Rialtas na hÉireann
Government of Ireland

Digital for Care — A Digital Health Framework for Ireland

2024-2030

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An Roinn Sláinte
Department of Health

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Digital technology now extends throughout many aspects of our daily lives. Most of us now use it at work, at home, in our social lives, when we look for information, book flights or pay for goods or services. In the past ten years alone, we have witnessed an extraordinary change in how digital technology affects our everyday lives. Online services have become faster and more accessible, the use of smartphones and smartphone apps has become ubiquitous, broadband and high-speed connections have become far more readily available. Digital Health is key to supporting the health service in delivering universal healthcare, in planning for the population's health needs, building integrated care models, and ensuring safety, quality and sustainability in delivering health services.

This Digital Health Framework for Ireland (2024-2030), sets out a clear ambition for the future. Such a future harnesses the power of data, digital technology and innovation, to widen access to health and social care services, provide improved affordable and equitable care, better patient safety and greater productivity. It presents a vision for how we will use data and digital technology to improve our population's health and well-being, enabled by seamless, safe, secure, and connected digital health systems. Using data and digital, we see a future where our population, our patients and those who care for them — are empowered and better informed about their care.

This framework was developed through extensive consultation with key stakeholders across the health and social care system including patients, healthcare professionals and staff, industry, and innovator groups. The approach has been shaped by the challenges and demands the health service faces, feedback from patients and our workforce, research of other healthcare systems, global trends, and emerging opportunities. The Health Service Executive (HSE) has developed a corresponding implementation roadmap in parallel with this strategic framework.

Digital Health is key to transforming the delivery of integrated health and social care services improving health outcomes for all our population and the care experience for our patients. Digital Solutions are also key to increasing efficiency and controlling expenditure to ensure we get the very best value from the resources we have and giving our healthcare staff modern digital tools to deliver better, safer care will benefit both staff and patients.

A key goal of the framework is to put a greater focus on empowering patients. We will do this by providing them with access to their own health information, and by leveraging data, digital solutions, and digital innovation to greater effect, in order to modernise the health service, for both patients and staff. Digital Health has the potential to promote self-care, lifestyle choices, assist with the prevention and treatment of disease and provide more accurate diagnosis.

Clinicians and carers want to be able to share information safely so they can provide high quality, connected care and services, which are better coordinated around their patient's needs. To do this we will provide a modern, digitally enabled environment for our workforce. We will support initiatives to improve digital literacy, so that our staff can take advantage of the many opportunities technology can offer, including making joined up health information available electronically through digital health records — in the form of summary, shared care, and enterprise level, electronic health records (EHRs). This will allow staff to access the right information where and when they need it, to carry out their roles effectively, and provide the best possible care to patients.

Core technology that underpins our health services, will enable a digital future. We will continue to invest in health infrastructure, evaluate and invest in emerging technologies, integrate systems for better security and collaboration, develop and implement standards to connect our systems and health information, develop new ways of working through innovation and put data analytics and insights at the centre of decision making. Governance and fit for purpose delivery models, along with sustained and predictable funding, will be required to deliver on this vision.

We must ensure our health and social care services are digitality inclusive for all our population including vulnerable groups. We will achieve this by making digital inclusion a core part of the design and delivery of high quality digital enabled health and social care services, in line with the commitments outlined in 'Digital For Good: Ireland's Digital Inclusion Roadmap'. We must also ensure we maintain existing ways for patients to access services.

Our vision has been developed in close consultation with patients, staff, clinicians and a wide range of diverse stakeholders across the health and social care sector. We have engaged with patient advocacy groups and have also taken on board results of surveys that sought to understand the views of the public in relation to the role of digital in health. To deliver on this framework we will continue to engage with all those who have equity in improving the health service that we all want for the future.

Digital for Care – An Introduction

Our vision for Digital health in Ireland up to 2030 will be driven and enabled by:

- Seamless, safe, secure, and connected digital health services

This will support:

- Improved health and wellbeing for everyone
- Better health outcomes

This means that:

- Everyone using our health service will have access to their own digital health record, so they can manage their own health and care with greater ease
- Healthcare professionals will have more comprehensive information about their patients in real-time, regardless of where they were treated before
- Patients can move between different health care settings, confident in the knowledge that their information is being shared between the healthcare professionals that are treating them in each setting, leading to safer, better care
- Patients can receive more care closer to home, reducing the need for otherwise avoidable hospital visits and stays

This Framework was developed through extensive consultation with key stakeholders across the health and social care system including patients, the healthcare professionals and staff, industry, and innovator groups. The approach has been shaped by the challenges and demands we identified through feedback from patients and our workforce, healthcare documentation, global trends, and emerging opportunities.

Digital Inclusion
As we embrace technology to modernise our health service, we must make sure no-one is left behind. As we digitise services and modernise our health system, we will continue to maintain access to health and social care services through non-digital channels, to ensure the inclusiveness of our whole population.

Trust and Transparency
Patient data is sensitive information. Transparency is the key to building trust so we will continue to engage patient representatives throughout the design and delivery of all digital health programmes. The need to provide the necessary assurances on how data is processed, who has access to it and for what purpose, how patients can express their preferences around consent, and how we ensure compliance under data privacy legislation, will be central to all that we do. To provide assurances to patients, we will align ourselves with the Caldicott principles that were adopted by the NHS (UK) in 2013[1].

