bed management and handover system, Paediatric Mobile application (Chai), Digital process review, Enterprise Scheduling |
| 2 |  Insights-driven healthcare | National Data Warehouse, Business Intelligence & Predictive Information Services, Clinical insights platform extension, Master data management implementation, Exploiting clinical insights platform |
| 3 |  Single patient view | Welsh Care Record Service, WIAS, Vision 360, Patient Portal |
| 4 |  Intelligently integrated healthcare | Implement Enterprise Service Bus (ESB), Detailed architecture review and tech roadmap, Strategy and Proof of Value for technology to track equipment, assets, patients and resources |
| 5 |  Digital workforce | Mobile Device Management Strategy, Rollout of Skype for Business, Employee Self-Service - Kiosks and apps, Single sign on, IT Self-Service web portal |
| 6 |  Adoption and exploitation | Implementation of ITOM enhancements |
| 7 |  Managing innovation | Innovation management and delivery |
| 8 |  Digital enablers | Datacentre consolidation, Enterprise monitoring, Cyber security, Infrastructure refresh, Switchboard rationalisation |

The projects listed are a sample and the full portfolio can be found in the accompanying Project Catalogue

The solutions align to and support the national strategy and directly contribute to CTUHB's healthcare objectives



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Document context

Purpose and audience

The purpose of this document is to describe the strategy that the Cwm Taf University Health Board is taking to using digital informatics services to aid in achieving its Integrated Medium Term Plan.

It describes the case for change, the future state and the transformation programme required.

It describes the overall direction for ICT over the next 3-5 years and whilst it details transformative interventions is not intended to be a detailed transformation programme description. It is important to state that is intended as a living document which is continually reviewed and revised to reflect the changing landscape and emerging needs.

The intended audience is any the UHB's stakeholders and technical understanding is not required.

This document is informed by national and local business and IT documents. It should be read in conjunction with the Digital Health Strategic Outline Programme and the annual ICT Corporate Business Development Plan.

Development Approach

Atos Consulting were engaged to develop this strategy on behalf of Steve Webster, Director of Finance. The development followed the Atos Consulting best practice strategy methodology.

It was produced in a highly collaborative manner over an 8 week period, working directly with Steve and his teams as well as engaging with a range of stakeholders to input and review; ensuring a fit for purpose strategy which will meet the differing needs of the health board across all care settings.

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UHB departments consulted

Pathology, Radiology,
Pharmacy, Therapies,
Community Health and District
Nursing, Maternity, Paediatrics,
Cardiology, Primary care,
Medical Records, Orthopaedics,
Performance and Information
Systems, Finance, Theatres,
ICT, Procurement, Workforce
and Organisational
Development, NWIS,
Executive Board

Executive Summary

This strategy document should be read in conjunction with the appendices and Strategic Outline Programme

The Digital Health Strategy was informed by a number of national and Cwm Taf documents covering both business and ICT. These include

- ▶ A Digital Health and Social Care Strategy for Wales
- ▶ NWIS Annual review 2016
- ▶ Cwm Taf University Health Board integrated medium term plan 2016-2019
- ▶ Cwm Taf Annual Report 15-16
- ▶ Cwm Taf ICT Corporate Business Development plan 2017-2018

This document refers and summarises the salient points but these should be referred to for further detail and context if needed.



Appendices

1. **CTUHB Digital Health Strategy – Capability Definitions** – This is a complete listing of the Business Capabilities with their descriptions and maturity assessment. It should be used as a reference to explain the meaning and intent of unfamiliar capabilities
2. **CTUHB Digital Health Strategy – Project Catalogue** – This is a complete listing of the defined projects and includes detailed descriptions of what each project is, its prioritisation and expected benefits. It should be used as a reference for more detail on proposed projects but primarily as a working portfolio summary to be edited over time as projects change or are added/de-scoped
3. **CTUHB Digital Health Strategy – Roadmap** – This is a large, wall banner size, graphic of the roadmap as defined. It should be used as part of the communication activities and as a tool for viewing the portfolio in one go; but again, should be seen as a working document to be updated and revised

Implementation documents

1. **CTUHB Digital Health Strategic Outline Programme** – This is the outline business case for the transformation programme and details the strategic, financial, commercial, management and economic cases. It should be read to understand the detail of how the programme will be delivered and managed
2. **CTUHB Digital Health Strategic Outline Programme – Financial Model** – This is the financial model used to describe the costs and quantified benefits for the programme. It should be used to understand the financial requirements and returns in more detail; ahead of the detailed business cases which may be produced

2

Business context,
vision and strategy

Section overview

1. This section includes:

- ▶ A summary of the UHB's business objectives that this strategy is aiming to support
- ▶ A summary of external factors that are complicating the achievement of the business objectives
- ▶ A summary of the National digital vision that has informed this strategy
- ▶ The CTUHB Digital Health Vision and guiding principles
- ▶ Introduction to the strategic solutions which will implement the vision
- ▶ Introduction to the analysis and roadmap development

2. The detail of the analysis, recommendations and roadmap are covered later in the document



The strategy's overriding purpose is to enable and help deliver the UHB's healthcare vision and priorities

Health board vision

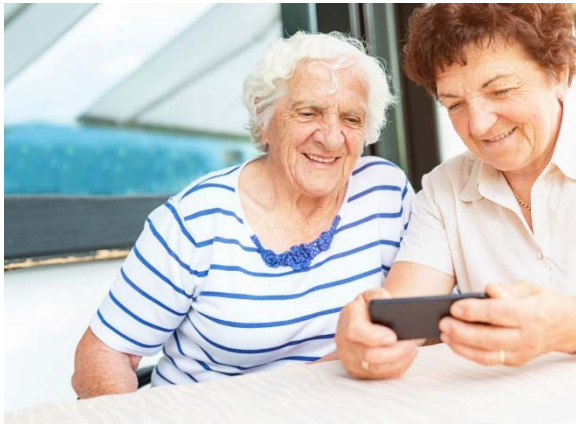
Care for our communities and patients by preventing ill-health, promoting better health, providing excellent services and reducing the need for inpatient care wherever possible through the provision of strengthened home, primary and community care.

Objectives

- ▶ To improve quality, safety and patient experience
- ▶ To protect and improve population health
- ▶ To ensure that the services provided are accessible and sustainable into the future
- ▶ To provide strong governance and assurance
- ▶ To ensure good value based care and treatment for our patients in line with the resources made available to the UHB

Priorities for 2016-2019

- ▶ a **reduction in ill health** across our communities;
- ▶ **strengthened core primary care** services through extending enhanced services across federated practices to improve equity of access;
- ▶ the **development of Cluster Hubs** to further drive locality working, thus facilitating a demonstrable shift of service from secondary to primary care;
- ▶ **implemented innovative workforce and service models in primary, community care services** which have reduced unnecessary hospital admissions and delivered a demonstrable shift of services from secondary to primary care;
- ▶ **delivered truly integrated services** with our partners across areas such as health and social care and reablement services, particularly for children and the frail elderly;
- ▶ **implemented redesigned secondary care service** models across our 'fragile' service areas, as part of wider alliance arrangements with our partner Health Boards and Trusts; and
- ▶ **embedded prudent healthcare** in our service planning and delivery.



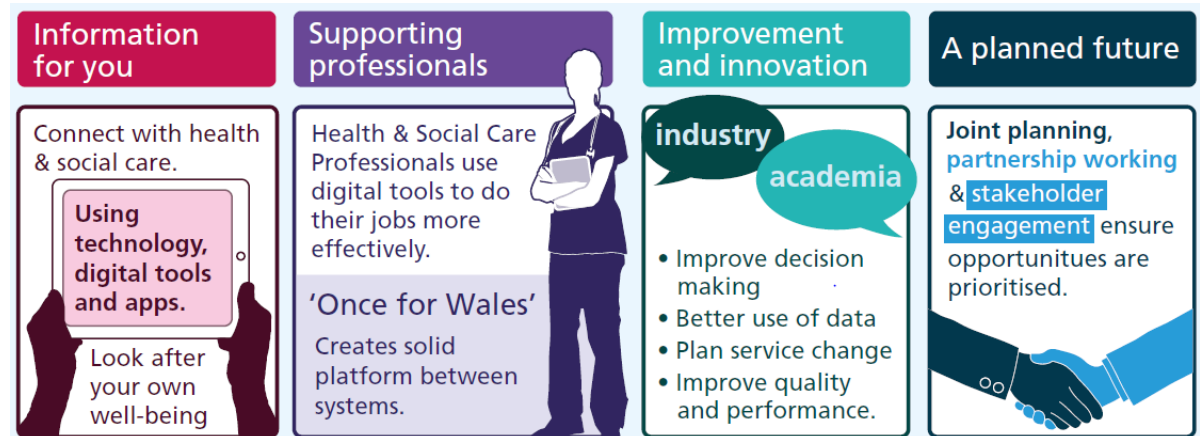
Source: Cwm Taf University Health Board integrated medium term plan 2016-2019

This healthcare vision must be delivered in the context of financial, societal and workforce challenges

- 1. Continued cost pressures** – continued economic pressures and budget reduction target of £37.7m over 3 years
- 2. Skill shortages** – As a semi-rural board, attracting and retaining talent across clinical and non-clinical services is an ongoing challenge with primary care sustainability an ongoing challenge and nurse shortages leading to temporary bed closures in 2015
- 3. Ageing workforce** - The issue of attracting skills is made more urgent when considering the number of over 51s in the workforce, with high percentages (19% to 28%) in key areas of nursing and midwives, additional clinical services and Administration
- 4. High degree of inter board patient flow** - The Welsh centre of excellence model and Cwm Taf's location means it experiences a high degree of patient flow in and out of the health board throughout a patient's care
- 5. Shifting care settings** – To alleviate pressure on hospital resources and simultaneously provide better patient-centric care and meet patient expectations, care delivery is shifting from hospital in-patient setting to in-community and in-home care including patient self-care
- 6. Need to reduce care quality variance** – The statistics are clear that care quality variance is high and needs addressing. For example, care varies based on which day patients are treated: For one UK hospital mortality rates are 11% higher for patients admitted on Saturdays and 16% higher on Sundays compared to a Wednesday
- 7. Providing patient-centric services** - Patients are demanding more care ownership, personalisation, consolidation, self treatment and increased accessibility to all services and patient records
- 8. Sector-wide digital disruption and innovation of care models** – Accelerated clinical research in bioinformatics, access to real-time digital records for clinical empowerment, analytics for pre-emptive care, smart devices for monitoring and asset tracking are just some of the digital health sector disruptors.
- 9. Digital proliferation is driving patient and employee expectations** – Expectations are influenced by increasing adjacent sector digital maturity. For example, in the travel sector passengers can now check-in online and receive digital queue and travel updates. This has led to a completely paperless journey and improved customer satisfaction. Adjacent sectors have tested and proved a number of emerging technologies for the health sector to consider

Business context, vision and strategy

NHS Wales and NWIS have developed a digital based response to many of these challenges and opportunities...



Our ultimate aim is that every task care professionals undertake is supported digitally, that records are created, held and accessed electronically and that all such services work seamlessly and commonly across organisations and sectors.

...and the CTUHB strategy will drive their achievement as well as delivering specific Cwm Taf needs

CTUHB will respond to this array of influences & challenges with sustainable, digitally underpinned ICT services



Digital Health Vision:
CTUHB will aim to become a digital exemplar within NHS Wales, as an innovator and early adopter of digital technologies and approaches, to enhance care quality, better engage with patients and deliver sustainable services

This vision is supported by principles which articulate what it means in practice

Digital Health Vision:

CTUHB will aim to become a digital exemplar within NHS Wales, as an innovator and early adopter of digital technologies and approaches, to enhance care quality, better engage with patients and deliver sustainable services

Strategic principles:

1. **National solutions** – National solutions will be adopted to drive efficiency and build in interoperability
2. **Digital first** – Exploiting digital as the first choice* to enhance and optimise services, raising quality and increasing clinical time
3. **Data driven** – Using analytic insights to drive decisions and thereby improve quality and efficiency of services
4. **Proactive trailblazer** – Acting as a test bed and incubator for NHS Wales, developing and trialling new solutions on behalf of and in collaboration with the other boards
5. **Whole experience** – Solutions will address the patient and employee experience across the whole patient journey

To realise the vision, the strategy focuses on strategic solutions which will transform CTUHB into a digital healthcare leader

| | | |
|---|---|--|
| 1 |  Digital health board | Digitising the processes across the health board that support patients and employees across all care settings, removing manual effort, eliminating paper and capturing valuable, reusable data as standard |
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| 8 |  Digital enablers | Putting in place the enabling infrastructure and maturing the key supporting capabilities needed to deliver the strategy |

These strategic solutions will be implemented through a programme of initiatives

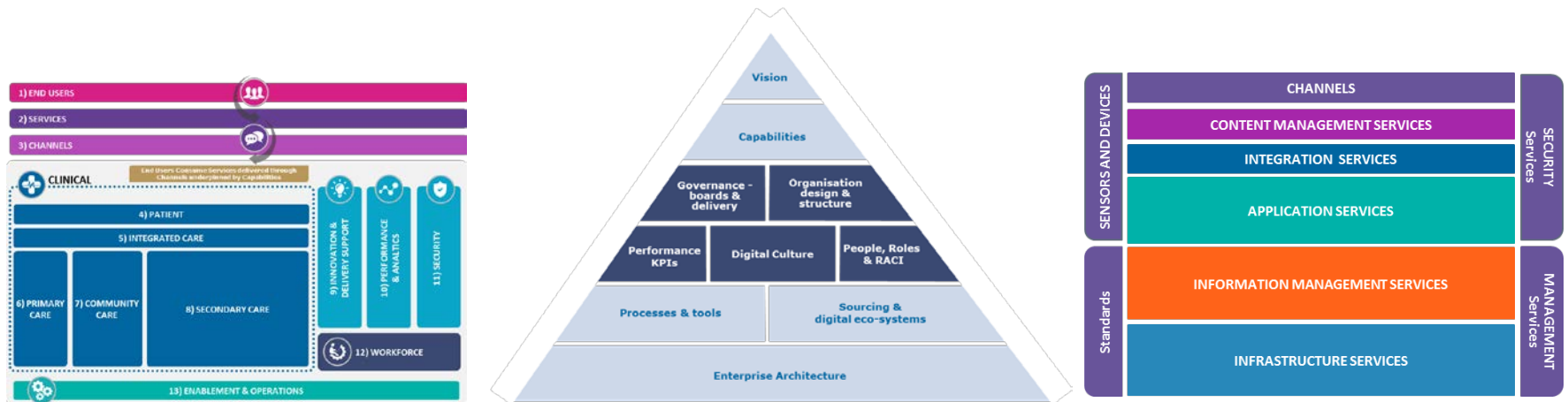
| | | |
|---|--|---|
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| 7 |  Managing innovation | Innovation management and delivery |
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The projects listed are a sample and the full portfolio can be found in the accompanying Project Catalogue

Business context, vision and strategy

The rationale and detail of the implementation plan is described through three strategy aspects

The vision, principles and strategic solutions are developed into a practical plan of action for Cwm Taf. To define this, the current state is understood for each aspect, target states defined and recommendations to make the transition developed.



