The healthcare industry seems to be in a perpetual state of flux. Whether it is industry change or Government reforms, the last couple of decades have seen significant upheaval amongst healthcare systems and the way that services are delivered.

Today, in a world that is moving from the delivery of healthcare to integrated ‘health and care’, geographical and organisational boundaries are being challenged. In addition, dependency on partnering will become more critical, between providers, with commissioners and other partners such as social care, the third sector and the public themselves. All the time, while this shift is occurring, the backdrop of cost pressures and subsequent need for efficiencies remains a constant challenge.

Meanwhile, industries and countries across the world are moving towards digitisation. UK Government has itself embarked upon a digital strategy and the term ‘digital’ has become embedded across the public sector, the NHS included. For health and care organisations, the headline imperatives mentioned above, along with expanding and increasingly fluid boundaries, dictate the need for a range of digital capabilities.

At Cisco we recognise this digital vision and in July 2015 as part of our Country Digitisation Acceleration initiative, we announced a series of strategic commitments in the UK that will total $1Billion. We believe that tighter alignment between business and technology, along with the ever improving capabilities offered by digital technologies present new opportunities for innovation and transformation of service delivery.

Our UK Healthcare team was established 17 years ago, and has a strong track record of issuing strategic guidance, most notably in December 2008 with the ‘Cisco Network Architecture Blueprint for NHS Trusts’. The blueprint advocated an architectural approach that directly links Information Technology (IT) investment with business and clinical priorities. It was first revised in 2011, and now we present the third edition which follows the very same principles, but responds to the needs of a modern ‘health and care’ system in a digital world.

We believe that following the guidance in this blueprint will inform your approach – from business planning through to technical delivery. Together we can deliver a digital strategy that truly underpins health and care transformation.

Terry Espiner - Client Director, UK Healthcare

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Acknowledgement

This document has been peer reviewed by many health and care stakeholders. Cisco would like to thank them for their time and effort.

Important Notice

“The guidance provided in this report is of a generic nature and cannot be specific to your organisation or operations. Please contact your Cisco partner or Account Manager to discuss your specific requirements. The guidance is provided in good faith based upon reference materials sourced from the NHS, Department of Health and other health and care organisations up to the date of publication. Errors and omissions are excepted. No warranty is given or implied.”

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1. Executive Summary

The healthcare sector is going through a period of deep transformation as organisations chart a journey towards the delivery of integrated health and care. Providers, commissioners, social care and others must work in ever tighter alignment to deliver new models of care and operational efficiencies through collaborative working. As such, there has never been a better time to consider how digital technology can play a pivotal role.

Led by Clinical Commissioning Groups (CCGs), the introduction of Local Digital Roadmaps in England has paved the way for health and care communities to emerge. The strategic plans that ensue must lead with business and clinical requirements that inform the technology domain and how it responds to those needs. Meanwhile, health and care organisations in general are evolving towards a digital journey to best scale and support their businesses against a backdrop of ever-increasing demand and financial constraints.

In this blueprint we aim to offer guidance for that journey. Relevant to health and care organisations in England, Scotland and Wales, we describe how successes can be repeated and how a common infrastructure and communications platform can underpin the operational and service delivery needs of an integrated system. This culminates in our ‘Whole System Approach’ vision for health and care communities.

We also offer advice and guidance on creating a digital strategy and how to get there. By adopting an architectural approach, the wide-ranging perspectives of all stakeholders are gathered, informing the capabilities needed from the technology domain. We call this approach ‘Plan down, build up’.

The blueprint is presented in two parts:

This document, “Landscape, Requirements and Digitisation”, is for business and clinical decision makers. At its heart it describes why stronger business alignment is the key to successful technology adoption.

The companion document, “Architectures for Digital Transformation”, is for technical decision makers providing much more detailed advice on the architectural approach and offers guidance on technology and design.

Cisco has a vast amount of experience of working with the NHS and local authorities, and we are committed to helping our customers extract the most benefit from their investments in digital technology. If you would like to further a discussion regarding digital strategy and its application in a health and care setting, please refer to Appendix A at the end of this document.
2. Scope and Purpose of the Blueprint

When considering the historical impact of technology in health and care, it would be easy to be cynical. Repeated attempts at applying technical solutions to the challenges of the NHS are perceived by many to have failed. Yet, when one looks back 10 years and considers the progress that has been made, it can be seen that there are many successful IT based projects – and, many technologies are now an integral part of the way health and care is delivered.