Our teams
We must provide a modern, digitally enabled environment for our workforce. We must support staff through access to training initiatives that improve digital literacy, so that we can take full advantage of the opportunities technology has to offer. We must provide them with appropriate connectivity, devices, and access to the systems they need to do their jobs.

Harnessing data
The processing of population wide health data, using dashboards and data analytics, became a mainstream activity in response to the pandemic, but there is still significant potential to leverage toolsets to better manage the wider health service.

Innovation
We want to nurture the opportunities offered by indigenous startup companies here in Ireland, greater deployment of robotic process automation to reduce administrative burden, ethical application of AI and other initiatives. We will continue to engage with the digital health ecosystem in Ireland, to find meaningful ways for them to be included in the implementation of this strategic framework, so that it is delivered in ways that match people's needs and expectations, whilst supporting innovation and economic growth.

Digital for Care – An Introduction

1.1 Vision, mission, and six principles

This Framework has been developed to reflect the rapidly changing landscape of health and social care in Ireland. It takes into account the establishment of the new HSE Health Regions[2] in 2024, as the organisations with operational responsibility for the delivery of both hospital and community-based healthcare services in each of six clearly defined geographical areas.

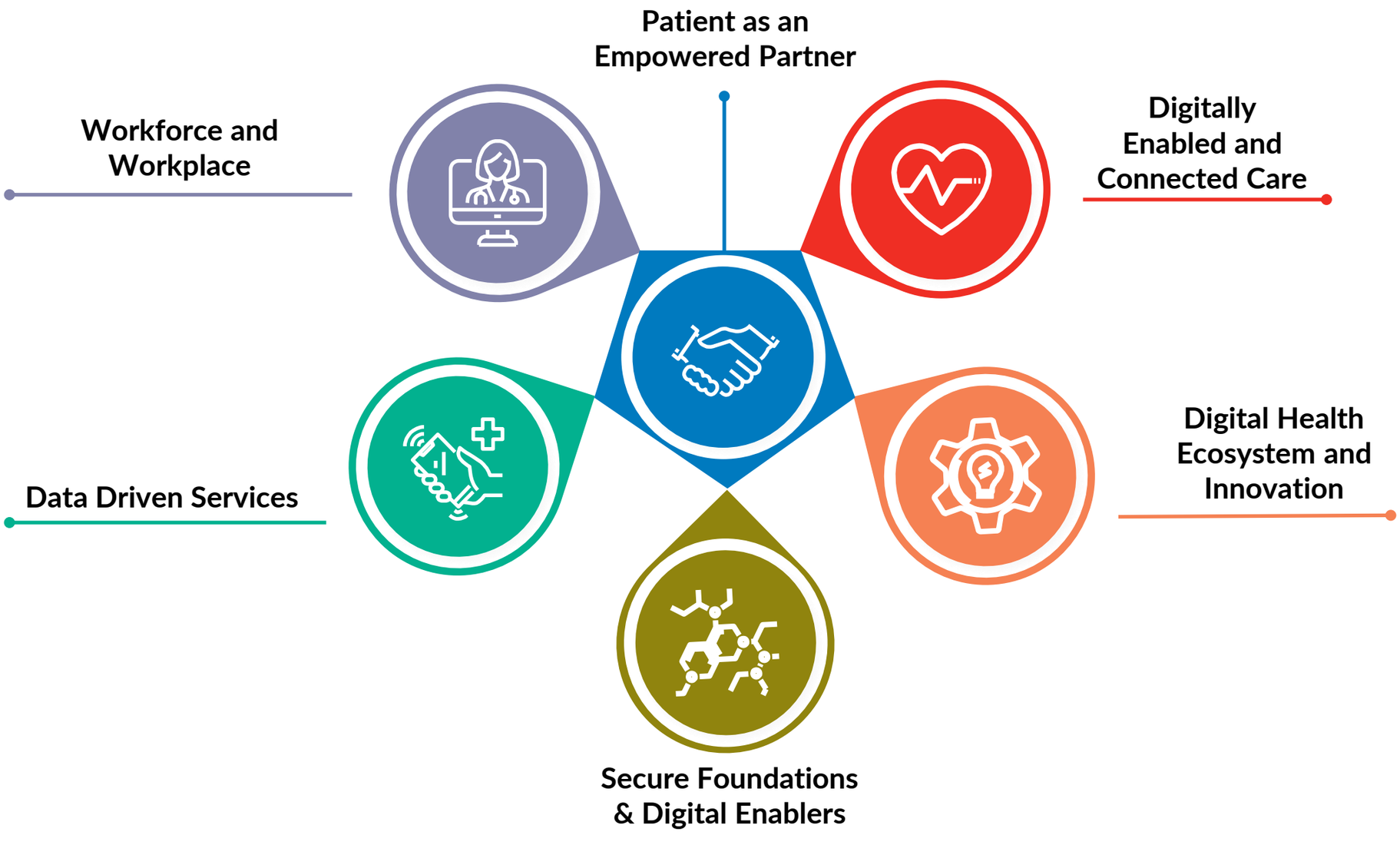
Given the critical role that existing and technologies of the future, digitalisation and data will play in shaping the future of the Irish healthcare system, the purpose of this Framework is to:

- Outline our vision for a modern, patient-centred, and sustainable health and social system that leverages the latest digital and data technologies and solutions to enable the delivery of universal healthcare, improve the quality of care, promote health and wellbeing, enhance population health, expand capacity, increase efficiency, increase productivity and reduce costs.
- Provide a guide for decision-making and investment in digital health over the course of this decade to ensure that Ireland is at the forefront of the global digital health revolution
- Set a 'North Star' for digital health with a clear step by step roadmap for accelerating the shift to a fully integrated national digital health ecosystem

This framework defines a Vision and Mission for digital health in Ireland. These are supported by six principles that describe how we will deliver on this vision.

Our Vision	Better health outcomes enabled by seamless, safe, secure, and connected digital health services and which support health and wellbeing for both our patients and providers.
Our Mission	To harness the power of new technologies ,digital and data to transform how health and social care services are delivered for our population.

Six principles are defined to describe our ambition and to give effect to our vision and mission for digital health.



A modern, patient-centred, and sustainable health and social care system for patients and workforce

Digital for Care – An Introduction

- **Patient as an empowered partner:**
  We will empower patients by giving them broader access to their own health information through a patient app, provide access to more digital health services, including virtual care offerings, whilst enabling greater autonomy and choice over their care options.

- **Workforce and workplace:**
  We will enable our workforce by providing them with the technology, systems, and skills they need to deliver the best possible care and services to patients in the modernised healthcare system.

- **Digitally Enabled and Connected Care:**
  We will drive future investment and make architectural decisions based on the ability of systems to share clinical information and deliver connected care. We will make it possible for healthcare professionals, and others who support delivery of care, to be able to access the information needed about their patients when and where they need it, regardless of where those patients were treated previously.

- **Data driven services:**
  We will leverage data analytics, business intelligence, visualisation, dashboards, and other digitally enabled management tools to provide greater insights into the health service and its operation. This will create opportunities for increased productivity, efficiency and more precise direction of resources to areas of greatest need, and where they will have the maximum impact.

- **Digital health ecosystem & innovation:**
  We will embed continuous improvement within the health and social care system. This will be enabled by innovation via improving ongoing collaboration, improved procurement pathways, increased participation, and promoting research excellence. This strategic principle also details key considerations for the Digital health ecosystem as we prepare for the technologies of the future.

- **Secure foundations & digital enablers:**
  We will continue to build cyber resilience and put in place the key enablers needed to deliver this digital health strategic roadmap, underpinned by strong governance, cultural change, standards, interoperability, infrastructure, architecture, and legislation.

Digital for Care – An Introduction

1.2 Why now?

The role that digital health plays in delivering health and social care has never been so important. It is urgent that we harness digital health and foster innovation to ensure safe, sustainable health and social care for all, given the widespread adoption of digital solutions across society. Digital transformation initiatives delivered in response to the Covid-19 pandemic provides evidence of what is possible when there is a singular focus and staff are empowered to deliver.

One of the core objectives for reform of the health service is to reduce reliance on acute hospitals and provide more care in the community. It is evident from our experience to date that there are significant dependencies on digital solutions that must be addressed in order to speed up reform. This goes well beyond the delivery of electronic health records and extends into the digitisation of many aspects of care and health service delivery, the way in which patients interact with the health service, and the management of the wider health system itself.

Our health and social care system is under increasing pressure to improve access, equity, affordability, high quality, and value-based health outcomes. The public's expectations have increased regarding digital health services due to the rapid advancement of technologies affecting how the population as consumers manage other aspects of their daily lives. Patients want greater control over their healthcare, and clinicians want immediate access to the right information about their patients, when and where they need it to provide safe and more efficient care.

Digital health solutions can help avoid admissions, reduce lengths of stay, improve the quality of care for patients in transition between the acute and community sectors, and accelerate the reorientation of service delivery from acute hospitals to community-based services. Digital health has the potential to support equitable and universal access to quality health and social care services, improving the quality and experience of care for all.

The following factors are also relevant in the context of why this framework is being developed now:

Demographic Factors: The population has seen a growth of 11% since 2016, with a notable increase of 28% among individuals aged 65 years and above[3]. This increase is putting more of a demand on our health and social care services today which requires us to have more innovative ways to meet the changing needs of patients and the wider population. In addition, the rising percentage of the population living with multiple morbidities is creating new pressures on the healthcare system compelling us to identify and deliver new treatments and services that can be facilitated using digital technology and innovations.

National Policy: To succeed in building up digital health maturity within the system, we must ensure alignment to national healthcare strategies like 'Sláintecare'[4], 'Harnessing Digital – The Digital Ireland Framework'[5], and upcoming legislation ('Health Information Bill'[6]) in addition to developing our capabilities in line with the wider public sector strategies such as 'Civil Service Renewal 2030'[7], 'Connecting Government 2030'[8]and 'AI – Here for Good: A National Artificial Intelligence Strategy for Ireland, 2021'[9].

Our Learnings: The adoption of digital health in Ireland during the COVID-19 pandemic demonstrates an ongoing desire to drive digital health transformation. This challenging experience has provided valuable learnings to inform the Framework.