1) Business Capability model

Defining the business capabilities that the health board needs to achieve the vision

2) Digital IT Operating Model

Defining how CTUHB will deliver, maintain and govern the transformed organisation

3) Enterprise Architecture

Defining the technical capabilities needed to achieve the vision

The following sections detail this analysis and the development of the roadmap

3

Business Capability Model

Section overview

1. This section includes:

- ▶ The definition of the business capability model terms
- ▶ The high level design of the model
- ▶ The full capability model, showing all business capabilities for the UHB
- ▶ A maturity assessment of the capabilities
- ▶ Analysis and recommendations
- ▶ Alignment of the recommendations to the strategic solutions

2. How the recommendations are implemented is covered by the roadmap later in the document

3. The full listing of capabilities and their descriptions can be found in the appendix



The business capability model describes what it is that the health board does, essentially the UHB on a page



By defining the business capabilities needed to be successful and assessing opportunities for enhancement, the strategy can target its efforts on delivering maximum value to the health board

Definitions

Business Capability Model

- ▶ The business capabilities and the way they are logically and strategically structured
- ▶ Note – the capability model does not depend upon or presuppose the organisation model

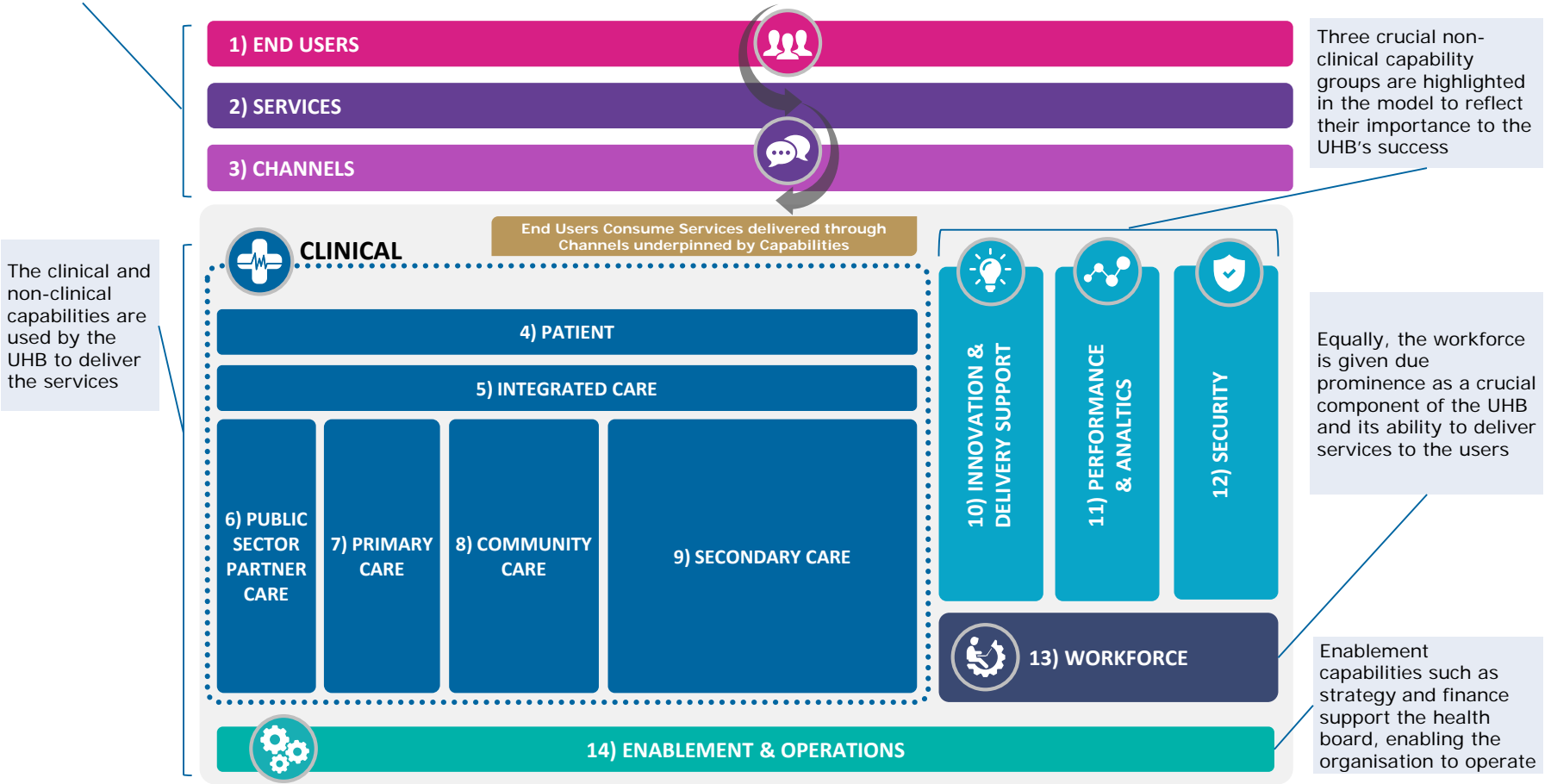
Business capability

- ▶ The ability to deliver an outcome, comprised of
 - Processes
 - Information, knowledge and skills
 - Tools and technology
 - Organisation and distribution

Business Capability Model

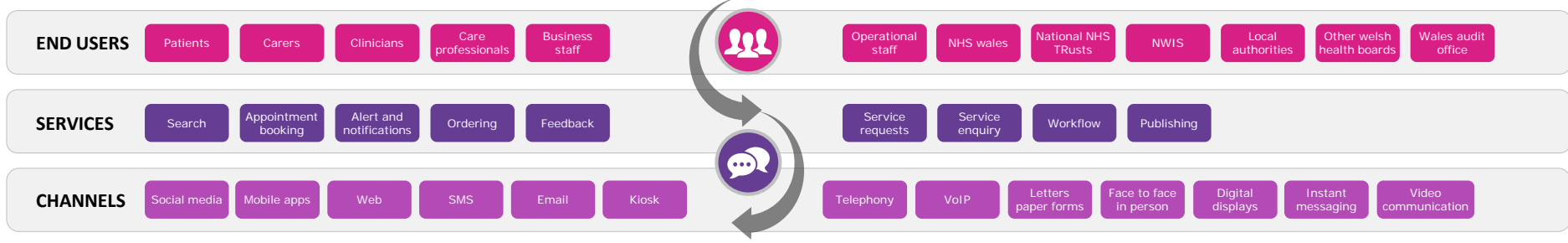
The strategy's capability model structures clinical and non-clinical capabilities to underpin the services CTUHB deliver

The end users including patients, employees and NHS bodies; access Cwm Taf services through a range of channels. E.g. a Patient uses fixed line telephony to book an appointment

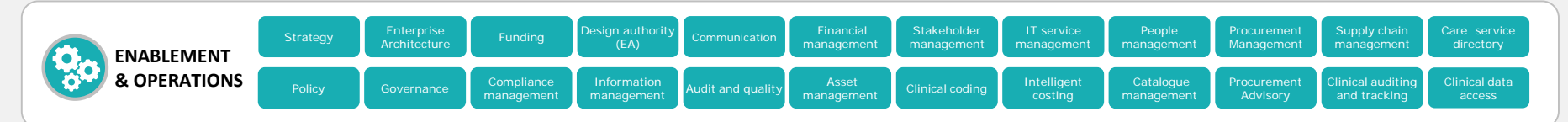
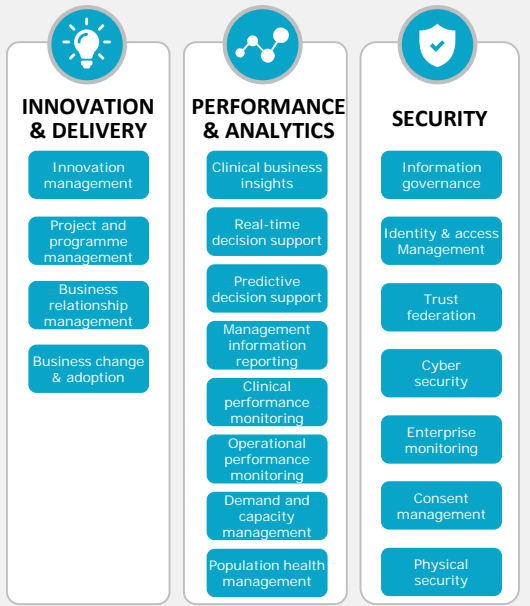
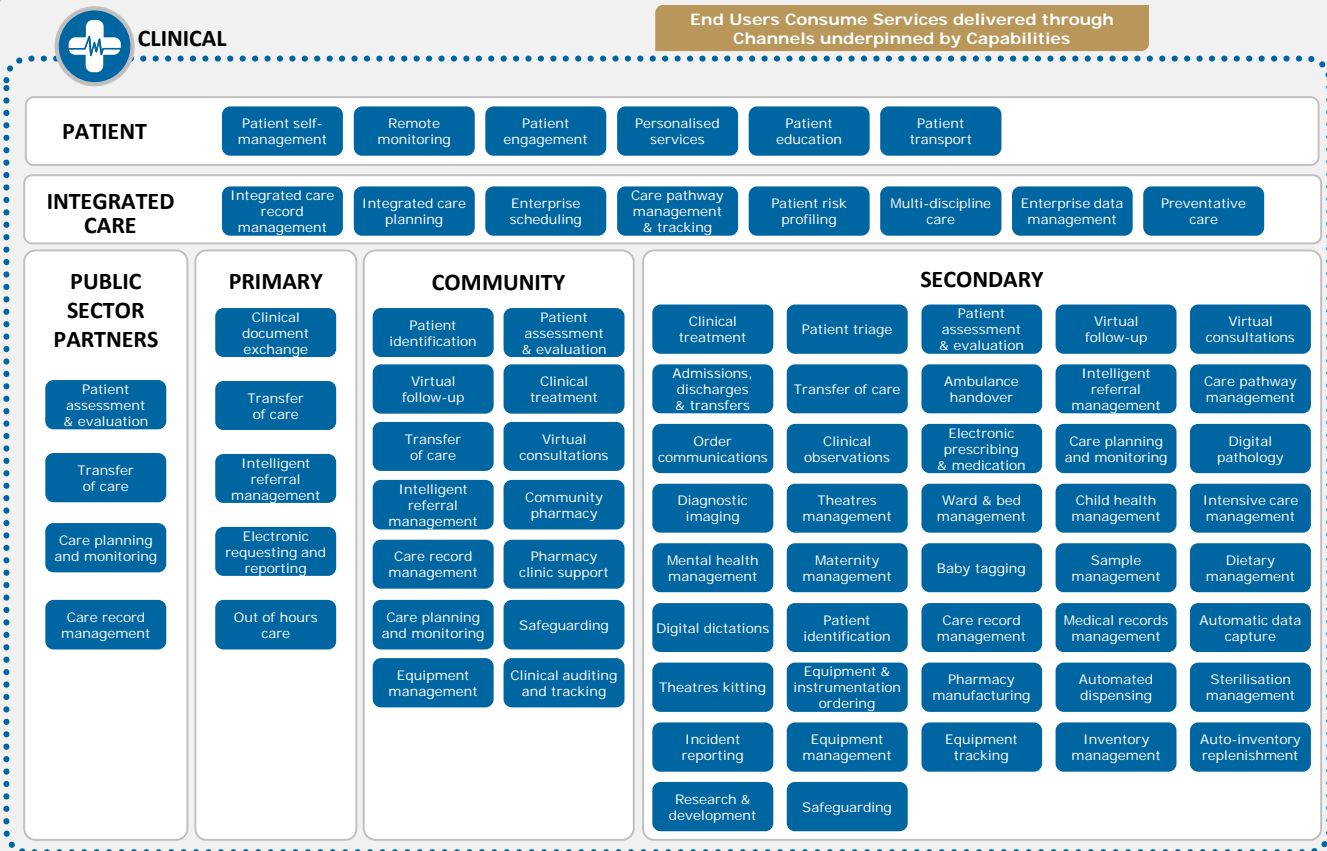