At Cisco, we are proud to have been associated with numerous examples of successful business and clinical led IT projects supporting new delivery models that help to improve the patient experience and drive operational excellence. A sample includes:

- Hospital at Night;
- Remote consultations and decision support;
- Reducing ‘Length of Stay’;
- Reducing unnecessary admissions from Nursing and Care Homes;
- High quality and agile Multi-Disciplinary Team working;
- Interpretation/ translation services;
- Improving discharge and referral processes;
- Medical education and training;
- Patient/ citizen experience and engagement
- Agile and mobile working.

We believe there is significant scope to expand these use cases, underpinning transformational change programmes across the health and care sector.

While the transformation potential for health and care is significant, advances in technology also introduce new threats. As organisational borders are stretched, security requirements become ever more important. Where policy is properly defined and a threat-centric approach adopted, organisations can be most confident that internal and external threats are mitigated.

Highlighting best uses of technology is admirable, but success deserves to be repeated and there are two key principles to consider:

- There is no need to invent everything; Analysis and measurement of benefits, along with best practice sharing principles should ensure that health and care organisations are able to copy each other’s successes.
- Secured, common infrastructure should be designed with a platform approach. Informed by business need, it should support the re-exploitation and re-use of capabilities for multiple use cases.

The latter point demands a new way of thinking about – and investing in – technology. It may dictate greater initial investment with a lifecycle management approach, but delivering better co-ordinated care and greater returns on investment over time. It therefore requires a programmatic approach to strategic technology investment, rather than the traditional project-oriented style.

“This of course demands a new way of thinking about – and investing in – technology.”

“It requires a programmatic approach to strategic technology investment, rather than the traditional project-oriented style.”
Scope and Purpose of the Blueprint

The emergence of the Government Digital Service (GDS)\(^2\) and introduction of the Government Digital Strategy in 2012 introduced a need for public sector organisations to consider how to best plan for, and adopt digital services. Core to this ambition is the development of a digital strategy, and this affords the opportunity to draw a line in the sand and make technology truly intrinsic to the way that health and care is delivered.

In this blueprint, we discuss how health and care business drivers will influence:

- The creation of digital strategies for health and care,
- Advise on how to get there using an architectural approach.

The blueprint consists of two documents as follows:

**Part 1: Landscape, Requirements and Digitisation (this document)**
- Discusses the transition from healthcare to health and care;
- Looks at the broader trends in health and care;
- Describes how stronger business alignment is the key to successful technology adoption;
- Advises on how to build a digital strategy;
- Introduces enabling digital technologies.

**Part 2: Architectures for Digital Transformation (the companion document)**
- Details the architectural approach and provides a conceptual reference model that establishes the link between business and clinical priorities with the technology environment;
- Introduces logical architectures or ‘solution sets’ and shows how they help to address the business and clinical priorities;
- Provides reference technical architectures that may be used by IT professionals as a template for design in their own organisations – and with their health and care partners.

With the transition to health and care, and with improved patient outcomes and operational efficiency as the key drivers, the time is right to develop a digital strategy delivering truly ‘Connected Health and Care’.

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The Health and Care Landscape

3. The Health and Care Landscape

3.1 England

The last five years have seen significant change across the NHS in England. The passing into law of the Health and Social Care Act in 2012 introduced structural change that is still being teased out today, one good example being the release of the Lead Provider Framework\(^3\) which again promises change in the Commissioning landscape.

However, what has become very clear in that intervening time is the ongoing transition from a healthcare service to one of integrated health and care. While there has always been collaboration between NHS and Social Care organisations, recent developments such as the Government’s devolution proposals promise much tighter community integration.

Greater Manchester is of course the major announcement of recent months and will be watched very closely as the pioneer of devolved budgets and power for the delivery of care services. Others are following, and in September 2015 a further 38 regions had made a bid for devolution of powers.