Technology Advancements: The population has experienced significant change in their daily lives in terms of access to technology and information, affecting how we interact with government services, banking, and travel. Digital health has the potential to revolutionise how the population interact with health and social care services.

European Policy: As part of the EU, we are committed to transforming and delivering digital health services in line with the 'Digital Decade' policy by 2030[10]. The key metric used by the EU when measuring Member State progress towards meeting the objectives of the EU digital decade in health is the 'percentage of citizens with access to their digital health record'. Additionally, the EU has provisionally agreed the text of the European Health Data Space[11] (EHDS) Regulation. EHDS presents significant opportunities but also places significant obligations on healthcare systems in EU member states regarding primary and secondary use of health information.

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1.3 What the future looks like

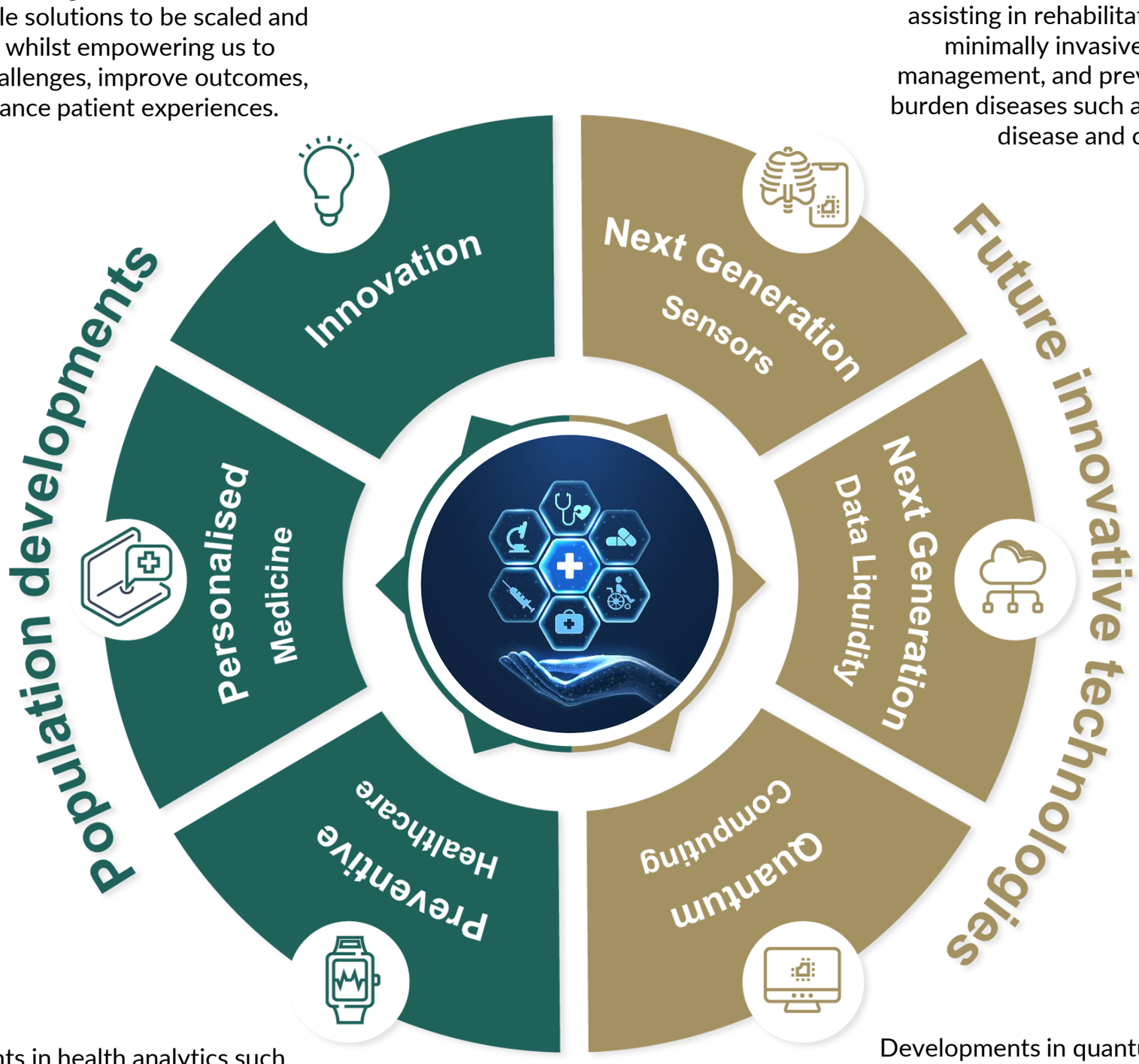
This strategic framework is complemented by a corresponding implementation roadmap that has been developed by the HSE. The HSE roadmap describes the programmes and projects that must be delivered to achieve the vision. The pace at which these programmes are delivered will be dictated by the level of resources that are committed through successive budgets. There will be obligations on the HSE to demonstrate real value to patients and key stakeholders as programmes are delivered in order to build confidence and ensure sustained levels of investment. Governance and oversight arrangements will need to be commensurate with the level of investment committed.