Source: Developed with input from CTUHB stakeholders 2017

Detailed business capability model for CTUHB



End Users Consume Services delivered through Channels underpinned by Capabilities



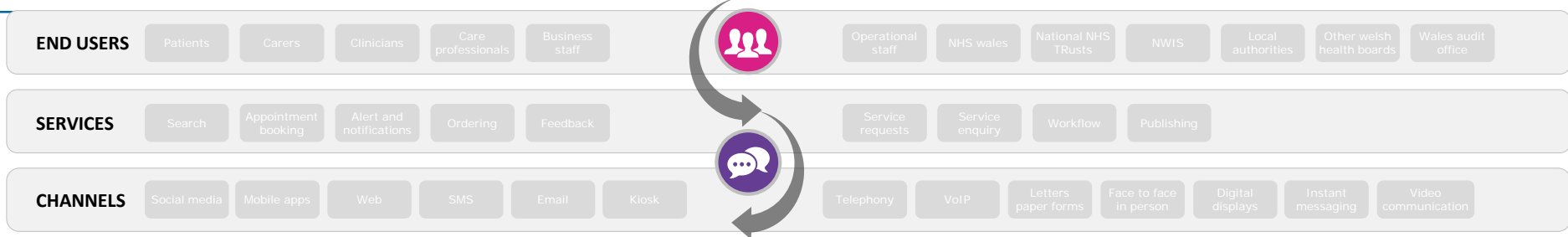
Capability maturity assessment

Key

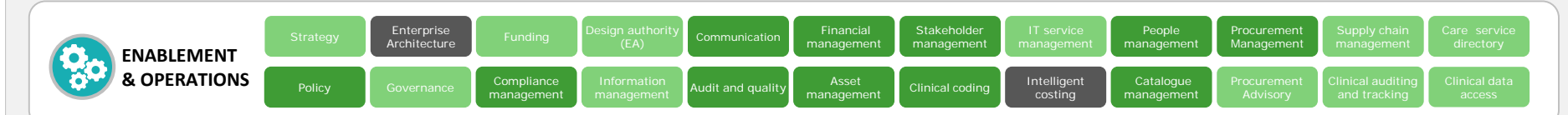
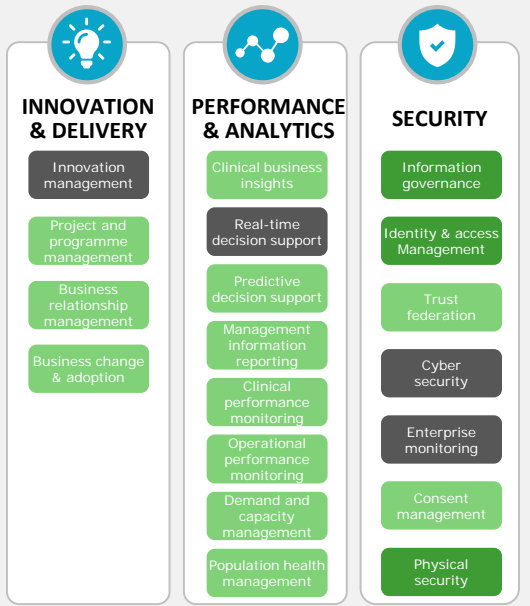
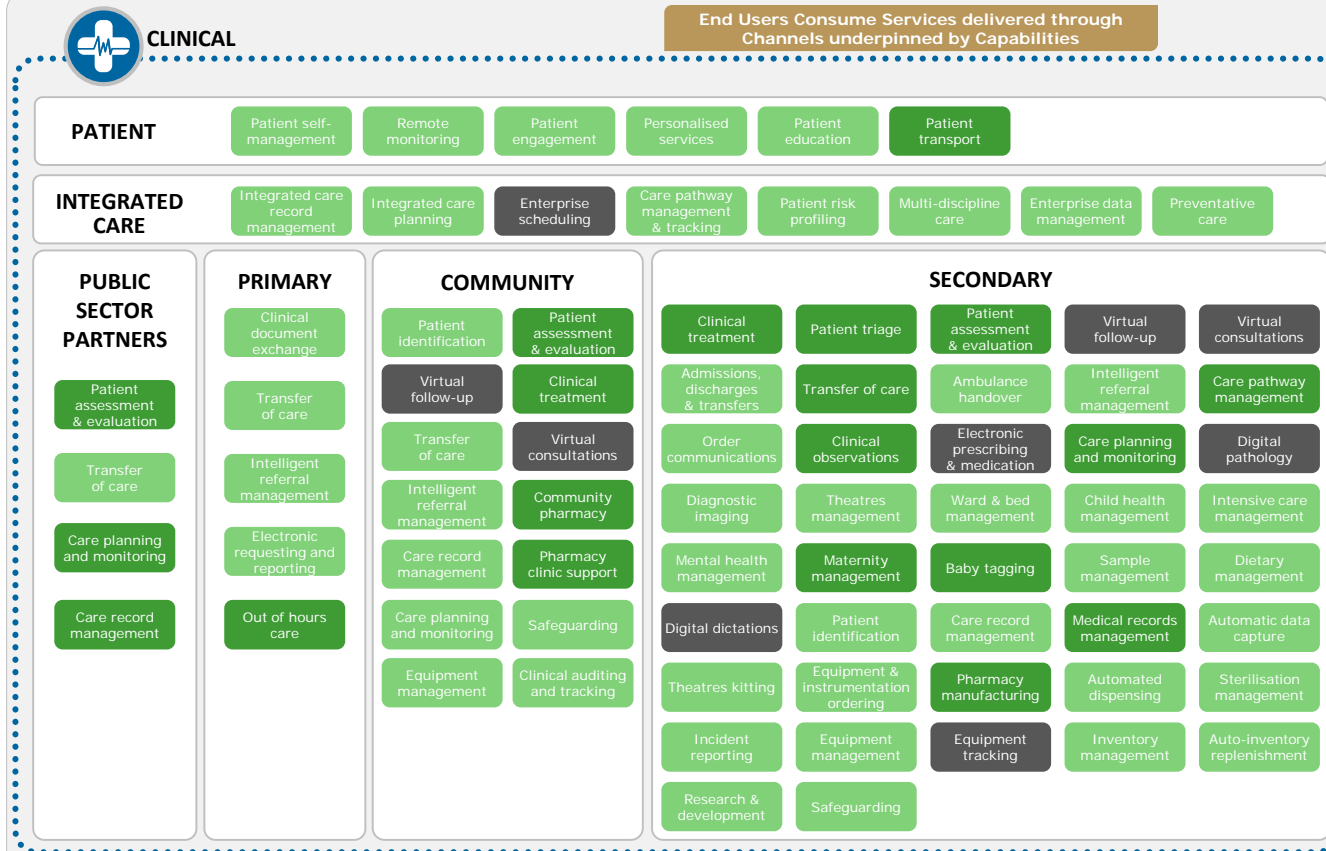
This capability is in place, and whilst there may be opportunity to enhance, it is delivering its outcomes at present

This capability is only partially in place, or there are significant opportunities to enhance it

This capability is not present in the UHB and its outcomes cannot be delivered



End Users Consume Services delivered through Channels underpinned by Capabilities











Assessing the statuses of the capabilities some clear opportunities for adding value arise

1. The first finding is that there are a large number of capabilities (75%) with significant opportunity to deliver additional value to the UHB
 - This is in part, due to the lack of full implementation, adoption and exploitation of technical capabilities. E.g. Secondary care having to print electronic forms sent by Primary care
 - The cause for this is highlighted by the need to mature capabilities in Business Relationship Management, Business Change and Adoption and Project and Programme Management
 - **The UHB should enhance these capabilities and once in place, review the current usage and exploitation to add value at minimal cost**
2. The second finding is that there are a number of clinical capabilities across integrated, primary, community and secondary care which can be significantly enhanced through digital technologies
 - These include Enterprise scheduling, equipment management, ward and bed management, electronic prescribing and medication, Intelligent referral management and diagnostic imaging
 - **The recommendation is to address these opportunities, enhancing delivery or care across all care settings**
3. The third finding is the lack of mature analytics capability which prevents the intelligent, data and insight driven management
 - This include real time decision support, intelligent costing and demand and capacity management
 - **The recommendation is to extend the analytics and data capabilities whilst addressing how and where they can be put to use across the UHB**
4. The fourth finding is the opportunity to enhance the way in which the UHB is supported, particularly in the ICT domain, by enabling capabilities
 - This includes deficiencies in enterprise architecture, cyber security, enterprise monitoring and procurement advisory
 - **The recommendation is to enhance these enablers to provide more effective ongoing management**

Business Capability Model

These capability based recommendations align to the themes and need to be addressed by their solutions

| | | | | | | | |
|---|--|----------------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------------------------|--------------------|
| 1 |  Digital health board | Remote monitoring | Electronic prescribing & medication | Diagnostic imaging | Ward & bed management | Equipment & instrumentation ordering | Equipment tracking |
| 2 |  Insights-driven healthcare | Clinical business insights | Real-time decision support | Predictive decision support | Demand and capacity management | Intelligent costing | |
| 3 |  Single patient view | Care record management | Integrated care record management | Patient identification | | | |
| 4 |  Intelligently integrated healthcare | Clinical document exchange | Enterprise scheduling | Intelligent referral management | Automatic data capture | | |
| 5 |  Digital workforce | Virtual follow-up | Virtual consultations | Digital dictations | Mobile & remote working | | |
| 6 |  Adoption and exploitation | Project and programme management | Business relationship management | Business change & adoption | | | |
| 7 |  Managing innovation | Innovation management | | | | | |
| 8 |  Digital enablers | Cyber security | Enterprise monitoring | Enterprise Architecture | Design authority (EA) | Procurement Advisory | |

How the strategic solutions will address and implement these recommendations is described in the roadmap section

4

Digital IT Operating Model

Section overview

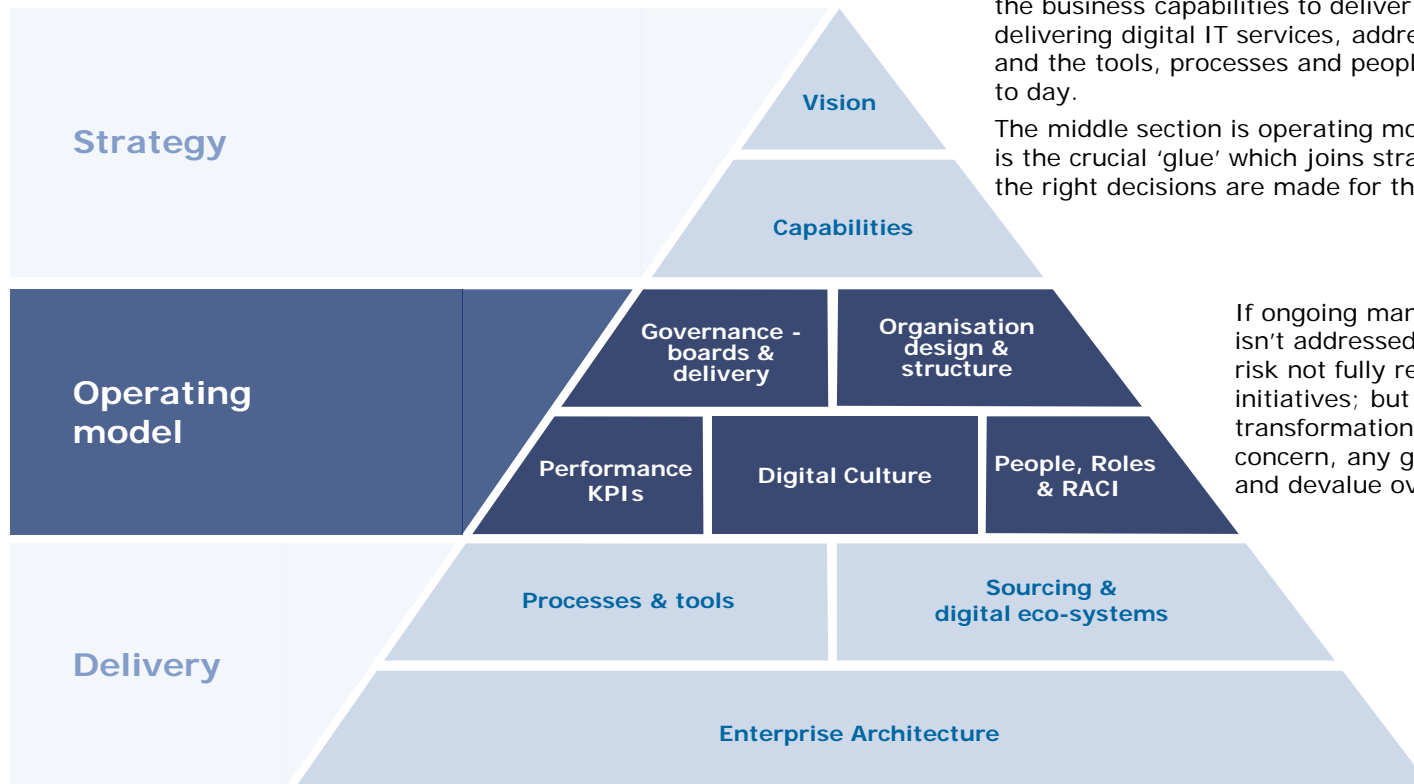
1. This section includes:

- ▶ Explanation of what a digital IT operating model is
- ▶ Detail on the areas that have been addressed in the strategy
- ▶ Current governance structure and findings
- ▶ Recommended governance structure
- ▶ Recommendation on ICT's organisational design
- ▶ Detail of recommended roles to be implemented
- ▶ Recommendations on KPIs and culture
- ▶ Summary of the Digital ITOM recommendations
- ▶ Alignment of the recommendations to the strategic solutions

2. How the recommendations are implemented is covered by the roadmap later in the document



It is imperative that the Digital IT operating model can support the ongoing management and governance



The Digital IT Operating Model pyramid is a model which describes the different components an organisation needs to address in order to be able to effectively manage digital IT.