Perhaps the biggest indicator of change in England was the release of the ‘NHS Five Year Forward View’ (5YFV)\(^4\) in October 2014. With a stated intent of breaking down barriers to the way care is provided, it cited the need for new partnerships with local communities, local authorities, the third sector and employers. It also introduced the concept of new care organisations such as:

- ‘Multi-Speciality Community Providers’ (MSCPs) to deliver ‘out-of-hospital integrated care’;
- ‘Primary and Acute Care Systems’ (PACS), combining general practice and acute hospital services and analogous to Accountable Care Organisations seen in other countries.

Also key to 5YFV’s vision is being paper free at the point of care by 2020 and a move towards a ‘7 day NHS’. These will have implications from a perspective of digitisation of existing paper records as well as the digital technology that allows that information to be consumed. It will also have implications for support organisations, including IT services.

Other 5YFV initiatives include closer links with Nursing and Residential Homes, as well as a renewed focus on prevention and public health – something which was first mooted in the early 2000s in Derek Wanless’s review, which indicated that a prevention approach was critical to the sustainability of health and care services.

Underscoring all of these initiatives in 5YFV is the need to deliver services sustainably on a foreseeably limited budget. NHS England set out plans to save and re-invest, but that more Government funding would also be needed, which was subsequently acknowledged.

‘Personalised Health and Care 2020’\(^5\) responds to the 5YFV document and places data and technology at the centre of plans to improve and transform health and care services, as well as reducing costs. It is presented as a:

“...framework for action that will support frontline staff, patients and citizens to take better advantage of the digital opportunity.”

In addition, the National Information Board (NIB)\(^6\) has established eight strategic priorities that are intended to help health and care organisations turn digital vision into reality.

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\(^3\) NHS Lead Provider Framework – [https://www.england.nhs.uk/lpf/](https://www.england.nhs.uk/lpf/)


All of this has led to the requirement for every local area to submit a Local Digital Roadmap and Clinical Commissioning Groups have been tasked with establishing a footprint, followed by full submission in April 2016. Key ambitions include record sharing, clinical digital maturity, technology enabled care and the increasing use of remote consultations. The digitisation of information and the use of digital technology will be equally important.

And finally, the strategic direction for local authorities must also be considered. The Care Act 2014 identifies a number of obligations, including:

- to provide access to community health and wellbeing information;
- to replace local standards for assessment with national standards;
- to provide assessments for carers as well as for the cared-for;
- to observe a new financial model that includes a cap of care costs for self-payers.

Set alongside the move to devolved responsibility for health and care in some areas, it demonstrates the critical need for effective partnering.

### 3.2 Scotland

The NHS in Scotland is on its own journey towards integrated care. The Scottish Government’s ‘2020 Vision’\(^7\), sets out a narrative for sustainable quality in the delivery of health and social care. The Vision includes initiatives around prevention and self-management as well as ensuring that people do not spend unnecessary time in hospital and can be cared for – or self-care – in a location of their choosing.

NHS Scotland identifies three key areas of focus in order to realise the vision:

- Staff engagement;
- Leadership and developing capability;
- Capacity and modernisation.

‘Everyone Matters: 2020 Workforce Vision’\(^8\) was launched in June 2013. A highly consultative document with staff and stakeholders alike, it identifies priorities for the workforce to deliver the vision. These are wide-ranging, from embracing new ways of working, to strong leadership and becoming more joined up (including commitments to partnering with local authorities and the third sector). Fundamentally, the key areas are more collaboration and integration – both of which of course are highly dependent on technology.

The refreshed ‘eHealth Strategy 2014–17’\(^9\) charts a path through to 2020. It centres on the move to integrated Health and Social Care and how this will be supported by eHealth. As such the scope is broadened beyond the needs of NHS Scotland to include the third sector, local authorities, citizens and patients – hence emphasising the need for greater collaboration and engagement tools. Other related strategic documents cover infrastructure, applications and information sharing amongst others.

In September 2015, NHS Scotland and NHS Wales announced the Health Informatics Service Alliance\(^10\) – an initiative to work together on digital technology and shared services.

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3.3 Wales

Welsh Government is responsible for outlining the strategy for healthcare and NHS Wales is responsible for delivery. Similar to Scotland, NHS Wales is structured around Health Boards who are responsible for health service delivery across respective geographical areas.

‘Together for Health’ is the national 5 year vision and identifies both challenge and aspiration, as well as indicating the actions that need to be taken to ensure the highest possible performing healthcare system. It was jointly developed between the NHS and its partners including Local Government.