The pandemic proved that the future of health cannot always be predicted. Our health service must be ready to adapt and change, to improve patient care and operations while delivering safe health services for the patient. This will include identifying technology trends and innovation opportunities to modernise our existing system and continue to leverage data driven insights.

As part of the framework, we have horizon scanned technology trends and ways of working that may optimise how we operate as a health service in the future ranging from personalised medicine, advanced diagnostics, wearable technologies, genomics , future clinical decision support tools, artificial intelligence (AI) capabilities and technologies yet to emerge. Indeed while these technologies may not transpire within the timeframe of this framework, as we seek to future-proof patient safety and new ways of working, we need to ensure that technologies of the future are deployed appropriately and in line with regulation. As a health service, we must be cognisant of how these trends can be integrated within our existing framework. We will establish robust foundations to ensure that our health services are agile and adaptable to these potential developments.

By creating an environment where time, space and funding are enabled. We can allow enable solutions to be scaled and realised whilst empowering us to address challenges, improve outcomes, and enhance patient experiences.

This technology offers solutions to challenges such as monitoring of vitals, assisting in rehabilitation processes, minimally invasive procedure management, and prevention of high-burden diseases such as cardiovascular disease and cancer.



Healthcare may evolve to provide personalised and precise treatments tailored to an individual's unique genetic makeup, lifestyle, and environmental factors.

Data liquidity presents an opportunity to seamlessly and securely exchange data across diverse platforms. This enables multiple stakeholders to access and utilise data resources efficiently.

Advancements in health analytics such as internet-of-things or smart personal devices has led to a shift from reactive treatment to proactive prevention and population health management.

Developments in quantum computing will provide several drivers of value to organisations such as advanced computational capabilities, advanced communication infrastructure and remote sensing functionality.

An Roinn Sláinte
Department of Health

Six Principles for Digital Care

An Roinn Sláinte
Department of Health

Patients as an empowered partner

Patients as an empowered partner

Patient empowerment is a key driver in achieving patient-centred health and social care. The intent of this principle is to treat 'patients as an empowered partner', and it sets out an ambition for care that is patient-centred and tailored around the needs and preferences of the individual. Under this principle we aim to empower patients by giving them access to more digital services and access to their own health information. Using digital channels, we want to improve communications between patients and the health service and provide ways for patients to express their preferences and receive more care closer to home.

Ambitions

As someone who relies on the health service, I will have:
My own Digital Health Record: available on my smartphone as a patient app using my own digital identity. I will be able to access my personal digital health record, that will contain up-to-date, high quality health information, that is relevant to me and co-designed through clinical and patient partnerships. I will be able to choose to view and/or contribute to my digital health record through the app. I will be able to use the app to share my health information with those who treat and care for me, meaning my data travels with me and for me.
Options for treatment closer to home: access to a broader range of digital services, supporting treatment closer to home such as telehealth, virtual wards or remote monitoring, where clinically appropriate and where I choose to avail of these services as an alternative to travelling long journeys for short appointments, and face-to-face interactions with health professionals.
More Choice: more awareness and visibility of the choices available to me to better manage and take control of my own health and wellbeing. This includes basic capabilities enabled through digital such as requesting appointments that work for me as a patient, for my family and carers. Not only does this help me to avoid missing appointments, it also allows others to avail of the opportunity to be seen sooner at busy hospitals and clinics. Digital services like this are convenient and make it easier for me as a patient to engage with the health service in a manner that best suits my needs.
Trust in Digital Health: high levels of trust in the security and confidentiality of the systems used by the health services to manage my health information, that provide assurances that my health data is being handled legally, securely, efficiently and effectively, while delivering safe, high quality care.
Digital Inclusion: as an individual who chooses to use digital health services, that I can receive equitable access, in a meaningful way, to all available services, with digital literacy programmes to assist me in having the confidence, skills and knowledge to use them without barriers.
My Consent: control over my health information and the kind of information I want to share, while maintaining the right not to share information that I consider sensitive. Access to the digital health record will exclusively be granted to authenticated healthcare workers, limited solely to those authorised through a care relationship, with all access subject to audit.
My say: input into the creation and development of digital health systems by participating in steering teams, programme boards, focus groups, public consultations, surveys, and through other forms of input and feedback.
Improved health literacy: looking at how digital can improve health literacy by helping people navigate the health system, understanding how, when and where to seek care, to understand what questions to ask when engaging with healthcare professionals, and what the information they receive means for them as individuals.

Patients as an empowered partner

Why this is important

Many people are ready to embrace technology and recognise the value in moving towards a more digitalised health service. People understand the need to safeguard and trust in that data knowing it will contribute to timely and appropriate care[12] [13].

According to research, 30% of the world's data is healthcare-related, yet healthcare uses only 1% of the data available. Digital health has an opportunity to unlock this data and empower people not only with the data and information, but also with knowledge and wisdom to empower people; providing them with the skills and confidence to be active partners in their own care[14]. Service users can have an empowering experience in every interaction with digital health, which in turn can drive a change in culture across the service.

This principle is focused on empowerment and creating a joined up digital experience for all patients. Patients can find it challenging to navigate through the health and social care system, communicate with multiple providers effectively, and ensure that their care including their health information is seamlessly coordinated.