The top section is about setting and managing the strategy and the business capabilities to deliver it. The bottom section is about delivering digital IT services, addressing the technical landscape and the tools, processes and people to manage their delivery day to day.

The middle section is operating model and governance layer. This is the crucial 'glue' which joins strategy to delivery, ensuring that the right decisions are made for the right reasons.

If ongoing management and governance isn't addressed properly then not only do we risk not fully realising the benefits from initiatives; but given that strategy and transformation is an ongoing and evolving concern, any gains made now will stagnate and devalue over time

Digital IT Operating Model

The strategy focuses interventions to ensure the key elements are in place to deliver the vision

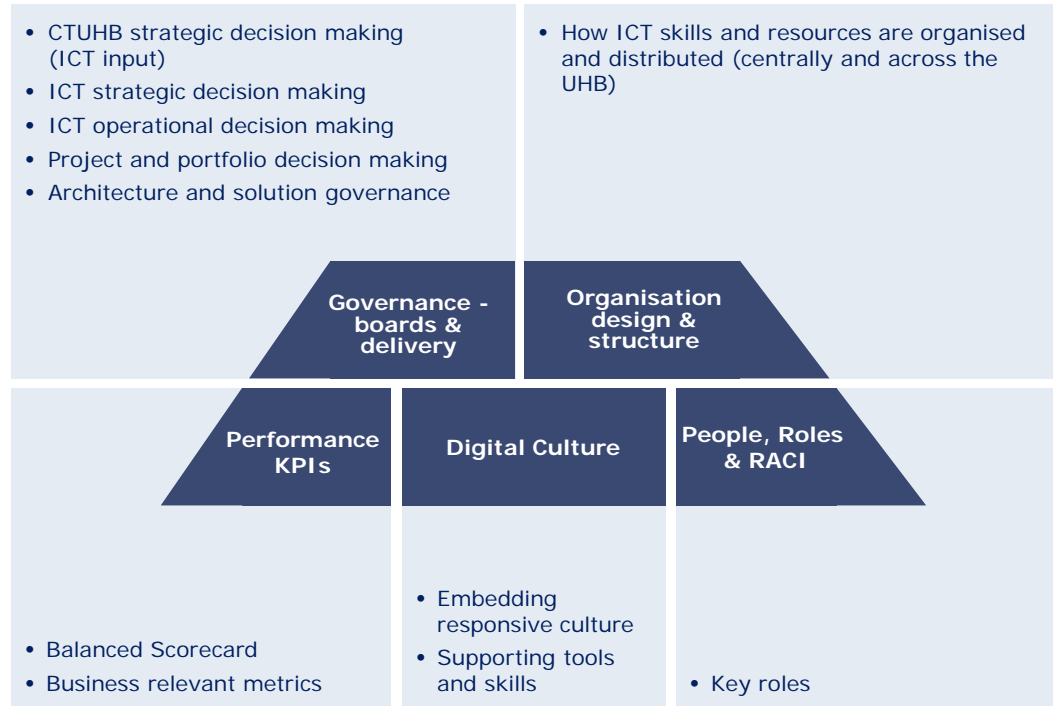
As with any element of strategy, focus is key. Trying to tackle every detail of the operating model simply results in the 'boil the ocean' effect, with efforts diluted over a number of low value activities such that the outcomes achieved are reduced. Trying to do too much simply results in achieving less

This strategy focuses on the key elements required to govern and steer the implementation and ongoing management of the strategy

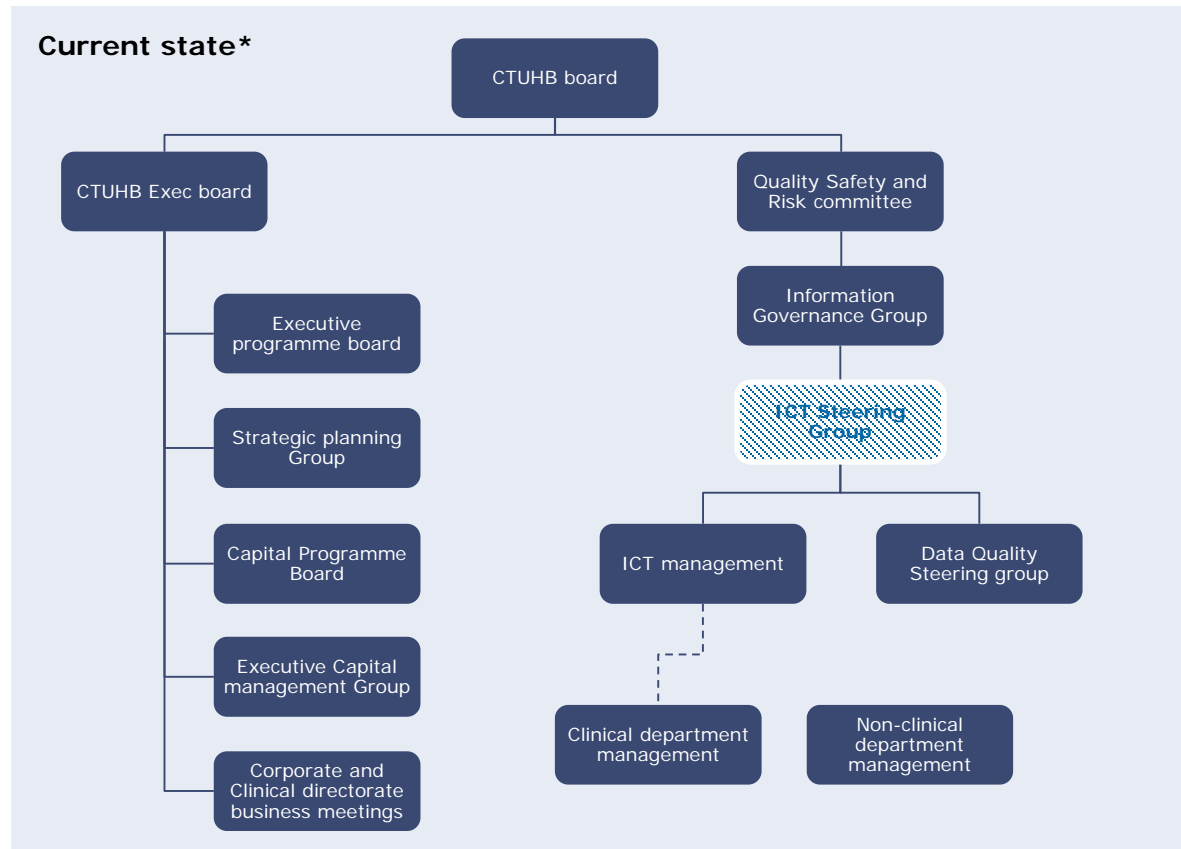
This means addressing the forums in which decisions are made, ensuring that the perspectives of ICT, clinical and non-clinical are all fed into and enhance their respective decision making

The strategy also addresses the key roles to support this and reviews the level of centralisation

The final elements are the culture that enables and supports 'digital' thinking and agility; and then crucially, how ICT is measured and performance driven

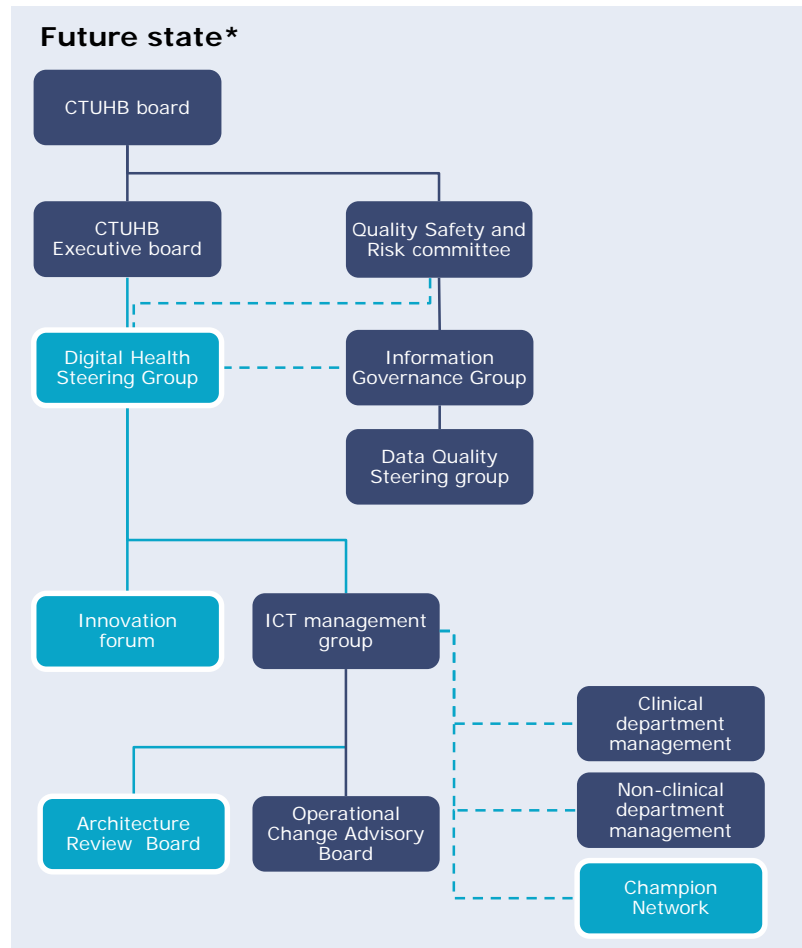


Governance: To deliver the vision, ICT needs a more direct route to the UHB's decision making forums



- ▶ ICT is represented on the Executive board by Steve Webster, Director of Finance and Procurement
- ▶ The Assistant Director for ICT (vacant) reports directly to Steve Webster giving good line of sight to the exec board
- ▶ The Steering group is currently dormant, meaning ICT accesses the strategic decision making groups via the Information Governance Group
- ▶ The primary issues are responsiveness and profile
 - The flow through the differing governance groups will undoubtedly add time into any project or proposal
 - The profile of ICT is inherently that of an internal supplier and not a strategic partner, making it difficult for the UHB to spot potential opportunities or efficiencies

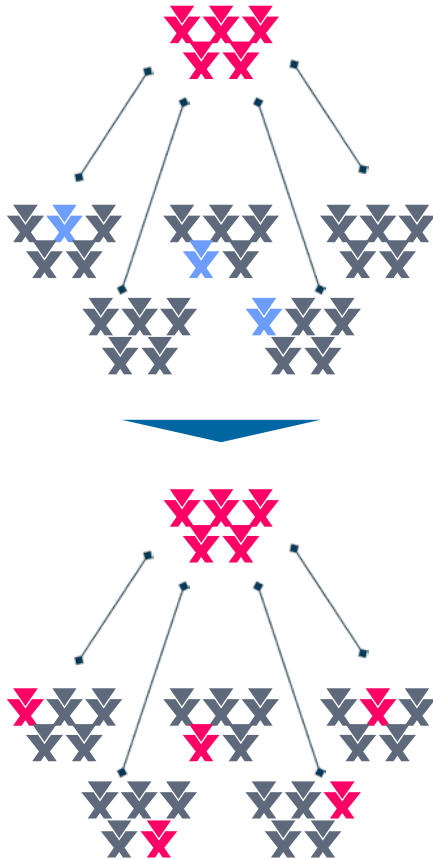
Governance: Recommendation is to establish a Digital Health Steering group reporting into the Executive Board



- ▶ **A Digital Health Steering group should be established**, meeting monthly, with membership to include a cross-sample of clinical and non-clinical senior representatives, Assistant Director for ICT, the executive lead(s), procurement and finance
 - Crucially, the steering group should be moved to report directly into the executive board, raising its profile and reflecting its significance to the UHB
 - The steering group will own the strategy and roadmap and drive its implementation and adherence
 - It will discuss and approve all strategic decisions regarding the delivery and make up of ICT and its services
 - It will be the point of convergence of ICT and Innovation
- ▶ ICT and Performance and Information management should have a close day to day working relationship, and similarly, both should have **ongoing dialogue with clinical and non-clinical management teams; with cross representation on each others' management groups**
- ▶ **Implementing an Innovation Forum** will provide a point of focus for fostering, capturing and managing ideas; with a direct line into the steering group to discuss implementation
- ▶ In support of ICT management we have highlighted two crucial review boards. The first is the CAB, which assesses all proposed operational service changes and agrees how and when they are implemented. The second is the **ARB which is the point of review and approval for architectural changes and designs**
- ▶ These changes will enable the UHB to more easily identify opportunities to enhance the way it operates through the use of ICT and digital, by having ICT intrinsically part of the decision making process; and ensure complete alignment to the needs of the business

*What is shown is the relevant portion of the UHB's governance structure only. Any omissions from the overall, or the current state from the previous page, simply indicate no change to the status quo

Organisation: The centralised model is apt, but CTUHB can enhance by harnessing the distributed champions



ICT is structured centrally and works across the UHB from the central teams; and there is no case to change this approach at this stage

What is clear, is the value the central team get from direct, personal relationships with 'interested individuals' across the organisation and other health boards, who are used as sounding boards and driving forces to help define and deliver ICT solutions