The vision is based around the delivery of community services and, as with England and Scotland, areas such as prevention and quality are pivotal. Other areas of focus include:

- Better outcomes for everyone – removing health inequalities;
- Access to healthcare and patient experience;
- Round the clock access and alternative access points, e.g. pharmacies;
- Digital channels for health and care;
- Dignity and respect;
- Act with transparency;
- One System for Health;
- Integrated care network(s).

This list demands a range of new capabilities that digital technologies can offer and connectivity, collaboration and mobility tools will have an integral role in delivering against the vision.

4. Transformation of Health and Care

The NHS and its partners are embarking on a programme of transformational change. The digitisation of information, and the way that information is consumed, presents new opportunities to redefine working practices and the services that are offered.

4.1 A Continuum of Care

As new health and care communities develop, the relationships between different parts of a citizen or patient journey will converge. There are many ways to consider this continuum of care and figure 4.1 gives a simplistic representation for the purposes of this paper.

![A Continuum of Health and Care](image)

Figure 4.1 A Continuum of Care

Though there are clear exceptions such as care of chronic conditions, it could be considered as a rule of thumb that people’s dependency progresses through the stages with age. The purpose of presenting the continuum in this way is to demonstrate that technology can help manage that progression through:

- Technology enabled health and well-being hubs to support Ageing Well and Independent Living;
- Citizen and patient contact solutions;
- Decision support and remote consultations using video and collaboration technologies at all stages of the continuum;
- More efficient delivery of care and access to information with mobile and remote working solutions;
- Collaboration between health, social care and the third sector;
- Underpinning shared infrastructure to support integrated care and operational efficiencies.

The ambition of seamless integrated care is one that will be highly dependent on digital technology and information systems. It is therefore important to step back and consider the entire continuum of care, then determine a strategy for the ways in which digital technologies can deliver capabilities – which, where possible, are re-usable across multiple stages of the continuum.
4.2 New Models of Care

The way that health and care is delivered is changing. We are currently in the midst of a transition, where three significant challenges are driving organisations to re-model systems and models of care.

Figure 4.2 illustrates the big shifts that are forcing this change, namely:

- An ageing population;
- Chronic disease management;
- A shortage of healthcare professionals.

![Figure 4.2 Drivers of Change](image)

Each one is significant in its impact on existing health and care systems, but when taken together there is no choice but to re-assess how, where and when care is delivered.

Digital technology is of course at the forefront of this shift. When used intuitively and informed by business and clinical use cases, well managed technology projects become enablers of change. However, what must also be considered are the impacts on people, as well as the process change that must occur. Indeed, any strategic technology project should always consider people, processes, technology and the data they generate in parallel, in order to offer the best chance of success.

Most NHS and Social Care organisations will be aware of Telehealth and Telecare solutions and will almost certainly be planning the implementation of such solutions, at least at a pilot stage. Whether it’s offering the opportunity to live independently or to administer care remotely, there are a range of use cases that can be enabled by technology:

- Nursing, care and residential homes: using video and collaboration technologies to bring remote decision support into the remote facility. This provides support to care workers and can help to reduce the number of unnecessary admissions into hospital;
- Independent living: allowing citizens and patients to manage their own condition where practicable. This might allow people to remain at home rather than become hospitalised;

12 Figure 4.2 References
Part 1: Landscape, Requirements and Digitisation

• Extended care: providing remote support to patients in their homes via a clinician or nurse practitioner over digital channels. This might be suited to long term condition management;
• Carer enablement: equipping care professionals with mobile equipment to gain access to information during home visits, with the potential to introduce decision support via video where it can be supported.

These are just some examples where well-planned technology projects can enable new models of care, allowing people to be cared for in a location of their choosing.

Other changes are more systematic. Some NHS organisations who cover broad geographies are considering new operational models based on community hubs. This approach supports estates rationalisation programmes and strategically places modern drop-in points for mobile care workers. Each premise should have the same look and feel, including at a technology level, providing location independence and a consistent user experience. There are opportunities for these premises to be shared with partners, hence creating greater economies of scale.

Finally, other organisational changes such as the MSCP and PACS initiatives in England are being backed up with Government funding through NHS England’s Vanguard programme. While in Scotland and Wales, the organisational breadth of Health Boards presents a greater opportunity as people can collaborate as part of one organisation.