The lack of access to up-to-date health information impedes patients' ability to make informed decisions about their care and actively participate in their own health management.

Digital health solutions and technology have the potential to play a crucial role in efforts to improve health equity. By enabling people to access, manage and contribute to digital health systems and services, patients will be empowered, and their experience of health and social care will be improved. Access to modern digitally enabled health services can lead to better patient experience, and better health outcomes. High quality, up-to-date information about care is critical to:

- Ensuring people have confidence in safer, more coordinated services
- Improving experience and continuity of care
- Ensuring patient preferences and needs are observed
- Supporting people to tell their story once by having health information easily available and accessible to them at the right time and right place to avoid the need to repeat medical or social care history
- Helping people to make shared, informed decisions about care with their healthcare professional

What good looks like

Patient's right to choose: Patients have greater involvement, control, and choice in their health and social care journey. This means they have more options about the care settings and types of care they choose. Patients have more visibility and access to easy-to-use digital tools to help manage care including scheduling and pre-registering for appointments, referral information and public and private waiting list information, online booking systems for ordering blood tests, and repeat prescriptions.

Access to digital health records: Patients have access to personalised digital health tools in a convenient and coordinated way. This makes them responsible for their own health decisions empowering them to have an active role in making informed decision about their own care to stay healthy. It also empowers them to make shared decisions with healthcare professionals. Patients are empowered to be proactive in maintaining and contributing to their health and wellbeing by having the ability to access their health information through public facing digital services such as patient portals and applications (Apps). There is a digital front door to the health service, providing health, wellbeing and services information and access to all health and social care services.

Patients as an empowered partner

To enable this, patients can access their information when and where required through a:

- **Patient App:** that will allow patients to view their health data including appointments, prescriptions, test results, and scans. The app will include digital credentials such as a digital version of the European health insurance card (EHIC)[15], medical card, GP visit card, a MyHealthID[16], proof of vaccination such as the digital covid certificate, and the seasonal flu vaccine. The patient app will enable a more personalised relationship with the health service that includes reminders of important appointments, signposting, self-care advice, and information. The features and content of the patient app will be enhanced and developed over time, through successive releases of the app.
- **Digital Health Record:** Patients often complain about having to provide the same information over and over again, as they engage with different healthcare professionals. A single digital health record would ensure their story is available and does not need to be repeated. Patients and their caregivers can play a direct role in contributing patient data to this digital health record. In the ideal case, patients will be able to access their entire lifetime health records from all healthcare providers in one place, electronically in their digital health record, allowing patients to seamlessly transition from one healthcare setting to another with all the relevant and real time information they need, to do this quickly and safely.
- **Telemedicine:** Patients have increased access to care in the right place at the right time using telehealth which may be more convenient for the patient, provide healthcare efficiencies, streamline workflows, enhance patient safety, reduce infection risk, and improve care coordination.

This means bringing care closer to home, when possible, to boost patient satisfaction and improve overall health outcomes. By broadening virtual care and telehealth services, patients have greater options to receive care in surroundings that suit them best, reducing the need for extensive travel or hospital visits. Patients are supported to self-manage their care through access to virtual consultation and telehealth services with particular focus on teleconsultation including video consultation, remote patient monitoring, virtual wards, and secure channels of communication with healthcare professionals.

In the future, patients will be offered the option of:

- **Virtual outpatient appointments** to avoid travel and to best suit the patient's preference
- **Virtual wards** that provide patients with the opportunity to be discharged from hospital early or indeed avoid admission altogether, but only where this is clinically appropriate and meets the needs and preferences of the patient and their carers
- **Mobile health applications (m-health)** including wearable devices that will enable patients to continuously monitor health parameters, track lifestyle behaviours, remind individuals to take medications, and facilitate communication with health and social care professionals
- **Patient Digital ID Verification** to give patients a simple and secure way to prove their identity online so only they (or a nominated carer) can access their digital health record and digital health services

- **Ensuring trustworthy data:** It is important to ensure that the public understands how data is being used responsibly and effectively. Patients can trust and have full transparency in how their data is safeguarded, how it is captured, processed, and leveraged. Patients can express their consent and preferences capture their consent based on a clear understanding of the use of their data.
- **Health Equity and Digital Health Literacy:** People across all parts of society can confidently use digital platforms, evaluate online health information, and use digital health tools effectively, helping to advance health equity across the health and social care system. They have the option to avail of digital health literacy programmes through comprehensive training initiatives. A joined-up national approach to health literacy to empower everybody in Ireland with the knowledge, skills, and confidence to be active partners and advocates for their own care is paramount. This involves an integrated approach across healthcare, education, and in our communities to enable, encourage, and educate people to make informed choices about their own health and have a voice in their own care[17].

Patients as an empowered partner

- **Patient involvement:** Patients — and those who care for them — are considered invaluable partners and are involved in how services are designed, delivered, and evaluated. Patients give feedback on current digital systems and feed into the co-design of future systems helping to foster inclusion and trust within services. Co-design of digital services is facilitated through meaningful patient and public involvement (PPI)[18], truly reflecting the needs of the patient.