This can be harnessed by **creating a semi-formal network of champions**, constituted as a virtual focus group. This does not supersede or conflict with the formal business relationship roles, but rather enriches the relationship, giving a direct route to the users in addition to the formal mechanisms and relationships

This means capturing the list of members, confirming their participation and establishing the best routes of communicating (e.g. creating email d-list)

Having this network in place and accessible through forums such as email chains or discussion boards, ICT will be able to more effectively:

- ▶ Test ideas
- ▶ Receive user feedback
- ▶ Disseminate information
- ▶ Plan rollout
- ▶ Manage adoption
- ▶ Capture the 'state of the nation'

An organisational review should be undertaken to ensure that the use of existing resources is optimised, using the diagnostic review as an input; but this is lower priority relative to other initiatives

Digital IT Operating Model

Roles: Formal roles are required in key areas of architecture, business relationship management and change

| Role | Description | Purpose | Activities |
|--|--|--|--|
| Enterprise Architect | Manages the strategy and architecture on an ongoing basis as part of ICT management team | Ensures that the strategy and architecture undergo continual review and maintenance and that initiatives consider, and requirements are considered by, the Enterprise architecture | Review and maintain the Digital Strategy and Enterprise Architecture Review and advise on all solution and service design matters and chairs the ARB |
| Design Authority | The single point of approval for solution or service designs | Ensure proposed services, solutions or changes thereto; are aligned to strategic and technical guidelines and best practices; reduce duplication and avoid technical debt | Input into design concepts, providing patterns and blueprints. Review of designs Approval of final designs |
| Business system owner | Responsible business owner for each IT system or service | Ensure that the relevant clinical or non-clinical department(s) is represented in any decision making concerning a given system | Advise on service matters including attending CAB, advising on incident prioritisation, advising on maintenance windows/deployments. Input into system strategy and roadmap decisions |
| Technical system owner | Responsible technical owner for each IT system or service | Ensure that all technical activity and decisions related to a given system are managed and coordinated | Advise as the technical lead on all service matters including Change assessment (CAB), incident responses, problem resolutions and service roadmap decisions (ARB) |
| ICT business partner | ICT role to liaise with a given department | Ensure that ICT has a close relationship with the business, enabling ICT to assist in achieving the business' objectives | Represent the business in ICT management and planning Attend relevant business management and planning Maintain informal relationship with the business |
| Clinical / Operational business partner | Business department role to liaises with ICT | Ensure that the business has a close working relationship with ICT, assisting ICT in developing and implementing services | Report to Clinical ICT lead Act as the voice of the department to ICT Attend relevant focus and planning groups Aid in planning deployments and adoption |

The recommendation is to implement these roles to enable efficient and effective management of the transformation and the ongoing management of ICT services. The roles do not map one-to-one to WTEs and may be fulfilled by existing employees.

Performance & Culture: A balanced business scorecard will drive performance, supported by digital culture

When measuring and managing the performance of Digital IT, there are two key concepts which should be applied to ensure that the KPIs are driving genuine performance gains

1. **Balanced scorecard** – historically KPIs have focussed on service delivery i.e. how well are we doing at delivering the services we said we would; and financial performance i.e. are we within our budget and how much are we saving. This is a sound approach, but very internally focussed and risks the neglect of anything that doesn't fall into those banners. The recommendation is to develop a balanced scorecard for Cwm Taf ICT which covers:
 - a. Financial performance – actual and predicted spend/savings against budgets/targets
 - b. Service delivery performance – service quality and availability
 - c. User satisfaction – patient and employee satisfaction with their experience using Cwm Taf Digital IT services
 - d. Internal processes – Adherence to / achievement of internal processes and targets such as L&D, recruitment etc

2. **Business metrics** – A bad habit of the IT industry is to focus on technical aspects which bear little resemblance to the business or the user experience. The recommendation is to review all metrics across the scorecard, ensuring the metric is about the business relevant outcomes. E.g. service availability is not measured by the server uptime, but by the number of times a user tried to access the service and couldn't. The success of L&D is not measured by the number of courses attended, but by the availability of required skills when they are requested

Adopting a balanced, business relevant scorecard will help Cwm Taf understand the true performance of ICT and therefore manage and enhance where needed.

Digital Culture

Culture is the final element of the operating model and for good reasons this has not been a focus, partly because there are more pressing concerns and partly because it is not a major blocker at the this stage. That does not mean it isn't important however. As the Steering Group takes shape and the strategy is implemented, Cwm Taf should consider the cultural approach to being digital which begins with executive messaging and flows down through decision making and the actions taken in delivery.

Being digital is more than just solutions and means embracing concepts such as agility, innovation, Minimum Viable Product and responsiveness. **The ICT and Executive leadership teams should consider and review how much they adopt this approach.**

Digital IT Operating Model

The Digital ITOM recommendations map to the strategic solutions and will be delivered by them



How the strategic solutions will address and implement these recommendations is described in the roadmap section

5

Enterprise Architecture

Section overview

1. This section includes:

- ▶ Explanation of what Enterprise Architecture is
- ▶ Detail of the current state
- ▶ Current enterprise architecture findings
- ▶ Recommended EA high level design
- ▶ Future state architecture design
- ▶ Recommendations for principles, patterns and standards
- ▶ Summary of the EA recommendations
- ▶ Alignment of the recommendations to the strategic solutions

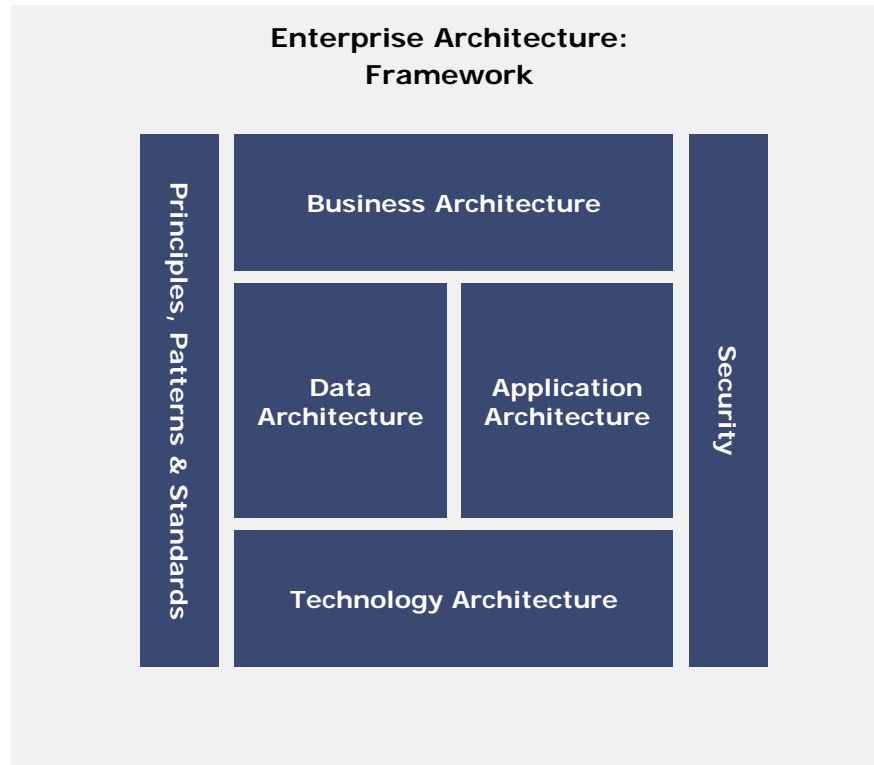
2. How the recommendations are implemented is covered by the roadmap later in the document



Enterprise Architecture

Enterprise Architecture is the make up and structure of Cwm Taf's business and technical capabilities

Before discussing Cwm Taf's enterprise architecture it is important to be clear on the definitions being used

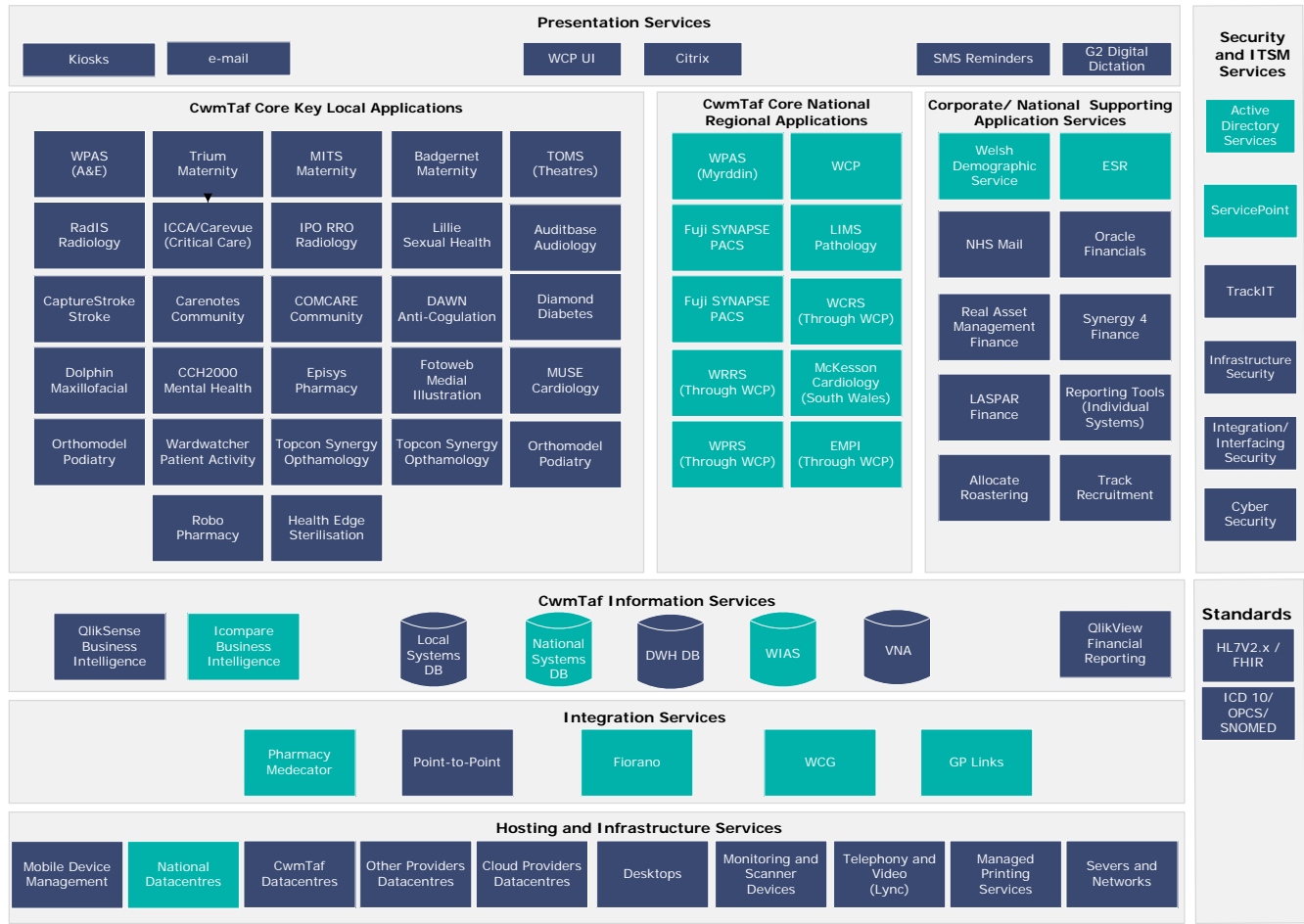


Definitions

- ▶ **Enterprise Architecture:** the blueprint that defines the structure and operations of an organization and how it will achieve its current and future objectives
- ▶ **Principles, Patterns & Standards:** the framework for defining the architecture
- ▶ **Business Architecture:** the capabilities, processes and services that Cwm Taf needs to realise its organisational strategic vision. This is covered by the Capability model and Digital ITOM and will not be discussed further here
- ▶ **Information Architecture:** the means to ensuring the organisation has the correct data Cwm Taf needs it and tools to analyse it
- ▶ **Application Architecture:** the means to ensure the applications support the business capabilities and scalable and exchange data securely
- ▶ **Technology Architecture:** the infrastructure required to support the application and data architectures, leveraging the right technology stacks
- ▶ **Security:** the means to ensuring that data is secured at both applications and infrastructure level