4.3 Operational Excellence

The inescapable reality is that the NHS needs to save money. In England, 5YFV quotes work done by Monitor, NHS England and independent analysts that identifies a potential £30 Billion funding gap by 2020. The UK Government has made a commitment to support the NHS with extra funding, but this alone will not address the gap.

5YFV declares that funding support is just one part of the answer with a renewed focus on demand and efficiency. The level of efficiency required could reach 3% year on year if the proposed measures are taken. 5YFV also states that one of the key measures will be a renewed focus on prevention bringing health and wellbeing into focus as public health becomes a priority – key to reducing health inequalities and extending life expectancy. As has been discussed in section 3, NHS Scotland and NHS Wales have similar ambitions to operate as an integrated, highly efficient health and care system.

Digital technology can play a critical role in supporting the operational efficiencies required. At Cisco, we have been involved in a number of projects that have identified cost savings and other efficiencies, as well as seeing the potential of other initiatives, including:

• Length of Stay – using mobile devices and collaboration tools to gain quicker access to information, hence supporting prompt discharge of patients and reduced length of stay;
• Referral process – using video and collaboration technologies for decision support, professional to professional;
• Early Intervention – in areas such as Mental Health, where appropriate to use video technology for ongoing support and assessment of service users, hence avoiding unnecessary visits and disruption;
• Multi-Disciplinary Teams – deploying modern, integrated video and collaboration facilities with extensibility for remote users;
• Hospital at Night – providing the wireless infrastructure that supports mobile devices and improved workflow and task management;
• Public Health – using Digital Media and Digital Signage to promote wellbeing including dietary advice, smoking cessation and immunisation.

These are just some examples where a common digital platform can be re-exploited across multiple use cases.
4.4 Building Health and Care Communities

For longer than a decade, observers have advocated stronger links between health and social care. Today, we are finally beginning to see that vision as a reality.

The vision for health and care communities is well known with Scotland and Wales already seeing the benefits of joined up care across the existing Health Boards. Equally there are good examples of effective partnering in England, but overall there is still much progress to make. The recent Government announcements around devolved funding and responsibility for health and social care will encourage the level of collaboration needed.

Practically speaking, the benefits of joined up care are profound. For example, the ability to collaborate around care planning with links to social care and the third sector, or greater ties between GPs and specialist clinicians can only help to improve the patient experience and clinical outcomes, as well as create operational efficiencies across the community.

Figure 4.3 Building a ‘Whole System Approach’

Digital technology has a major role to play in supporting the development of such communities. At Cisco, we have championed such an approach for the last three years. We call this a ‘Whole System Approach’ and a simplified representation of this vision is shown in Figure 4.3. There are two perspectives:

• The development of a health and care community with provider organisations, commissioners (where applicable), partner organisations and citizen/patient groups collaborating to determine – and deliver against – the needs of the population they serve;
• The development and delivery of new models of care. These may be in the home, or in recognised facilities such as nursing homes and prisons. In addition, and most importantly, ensuring that caregivers are properly equipped to access information and decision support, regardless of location.
What should also be apparent in this diagram is the high dependency on shared infrastructure and a common collaboration workspace. Shared services, whether offered from the Cloud\textsuperscript{13} or managed on premise, can create economies of scale and real cost savings, whilst also ensuring a consistent user experience and reduced complexity.

The model also supports the drive for integration and interoperability at an information level. Newer approaches that offer a single integrated view of the patient record allow for each organisation to retain ownership of their data and provide real-time access. The ‘Whole System Approach’ shown above supports this hierarchical view, as well as presenting the opportunity for a community-based citizen or patient portal.

\textsuperscript{13} Cloud Solutions – http://www.cisco.com/go/cloud
5. Digital Technology as an Enabler

So, why is digital technology so important?

We are surrounded by it in our lives as consumers, enjoying access to information when and where we need it – and from our device of choice. The barriers to information are disappearing as we enjoy the simple technologies that keep us connected.

And yet it can be argued that the business world has been much slower to adopt such technologies. Performance, security and privacy concerns have been the major obstacles and nowhere has this been clearer than across the public sector including the NHS. However, the efforts of GDS and others are promoting a different way of thinking.