The following scenario illustrates how patients will experience improved health outcomes and a more seamless and efficient healthcare journey through digital:

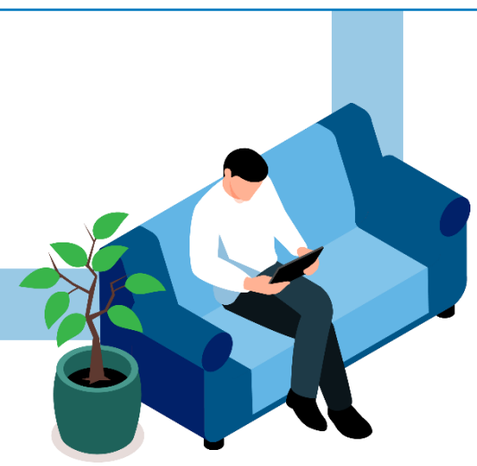
Sean Conroy, from West Cork, diagnosed with a heart attack.

1

Sean is 59 years old who presented to Cork University Hospital with a Heart attack. Sean was treated and managed by the Cardiology team. Sean is recovering well and transitions from the Coronary Care Unit (CCU) to the Cardiology ward.

2

Sean's Cardiologist notes Sean is progressing well in his recovery and is suitable for home monitoring. Sean returns to his home but remains admitted on the Cardiology virtual ward. This allows Sean to be continuously monitored using portable devices to keep track of his real-time vital signs and heart function.



3

Sean has a daily review with the Cardiology team to report any concerns he may experience. A telehealth appointment is scheduled for Sean to meet his Cardiologist before his discharge.

4

Sean logs into the online patient portal to access his telehealth appointment with his Cardiologist. They discuss his progress, symptoms and review his health data. Sean is discharged from the cardiology virtual ward.

5

Sean's Cardiologist guides Sean to the online resources for his rehabilitation available on the patient portal and organises a follow-up in-person appointment. This information includes increasing his exercise tolerance, nutrition, and general post-discharge advice.

6

Sean reviews the appointment on the patient portal. Sean realises the scheduled appointment with his Cardiologist clashes with a family engagement, he requests for an updated appointment which is approved.

> *"I am now able to receive treatment from the comfort of my own home"*

Patients as an empowered partner

John Walters, from Meath, diagnosed with high blood pressure.

1

John is 62 years old attending his local General Practitioner (GP) to manage his high blood pressure. John is concerned as a family member recently experienced a stroke. John wishes to attend his (GP) to discuss his worries and if he is at risk of having a stroke.

2

John attends his GP and explains his concerns. The GP explains that his blood pressure is well controlled at present and advises John undergo Community Health Screening at his local pharmacy to assess for other risk factors.

3

John contacts his local pharmacy in Dunboyne, county Meath, to arrange his health screening. He speaks to one of the pharmacy advisors who explains the process and arranges an appointment for John which will take 15 minutes.

4

John attends the pharmacy and meets with a healthcare professional. John is asked to fill in a online digital health screening questionnaire. Following this, John's assessment includes 1) measurements of his weight, height and waist, 2) blood tests for glucose and cholesterol, 3) pulse assessment, 4) blood pressure check, and 5) lung function assessment.

5

John's screening questionnaire and test results are reviewed by medical professional and a clinical support tool , generating a medical report. These results and report are issued to John and uploaded to John's digital patient record.

6

John's GP receives an alert through the digital patient record to review John's test results and report. John also has access to his test results through his digital patient record. The GP arranges a follow-up appointment with John to discuss the results. John's health screening is normal with no further treatment required. The GP advises John may undergo this screening yearly if he so chooses.

"Digital health technology has improved my care journey and experience of the health system"

An Roinn Sláinte
Department of Health

Workforce and Workplace

Workforce and Workplace

The strategic principle to support a ‘Digitally enabled Workforce and Workplace’ focuses on having a collaborative, digitally skilled, and supported workforce who have access to connected digital systems and clinical tools to deliver the highest standard of patient care in a timely manner. This will lead to improved patient safety and quality of care while ensuring that staff workloads remain manageable and sustainable.

Ambitions

As a member of the workforce, I will have:
Access: to my own unique digital identity and a single sign-on facility that allows me to log in once to all the systems I need to use when providing care to patients, and a single email account to make it easier for me when working across multiple sites.
Better workplace: a more modern fit-for-purpose workplace environment, with ICT infrastructure that includes high speed connectivity, Wi-Fi, and ready access to PCs and specialist workstations where needed. I will have access to suitable locations to update patient records and provide online consultations. I will have access to dedicated space that is ICT enabled and available to facilitate online multi-disciplinary team meetings and group discussions on care delivery. I will be able to easily contact technical support and get help with any issues I experience with accessing and using this technology.
Improved Experience: an improved day-to-day experience with access to systems that support me as an employee. This may include access to a staff portal to manage timesheets, eRostering, an electronic record of my qualifications, training and development, reimbursement, payslips, well-being, and occupational health resources.
Trust in Digital Health: the ability to manage information legally, securely, efficiently, and effectively to deliver safe, high-quality care. I will have the assurance and training to ensure data is managed correctly and the knowledge of what procedures I should follow to minimise the risk and impact of cyberattacks on the organisation.
Resources and Tools: the tools to do my job, such as access to online collaboration tools like email and Teams that I can access from wherever I am working. Access to corporate systems for people who work in finance or HR, and access to clinical systems and digital patient records for healthcare professionals.
Digitally Enabled Care: easy access to health information, data, advanced diagnostics, and the latest digital clinical tools to care for my patients.
Digital skills: the right digital skills and learning opportunities to help me operate effectively in a ‘Digital First’ work environment.
Workforce Feedback: the facility to provide feedback to help drive improvements and inform the development of the systems and digital services I need to do my job.