Enterprise Architecture

The current Cwm Taf architecture has been captured to understand the baseline



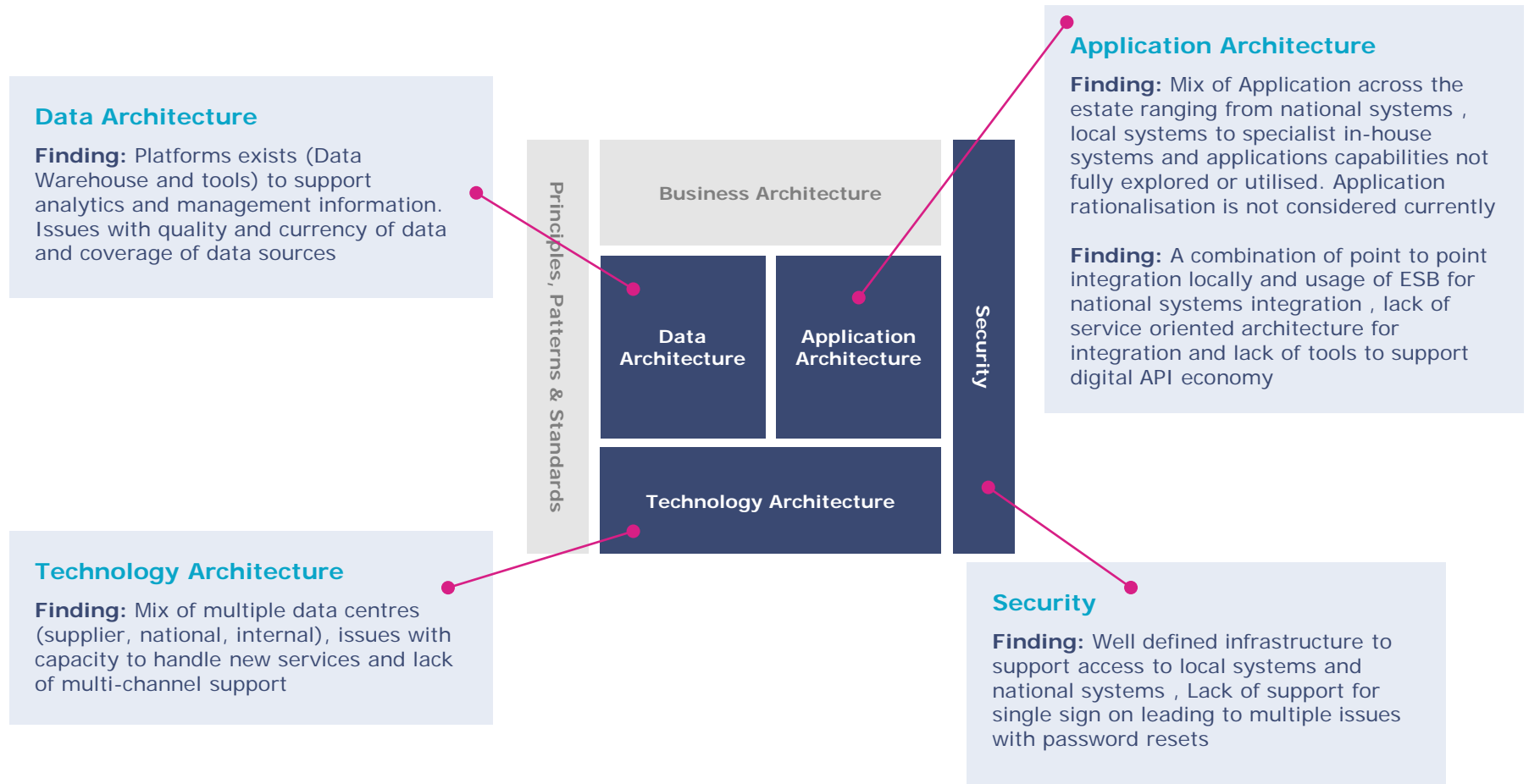
- Presentation Services** user interfaces for accessing applications and systems
- CwmTaf Core key Local Applications** Key local apps for CwmTaf
- CwmTaf Core national /regional applications** National applications used by CwmTaf
- Security and ITSM Services:** applications and services ensuring security and service management
- CwmTaf Information services** Data sources and tools used for analytics
- Integration services** Enabling secure exchange of information between applications
- Hosting and Infrastructure** Underlying platforms and services (infrastructure) required to support CwmTaf applications

Key:
Green = national
Blue = Cwm Taf

Source: Developed with input from CTUHB stakeholders 2017

Enterprise Architecture

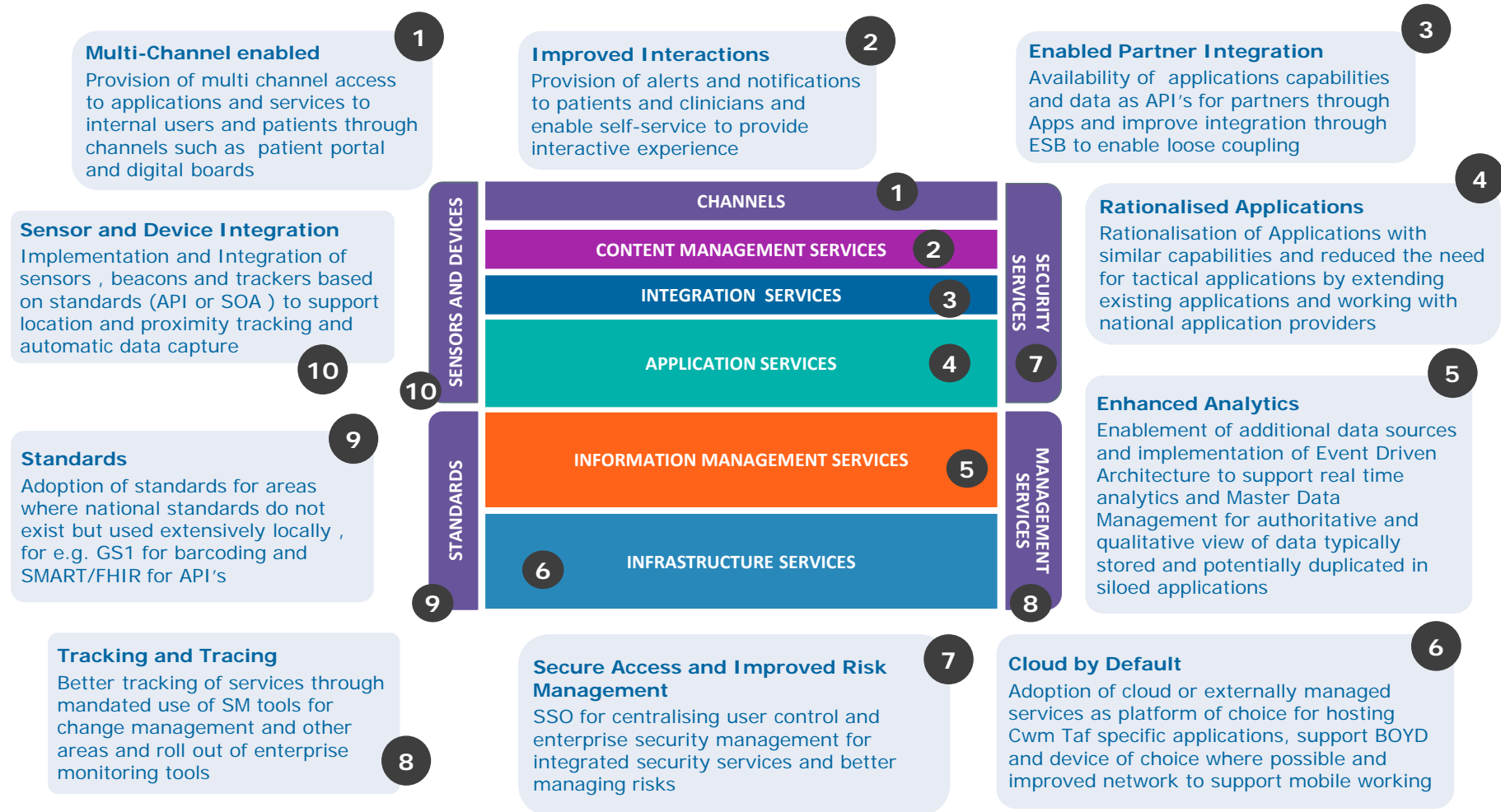
Analysing the current architecture shows stable systems but some technical capabilities not fully understood



Source: Analysis of information provided by CTUHB stakeholders 2017

Enterprise Architecture

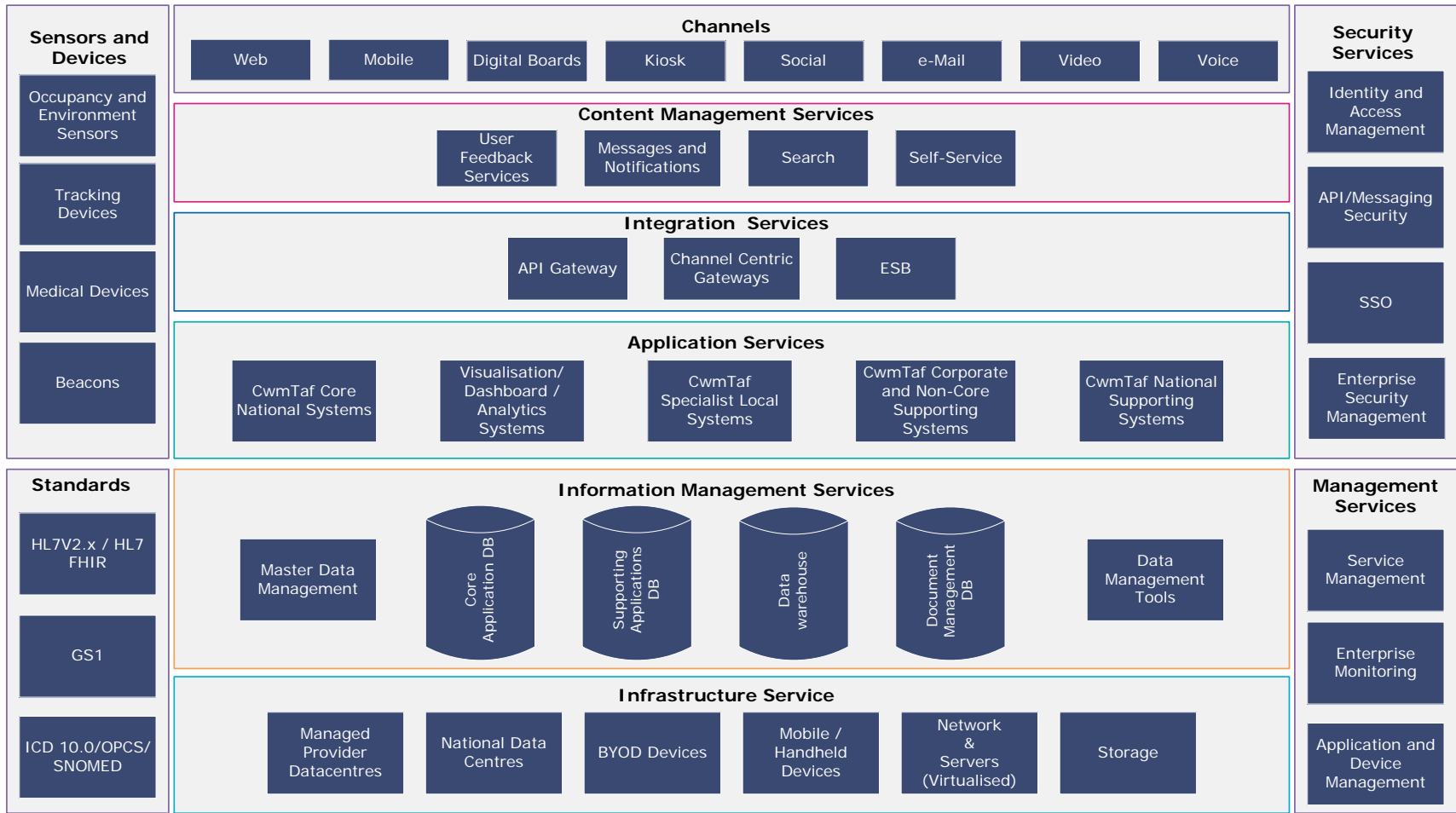
A future state architecture is proposed with enhancements to make it "SMART" and deliver the digital IT needs



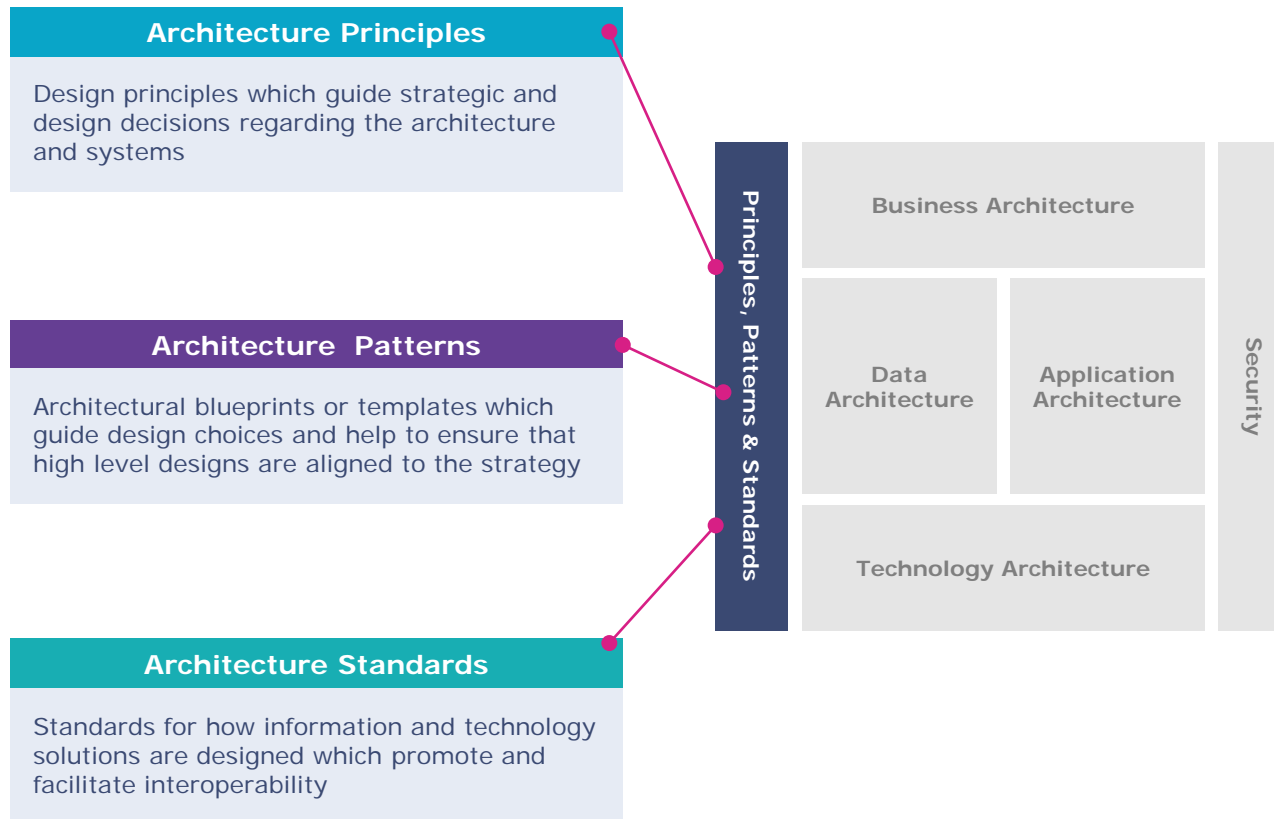
Source: Atos Consulting

Enterprise Architecture

Applying this future architecture will address the findings and support the vision