Many NHS organisations are engaged in system and application interoperability projects, as well as the digitisation of paper records. But, if health and care communities are to succeed, the same must be true at an infrastructure and communications level. Digital technologies such as connectivity, collaboration, mobility and security solutions should be seen as enablers of integration and location independence across the NHS as well as with its partners. While the connection of more “things” onto the network will increase the amount of available information for better decision making and support.

“NHS organisations are engaged in system and application interoperability.”

“But, if health and care communities are to succeed, the same must be true at an infrastructure and communications level.”

In fact, the role of technology begins with networks and other infrastructure, where it is rarely noticed unless a problem occurs. Yet this infrastructure is the foundation of the digital environment, not only providing the robust platform on which everything else sits, but also offering enhanced technical capability to systems and applications that depend on it. Regardless of whether the infrastructure platform is customer owned or sourced from the Cloud, it must be robust and feature-rich to support the innovation required.

The collaboration tools that we are all familiar with in our consumer world are also becoming widespread in industry. However, business use demands greater quality assurance, while integration between elements such as video, ‘instant messaging’ and conferencing is essential.

And from a security perspective, there are many considerations. By their very nature, digital technologies stretch the perimeter of any organisation. Information is therefore more transient and any strategy should focus on threat mitigation before, during and after events.

Looking forward, we will also see the emergence of new digital technologies and new ways to use information. Broadly speaking this emerging continuum has three components:

- **The Internet of Everything**\(^{14}\) – the world is becoming increasingly connected. It is no longer just about computers, as we see people, process, technology and things coming together to create systems. In health and care environments, consideration should be given to devices, sensors, alarms and people – new sources of digitised information.

Digital Technology as an Enabler

- **Big Data and Analytics**\(^\text{15}\) – as more things become connected, so we have access to even more information. However, this brings a challenge of too much data (Volume), too quickly (Velocity) and from a number of sources (Variety). Modern analytics solutions help to make sense of this data for areas such as population health management, genomics and clinical decision support, while also creating a return on investment for the technology itself.

- **Automation** – there is likely to be more automation within networks and systems – potentially based on the decisions forthcoming from this analysed information. Already, today’s solutions allow a common policy to be invoked across a wide range of Data Centre and Networking equipment.

The potential of these technologies demonstrates why ‘digital’ is so important and can offer real value to both operational efficiency and service delivery.

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6. Creating and Delivering a Digital Strategy

Fundamentally, a digital strategy must consider the current business priorities of any organisation and have a transformational plan embedded within it. Across health and care, some of the business priorities will be common in nature – including those discussed in this document. However, there will also be local specific issues depending on the community being supported and the services offered to it.

In the context of this document we define a digital strategy to mean the exploitation of new digital technologies to enable major business improvements as described in Figure 6.1.

![Figure 6.1 What do we mean by ‘Digital Strategy’?](image)

What do we mean by ‘Digital Strategy’?

**Digital Strategy - refers to:**
- the exploitation of new digital technologies (communications, social media, mobile, open data, data analytics, connected devices, embedded devices)
- to enable major business improvements (such as enhancing customer experience, streamlining operations or creating new business models)

So, when creating a Digital Strategy, where should one begin? Cisco believes that the answer is the adoption of an architectural approach.

6.1 Adopting an Architectural Approach

Simply put an architectural approach is technology planning that begins with the business. It is most important that the business and clinical leadership are highly engaged in the process from the beginning and throughout the programme of work. This means that they are always consulted and clearly understand the benefits that technology investments will bring. There must be a clear correlation between investment and financial and operational benefits.

IT organisations must therefore be adept at promoting those benefits and clearly articulating them in a consistent way. This includes the use of models to strengthen business alignment and hence business cases.
As shown in Figure 6.2, this dual pronged strategy helps to close the air gap that sometimes exists between the business and IT. The result should be an organisation that sees technology as an integral component of the business, hence no longer being seen as a cost centre.

6.2 ‘Plan down, build up’

Successful adoption of technology can truly impact patient care and/or operational excellence. There can be no doubt that the best innovations we have seen at Cisco have had the input of a clinical sponsor, while strategies for broader technology investment are always more successful when informed by, and aligned with, the business and clinical needs of the organisation. At Cisco we call this business-led architectural approach ‘Plan down, build up’ (see Figure 6.3).

Determining business need is a time consuming and often complex process. It involves an understanding of national, regional and local initiatives and a broad range of stakeholder views. However, to deliver a programmatic style of IT investment, where each step builds upon and exploits the previous one, this piece of work is critical.
With this in mind, we would suggest that strategic planning should always begin with the business needs and ambitions of any organisation, understanding the capabilities that will need to be delivered. Though seemingly obvious, it is a policy that can often be forgotten in the highly reactive world that surrounds us.

6.3 Requirements Gathering

Most organisations will have a living business strategy and this is of course a good place to start in terms of foreseeable business need. In addition, the business requirements definition (BRD) can be strengthened by consulting stakeholders across the organisation as well as partners, suppliers, citizens and patients. Stakeholder views will always vary, for example a clinician will have different requirements of the technology domain than an Estates professional or someone working in medical records. It is important to correlate all of these perspectives to establish an authoritative view of the future business state that in turn informs the technology domain.

So, where should one begin to gather stakeholder requirements? Consider internal stakeholders from various disciplines, for example business, clinical, nursing, estates, IT, partner organisations and patient groups.

When gathering information, we recommend considering priorities in two very broad categories:

- **Operational excellence**: typically inward facing, the focus should be on the workforce and workplace. It should include considerations of workflow, working practices and communications as well as the built environment, remote and mobile working.

- **Service delivery**: typically outward facing. Here the emphasis is on understanding current service delivery and the future state, i.e. what is best for the service user, and the viability of new models of care.

In both cases the overarching need for effective partnering should feature prominently.
6.4 Capability and Solution Mapping

Once the requirements gathering phase is completed and the business needs – both current and foreseeable – are established, an informed view can be taken of what capabilities are required to meet those needs, and subsequently how technology can deliver those capabilities.

Figure 6.4 illustrates this process in a simplified manner from the understanding of business requirements; to identification of capabilities needed; and ultimately how IT can provide those capabilities. It is supported by two examples from the inward and outward facing perspectives.

The key to this approach is that the underlying platform for infrastructure and communications should be common across all identified projects. However, as inferred earlier, this requires a change of approach towards strategic investment in technology.

Large corporate organisations will typically have something known as an Enterprise Architecture (EA)\(^\text{16}\). Using an EA methodology, the organisation is mapped in respect of structure, finance, operations, partnerships, service delivery and more. All of this information is used to determine the short, medium and long term re-usable capabilities that can be delivered in the technology domain. The approach supports efficiencies, cost savings and cost avoidance due to the fact that opportunities for re-use are easily identified.

Contrast this with the traditional approach in the NHS, and other Public Sector agencies, where strategic IT projects are typically funded via capital programmes. The downside to this approach is that projects may become siloed, with disconnected technology investments.

When thinking about infrastructure and communications, an EA based approach would allow health and care organisations to invest in a platform that could be re-exploited for many different use cases, as opposed to individual project investment. Figure 6.5 demonstrates these underlying dependencies, but also the opportunity for re-exploitation using a sample number of use case.

![Business Capability Mapping](image)

Fig. 6.4 ‘Business Capability Mapping’

\(^{16}\) Enterprise Architecture: The Open Group - [http://www.opengroup.org/subjectareas/enterprise](http://www.opengroup.org/subjectareas/enterprise)
The benefits of such an approach include:

- Consistency of user experience;
- Simplified management;
- Re-exploitation/ re-usability of existing investments;
- Cost effectiveness.

Having established what is needed, a future state vision can be determined, and then mapped to the current state. This will produce a gap and the ability to develop a strategic roadmap for the organisation, such that each project is linked and that the underlying dependencies are well understood.

Altogether, the adoption of an architectural approach is a sensible and informative way of developing a digital strategy. The organisation will now have a clear view of what is needed from a business perspective, and how technology can provide the capabilities required.
7. A Summary of Enabling Technology from Cisco

This section presents an overview of some of Cisco’s technologies. These technologies are categorised into four main logical architectures or solution sets:

- Enterprise Networks\(^{17}\),
- DataCentre and Virtualisation\(^{18}\),
- Defence in Depth Security\(^{19}\),
- Voice, Video and Collaboration\(^{20}\).

Using these solution sets, health and care organisations can construct a platform for end to end service delivery. Figure 7.1 demonstrates the relationship between the solution sets using the example of a remote care worker.