Recommendations for Principles, Patterns and Standards have been made to govern the future architecture



These should be reviewed and refined as part of adoption

Recommended architecture principles to guide design decisions

1 Digital by Default*

Services will be designed as digital by default, enabling the benefits of digital channels to be realised

2 Preference for National Applications

National applications are preferred in line with "Once for Wales" strategy

3 Interoperability

Applications should adopt common standards for integration with internal and external services and ensure all interfaces follow security protocols for access control and governance

4 Data Ownership

Cwm Taf retains the managerial and financial control of the data it generates

5 Common Vocabulary and Data Definitions

Data definitions and ICT terminology is common throughout the health board and the definitions are simple, understandable and available to all users

6 Device Agnostic

Services are compatible with all device types and provide uniform experience across subtypes

7 Technical Diversity

Technological diversity is controlled to minimise the cost of maintaining expertise in, and connectivity between, multiple environments

*Except where this would be to the detriment of the patient experience

Recommended architecture patterns for digital solutions

| Multi-Speed Architecture | Event-Driven Architecture (EDA) | Application Programming Interfaces (API) | Common Information Model | Master Data Management (MDM) |
|--|--|--|---|---|
| <p>A multi-speed architecture for developing digital capabilities at high speed while decoupling existing systems for which release cycles of new functionality stay at a slower pace.</p> | <p>EDA can scale to process huge amounts of real time events and, at the same time, correlate and identify patterns across them; an architecture that combines the events and data for customer and business process analytics</p> | <p>Application Programming Interfaces (APIs) provide access to Web services and business processes, along with information about those processes. They typically take the form of RESTful API's. Convergence of SOA and API need to happen where SOA already exists.</p> | <p>Common Information Model would allow a shared understanding of its information's terminology, meaning, and structure. The common information model maps existing terminology and definitions to a set of definitions supporting information exchange and display of information.</p> | <p>The output generated by analytics can be diminished by poor data quality leading to inaccurate analysis and poor decision making. MDM is a "golden record" that helps authoritative view of the enterprise as reflected in its core data elements.</p> |

Recommended interoperability standards to facilitate information exchange

| HL7 V2.x | HL7 FHIR | NHS Number | GS1 | Clinical Coding |
|---|---|---|--|--|
| <p>HL7V2.x (V2.6) is the preferred messaging standard and allows the exchange of patient and clinical data between systems with CwmTaf and where possible with wider health economy</p> | <p>HL7 FHIR uses REST and utilises the concept of information 'resources' from which a message is constructed. FHIR is the new standard for use in healthcare for non-document centric communications. FHIR should be considered for new interoperability initiatives</p> | <p>NHS Number is the primary identifier for all correspondence and to track all patient activity within organisations</p> | <p>Standard used in barcodes and RFID's to enable identification and data Capture where possible</p> | <p>ICD 10, OPCS and Read codes are the preferred codes for clinical coding and with a roadmap to adapting SNOMED</p> |

The architecture recommendations should be adopted throughout ongoing ICT management











In addition, specific interventions are recommended to deliver the step change required

1. **ESB and API architecture** – Implementing an Enterprise Service Bus and using APIs to significantly ease, and better control the interoperability between Cwm Taf, national and other health boards' systems
2. **Application rationalisation and roadmap** – Defining and implementing roadmap for the full application portfolio which enhances and consolidates it, improving the user experience and maintainability
3. **Enhance analytics and data architecture** – Development of an enhanced data architecture which includes all required information, and the real time and off line analytics tools to develop insights and support decisions
4. **Consolidation of datacentres and adoption of cloud** – Consolidation of the on site server rooms and data centres, using as-a-Service solutions to enhance service performance, assurance and maintainability, whilst also creating real estate and resource capacity
5. **Single sign on** – Implementing common and single sign on to simplify the user experience and provide greater access management control
6. **Enhanced cyber security** – Thorough review of cyber security requirements and controls, with implementation of hardening and security management enhancement initiatives
7. **Enterprise monitoring** – Implementation of enterprise monitoring capability to enable better management of the services and service performance; and their usage

Enterprise Architecture

The enterprise architecture recommendations align to the strategic solutions

| | | |
|---|---|--|
| 1 |  Digital health board | |
| 2 |  Insights-driven healthcare | Enhanced analytics and data architecture |
| 3 |  Single patient view | |
| 4 |  Intelligently integrated healthcare | ESB |
| 5 |  Digital workforce | Single Sign on |
| 6 |  Adoption and exploitation | |
| 7 |  Managing innovation | |
| 8 |  Digital enablers | Application rationalisation Enhanced Cyber security Data centre consolidation and cloud Enterprise Monitoring |

How the strategic solutions will address and implement these recommendations is described in the roadmap section

6

**Transformation
roadmap**

Section overview

1. This section includes:

- ▶ Explanation of how the three sets of recommendations are developed into practical solutions
- ▶ Summary of the solutions
- ▶ Mapping of the solutions to the national and local objectives
- ▶ Introduction to the roadmap
- ▶ Detail of the transformation roadmap
- ▶ Reference to project catalogue and consolidated roadmap

2. How the roadmap is implemented and the associated financial model are detailed in the accompanying Strategic Outline Programme



The recommendations from the three perspectives were analysed alongside the existing programme plan

ICT Corporate Business Plan

Business Capability Model

Digital IT Operating Model

Enterprise Architecture

- ▶ The analysis of the Business Capability Model, the Digital IT Operating Model and the Enterprise Architecture produced three sets of requirements, designed to deliver the strategic solutions and realise the Digital Informatics vision
- ▶ These were rationalised and prioritised to drive the roadmap
- ▶ In addition, there is the programme of national led projects, both in flight and planned, which Cwm Taf will participate and benefit from; and a programme of planned local and collaborative projects as described in the ICT Corporate Business Plan
- ▶ These existing projects were analysed to understand where they delivered the identified requirements
- ▶ For any remaining requirements, projects were defined to deliver the desired outcomes
- ▶ This resulted in a combined portfolio of projects including technology and non-technology projects and a combination of national projects, Cwm Taf projects and projects in collaboration with other health boards

- Digital health board
- Insights-driven healthcare
- Single patient view
- Intelligently integrated healthcare
- Digital workforce
- Adoption and exploitation
- Managing innovation
- Digital enablers

Transformation Roadmap

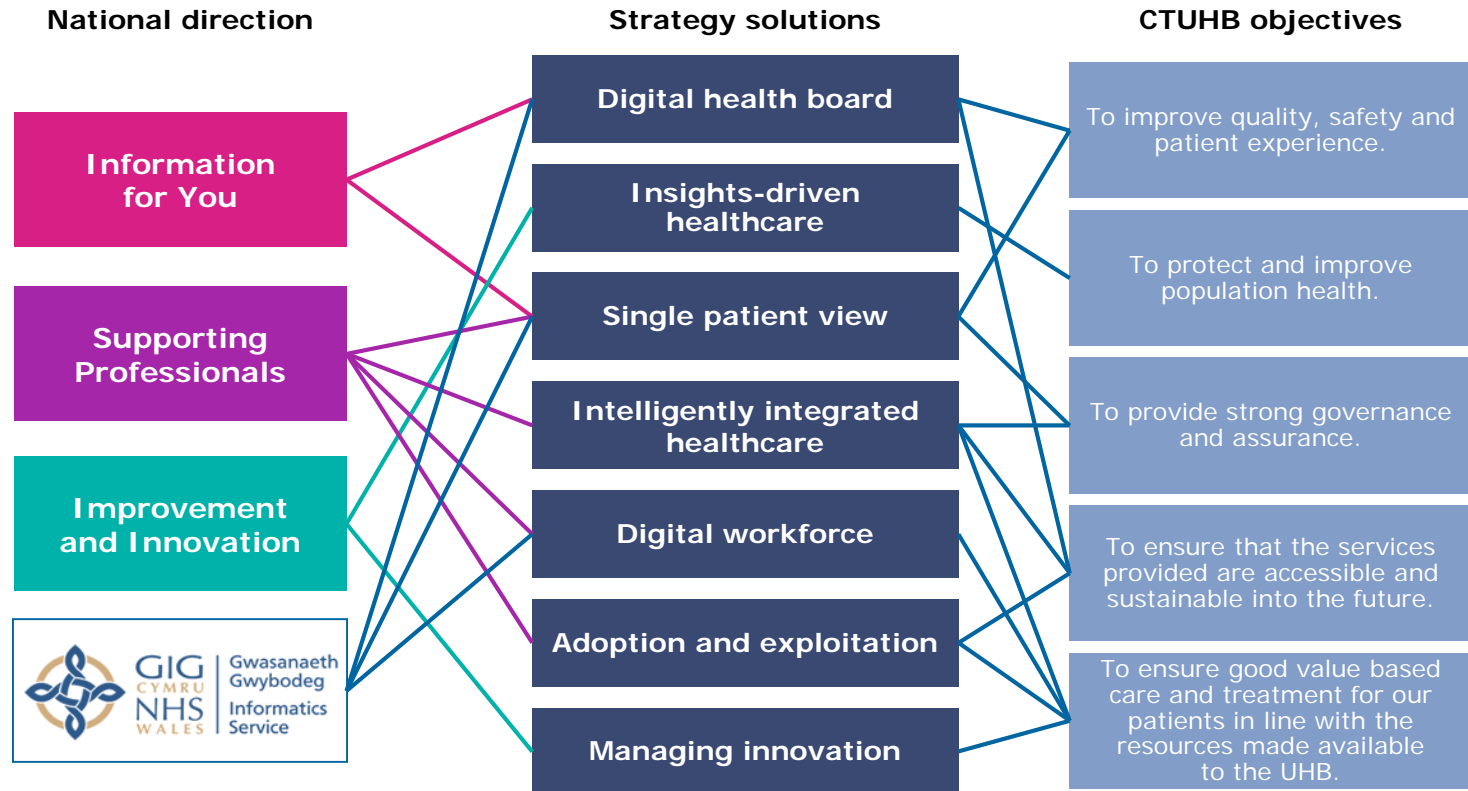
This transformation portfolio is summarised by the strategic solutions, clearly showing where projects support the vision

| | | |
|---|--|---|
| 1 |  Digital health board | Welsh Patient Referral Service , Welsh Community Care Information Solution, Welsh Hospital Electronic Prescribing and Medicines Administration, Welsh Clinical Portal extensions, Interim acute medicine, bed management and handover system, Paediatric Mobile application (Chai), Digital process review, Enterprise Scheduling |
| 2 |  Insights-driven healthcare | National Data Warehouse, Business Intelligence & Predictive Information Services, Clinical insights platform extension, Master data management implementation, Exploiting clinical insights platform |
| 3 |  Single patient view | Welsh Care Record Service, WIAS, Vision 360, Patient Portal |
| 4 |  Intelligently integrated healthcare | Implement Enterprise Service Bus (ESB), Detailed architecture review and tech roadmap, Strategy and Proof of Value for technology to track equipment, assets, patients and resources |
| 5 |  Digital workforce | Mobile Device Management Strategy, Rollout of Skype for Business, Employee Self-Service - Kiosks and apps, Single sign on, IT Self-Service web portal |
| 6 |  Adoption and exploitation | Implementation of ITOM enhancements |
| 7 |  Managing innovation | Innovation management and delivery |
| 8 |  Digital enablers | Datacentre consolidation, Enterprise monitoring, Cyber security, Infrastructure refresh, Switchboard rationalisation |

The projects listed are a sample and the full portfolio can be found in the accompanying Project Catalogue

Transformation Roadmap

The solutions align to and support the national strategy and directly contribute to CTUHB's healthcare objectives



The project portfolio is prioritised, sequenced and developed into the roadmap



The development of the roadmap and the timing and sequencing of the projects considered a number of factors:

- ▶ The fact that the national projects are fixed and cannot be moved by Cwm Taf
 - Similarly, the collaborative projects are harder to move
- ▶ The relative business and financial benefits of each project and the desire to prioritise high value and quick wins
- ▶ The change capacity within ICT and the UHB

There are two projects which were developed to deliver interim solutions for Cwm Taf on the basis that the national project timelines would leave the UHB with unrealised potential for a significant period. These are:

- ▶ Project 1.15 Interim acute medicine, bed management and handover system; which will deliver an interim solution whilst awaiting project 1.31 Patient flow
- ▶ Project 1.32 Interim e-Prescribing, which will deliver an interim solution whilst awaiting project 1.07 Welsh Hospital Electronic Prescribing and Medicines Administration

A key feature of the roadmap is the intention that it is continually managed and revised and not taken to be a final version

- ▶ The roadmap should be reviewed and revised to respond to emerging needs and requirements, changes in planned projects and in particular, as a result of detailed design definition and business cases
- ▶ Projects addressing the departmental clinical systems such as MITS, Lillie and Twinkle have been placed as pre-planned* resulting in a congested 2017. Cwm Taf should review the relative priorities and urgencies with a view to delaying some projects, easing the amount of parallel change