![End to End Service Delivery](image)

Figure 7.1 ‘End to End Service Delivery’

A brief description of the solution sets follows.

**Enterprise Networks**

Enterprise Networks consist of the underlying infrastructure that is largely invisible to the user. Nevertheless, because of that underpinning role, it is perhaps the most critical element. Analogous to the foundations of a house, the Enterprise Network must be robust, scalable and high performing. In simple terms, Enterprise Networks includes:

- Networks for the campus environment (hospitals, offices, clinics etc.);
- Wide area network connections between sites;
- Mobility, i.e. wireless networks and associated features;
- Energy management;
- Network management tools.

It also includes the features and functionality that optimise performance and presents capabilities to the solutions and applications that sit on top.

Data Centre and Virtualisation

Data Centres are critical assets for health and care organisations as they support all the applications and services required for business and clinical applications.

Today’s Data Centres must be highly efficient, high performing and secure. In addition, modern Data Centres operate in a unified environment where operations and management can be performed from a single point of control. The Data Centre is perhaps the most rapidly evolving of all segments and the next generation of technology will see increasing levels of orchestration and automation.

In addition, Data Centre services can be delivered on premise, from the Cloud or a hybrid of both.

Threat-centric Security

Ever present cyber threats, and increasing dependence on digital technology dictates that the importance of robustness and security of infrastructure and applications becomes ever more critical.

Cisco advocates that policy and strategy for process change and technology adoption focus on the three key stages of an electronic attack; we refer to these as monitor, mitigate and remediate (Before, During and After).

Cisco products provide a rich set of security features which, if fully enabled, allow the ‘network to operate as a sensor’ to help detect attacks, mitigate their impacts, and provide remediation.

Voice, Video and Collaboration

As user facing technologies, these have the most potential to directly impact on service delivery and operational efficiency. Cisco advocates a holistic and systematic approach, whereby a single, common platform offers capabilities that may be exploited for multiple use cases. Whether it’s a Mental Health Home Treatment Team or a clinician providing care at the bedside, the capabilities should support, enhance and speed up the delivery of care.

In simple terms, a video call should be as easy as a voice call. It should be high quality, reliable and easy to use. Contact Centre solutions can again support multiple use cases from switchboard to Crisis Lines. Meanwhile conferencing and collaboration tools allow professionals to connect without the need for travel, as well as helping to improve processes such as bed management, discharge and referral.
8. Conclusion to Part One

In Part One of this blueprint, we have attempted to demonstrate an understanding of the health and care landscape and considered the imperatives of creating new models of care and establishing health and care communities.

In addition we have shown the importance of creating a comprehensive digital strategy and provided guidance on how to achieve it.

We have advocated the adoption of an architectural approach, beginning with a full understanding of stakeholder views to match with the organisational business plan. Capability mapping then helps to establish how solutions can respond to business need and ultimately lead to a roadmap for strategic IT investment.

In part two we provide more detail on the architectural approach, as well as specific guidance for IT professionals.
9. How Cisco Can Help

Cisco is one of the largest global suppliers of information technology products and services. It has been recognised for its substantial annual investment in research and development.

We have been at the forefront of technology innovation for many years. Our technology powers the Internet and, we believe it can “change the way we work, live, play and learn”. We have deployed an extensive range of digital services that demonstrates this.

At the heart of our success has been the business exploitation of interoperable Internet Protocol (IP) technology by organisations of all shapes and sizes. We invest heavily each year in the development of standards, and in interoperability testing, to ensure that technology can continue to be built with the function, features and performance demanded by new generations of users.

Cisco has a dedicated team supporting our UK health and care customers. They offer a comprehensive set of industry knowledge, and are able to position Cisco’s extensive range of products and services to best meet customer needs. If you would like to further a discussion regarding digital strategy and its application in a health and care setting, please refer to Appendix A to find your nearest Cisco representative.
Web: http://www.cisco.com/uk/healthcare
LinkedIn: https://www.linkedin.com/groups/7451637
E-mail: healthcare-uk@cisco.com

<table>
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<th>UK Healthcare Primary Contacts (January 2016)</th>
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<tbody>
<tr>
<td>Mike Badham</td>
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<tr>
<td>Terry Espiner</td>
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<td>Graham Small</td>
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<td>Alexandra Staneva</td>
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