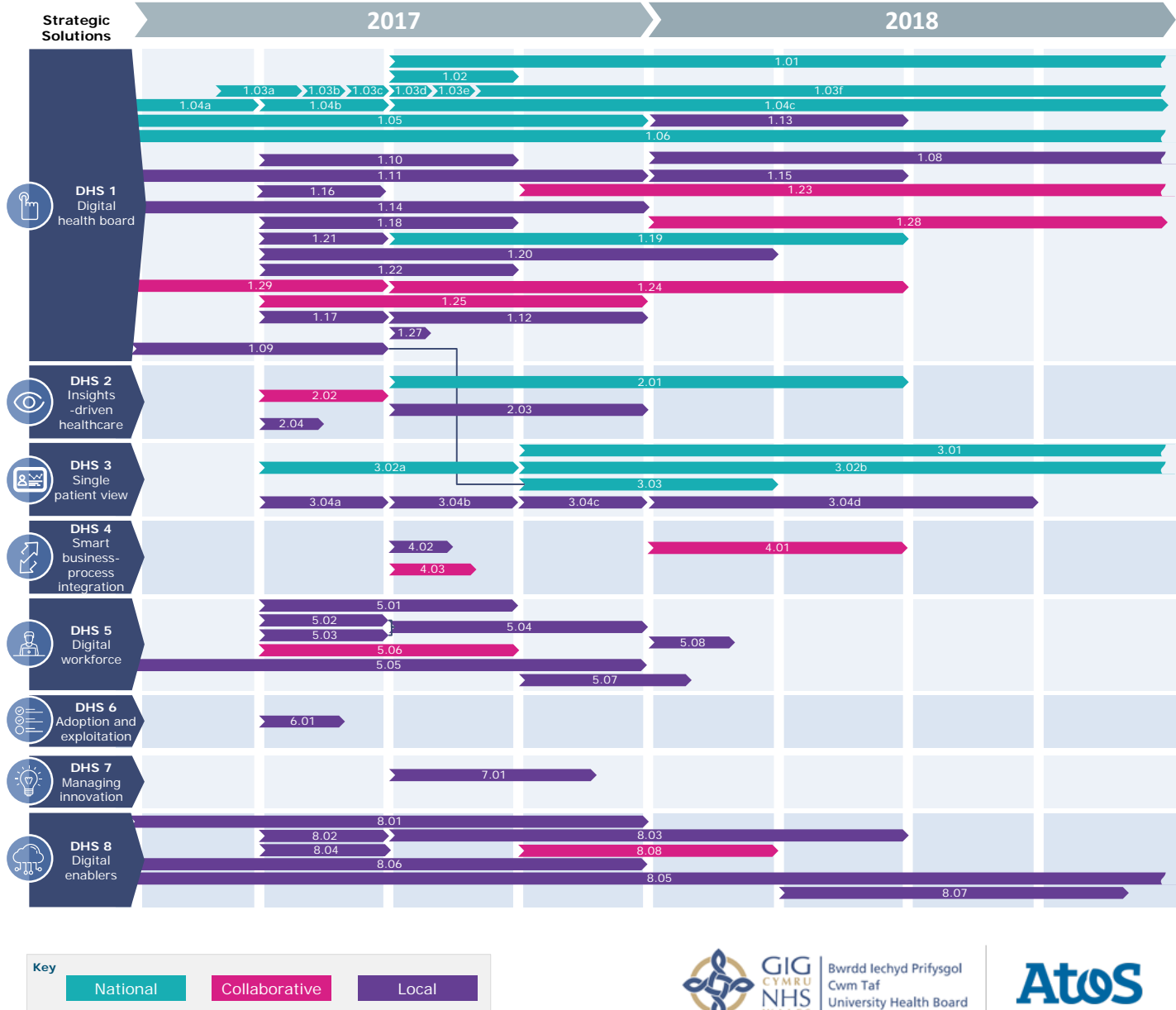
For full details of the projects and the roadmap, please see the accompanying Roadmap and Project Catalogue

**I.e. No attempt was made within this strategy to assess and rank the relative interdepartmental priorities for pre-planned projects*

Digital Health Strategy Roadmap

Projects

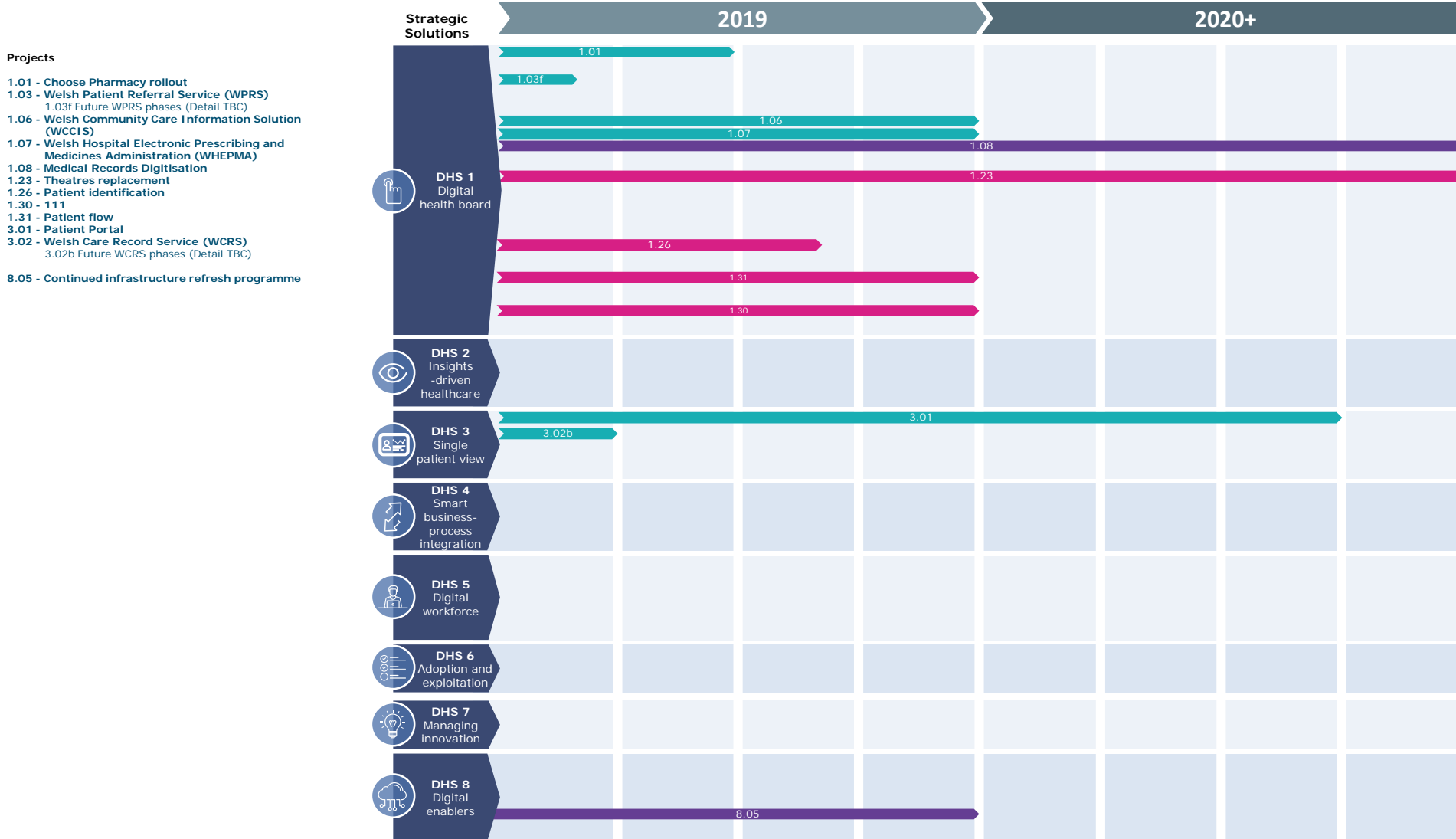
- 1.01 - Choose Pharmacy rollout
- 1.02 - CYPRIIS
- 1.03 - Welsh Patient Referral Service (WPRS)
 - 1.03a WPRS Cardiology
 - 1.03b WPRS Rapid diagnostics
 - 1.03c WPRS Diabetes
 - 1.03d WPRS Rheumatology
 - 1.03e WPRS @Home service
 - 1.03f Future WPRS phases (Detail TBC)
- 1.04 - Welsh Results and Reports Service (WRRS)
 - 1.04a WRRS Cardiology and Endoscopy
 - 1.04b WRRS Space labs
 - 1.04c Future WRRS phases (Detail TBC)
- 1.05 - Welsh Laboratory Information Management System (LIMS)
- 1.06 - Welsh Community Care Information Solution (WCCIS)
- 1.08 - Medical Records Digitisation
- 1.09 - Radis merger
- 1.10 - Digital dictation
- 1.11 - Welsh Clinical Portal (WCP) extensions
- 1.12 - Ophthalmology system redesign
- 1.13 - Implementation of electronic prescribing in ITU
- 1.14 - MITS maternity system - Booking form
- 1.15 - Interim acute medicine, bed management and handover system
- 1.16 - Paediatric diabetes system
- 1.17 - Sexual Health system enhancements
- 1.18 - ICNET deployment
- 1.19 - Welsh Point of Care
- 1.20 - Community Digital INR Self Monitoring
- 1.21 - Remote storage and lab temperature monitoring
- 1.22 - Haemonetics Blood Track
- 1.23 - Theatres replacement
- 1.24 - Digital pathology
- 1.25 - Paediatric Mobile application (Chai)
- 1.27 - Digital process review
- 1.28 - Enterprise Scheduling
- 1.29 - Telehealth
- 2.01 - National Data Warehouse, Business Intelligence & Predictive Information Services
- 2.02 - Clinical insights platform extension (tooling and data architecture)
- 2.03 - Master data management implementation
- 2.04 - Exploiting clinical insights platform
- 3.01 - Patient Portal
- 3.02 - Welsh Care Record Service (WCRS)
 - 3.02a WCRS Chai
 - 3.02b Future WCRS phases (Detail TBC)
- 3.03 - WIAS
- 3.04 - Vision 360
 - 3.04a Vision 360 Merthyr Cardiology Clinic
 - 3.04b Vision 360 Home Service and Cynon Diabetes Clinic
 - 3.04c Vision 360 Rhondda COPD Clinic and Taff Ely MSK Clinic
 - 3.04d Future Vision 360 phases (Detail TBC)
- 4.01 - Implement Enterprise Service Bus (ESB)
- 4.02 - Detailed architecture review and tech roadmap
- 4.03 - Strategy and Proof of Value for technology to track equipment, assets, patients and resources
- 5.01 - Mobile Device Management Strategy
- 5.02 - Microsoft licensing upgrades
- 5.03 - Citrix refresh
- 5.04 - Rollout of Skype for Business
- 5.05 - Rollout of MFDs and Managed Print Services
- 5.06 - IT Self-Service web portal
- 5.07 - Employee Self-Service - Kiosks and apps
- 5.08 - Single sign on
- 6.01 - Implementation of ITOM enhancements
- 7.01 - Innovation management and delivery
- 8.01 - TrackIT database population
- 8.02 - Pathology system backup hardware
- 8.03 - Pathology Managed service contract renewal support
- 8.04 - Switchboard rationalisation
- 8.05 - Continued infrastructure refresh programme
- 8.06 - Cyber security
- 8.07 - Enterprise monitoring
- 8.08 - Data centre consolidation



Key

- National
- Collaborative
- Local

Digital Health Strategy Roadmap



Key

- National
- Collaborative
- Local

This strategy and roadmap will be delivered through the Strategic Outline Programme

The Digital Health Strategy was informed by a number of national and Cwm Taf documents covering both business and ICT. These include

- ▶ A Digital Health and Social Care Strategy for Wales
- ▶ NWIS Annual review 2016
- ▶ Cwm Taf University Health Board integrated medium term plan 2016-2019
- ▶ Cwm Taf Annual Report 15-16
- ▶ Cwm Taf ICT Corporate Business Development plan 2017-2018

This document refers and summarises the salient points but these should be referred to for further detail and context if needed.



Appendices

- 1. CTUHB Digital Health Strategy – Capability Definitions** – This is a complete listing of the Business Capabilities with their descriptions and maturity assessment. It should be used as a reference to explain the meaning and intent of unfamiliar capabilities
- 2. CTUHB Digital Health Strategy – Project Catalogue** – This is a complete listing of the defined projects and includes detailed descriptions of what each project is, its prioritisation and expected benefits. It should be used as a reference for more detail on proposed projects but primarily as a working portfolio summary to be edited over time as projects change or are added/de-scoped
- 3. CTUHB Digital Health Strategy – Roadmap** – This is a large, wall banner size, graphic of the roadmap as defined. It should be used as part of the communication activities and as a tool for viewing the portfolio in one go; but again, should be seen as a working document to be updated and revised

Next steps

The implementation of the roadmap is detailed in the Strategic Outline Programme

- 1. CTUHB Digital Health Strategic Outline Programme** – This is the outline business case for the transformation programme and details the strategic, financial, commercial, management and economic cases. It should be read to understand the detail of how the programme will be delivered and managed
- 2. CTUHB Digital Health Strategic Outline Programme – Financial Model** – This is the financial model used to describe the costs and quantified benefits for the programme. It should be used to understand the financial requirements and returns in more detail; ahead of the detailed business cases which may be produced

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