Workforce and Workplace

Why this is important

There is an increasing demand for healthcare services, driven by an aging population and more people suffering from multimorbidity. The workforce is the main driving force behind care delivery, and the efficient use of digital health tools will become increasingly important as we deal with an emerging global shortage of healthcare professionals and increasing demands for service. Staff also depend on operational IT systems to deliver essential services to support patient care such as bed management systems, theatre track and trace systems, access to up-to-date data to make better decisions for individual patients, and to inform overall service planning. The workforce also relies on IT systems to improve their own workplace experience.

However, it is important that the introduction of new technologies and infrastructure strengthen and support staff, rather than become an additional burden to their existing workload. Done wisely, investing in our digital infrastructure will enhance how staff deliver health and social care services. Building digital skills among the workforce, will give staff the confidence and capability to use the most appropriate technology and secure the maximum benefit from their use. A workforce with the right digital tools and skills will lead to an improved experience for staff, better patient outcomes, greater access to health and social care services and better value care.

What good looks like

To work collaboratively and effectively, a workforce requires the right digital solutions, good connectivity, and enhanced digital skills to deliver the right care, in the right place, and at the right time. To enhance the ability of clinicians and staff to deliver the highest quality and safest healthcare possible for patients, they require:

- A modern, digitally enabled, fit for purpose workplace with access to Wi-Fi and the systems needed for staff to do their job
- An environment that facilitates collaboration between staff and makes it easier to provide services and care
- Digital tools, devices, and systems that are user-friendly and simple to use, to avoid technologies getting in the way of work and access to technical support
- Opportunities to develop digital knowledge and skills, including dedicated modules on digital literacy and health informatics being incorporated into undergraduate programmes for all healthcare professionals
- The ability to share health information between different systems and settings
- Trust and confidence in digital health solutions and technology
- A mechanism to provide feedback from staff to improve digital health systems and services
- For non-consultant hospital doctors who rotate frequently between hospitals, they require access to the systems and technology they need to move seamlessly from site to site

Access to Digital Health Records: The workforce has a collaborative and connected workplace enabled through a digital record system. Workforce experience is enhanced by streamlining processes and work practices, reducing the administrative burden on clinical teams and freeing-up staff so they can spend more time with patients.

Access to a broad range of digital services and tools: A modern digitally enabled workforce ensures greater efficiency, collaboration, and productivity across the health and social care system. Workforce experience is enhanced by giving staff access to a broad range of digital services and tools — including smartphones, laptops, tablets — to help them to do their job more effectively and meets their needs, resulting in a healthier workplace environment. More consistency in the systems and technology that are deployed across the health system will enable the workforce to transition more easily between different healthcare settings and access the resources they need and are familiar with.

Workforce and Workplace

Access to core strategic corporate IT systems: Health service leadership and staff are empowered to make better, data-driven decisions relating to investment, control of costs, allocation of resources, and operational excellence in the delivery of health services. Staff have access to core strategic corporate IT systems such as the National Integrated Financial Management System (IFMS)[19] programme, the National Integrated Staff Records and Payroll (NISRP)[20] system, hospital-based demand and performance management dashboards and related solutions.

Up-skilling, training, and development: The workforce is supported to develop their knowledge and skills to use digital systems confidently and effectively. To ensure the right people are in the right roles, with the right skills will require leadership, management support, and dedicated time for staff to avail of learning and development opportunities.

Workforce feedback: A feedback system designed to create a continuous feedback loop for healthcare worker experiences will be available. The HSE platform will focus on gathering feedback from frontline healthcare professionals to capture changes required to empower healthcare workers.

Workforce and Workplace

The workforce's experience and working environment will be enhanced by streamlining processes and access to online shared systems, allowing the workforce to focus more on patient care.

Diane Cunningham, a Paediatric Registrar, who works at Hospital A and is transitioning to her new role at Hospital B.

1

Diane is a Paediatric Registrar and is due to move from Hospital A to Hospital B as part of her new rotation.

2

The Human Resources (HR) department at Hospital B contacted Diane to request access to her staff portal, which holds a record of her employment, qualifications and training records.

3

HR noticed that Diane's basic life support certificate is expiring and informs the training officer to arrange for her training before starting her new role.

4

The HR department send her a digital copy of her new contract, online hospital induction pack, and grant her access to view her new work roster.

5

Diane views her Hospital B work roster and on-call shifts on the staff portal and notices an incomplete timesheet, she proceeds to fill in her previous timesheet with Hospital A.

6

The induction information pack advises Diane to request access to the Hospital B upon starting her new role and she is reassured as she has experience using most of the systems at Hospital A.

"My transition from one place of employment to another has been seamless without any delays improving my overall experience"

An Roinn Sláinte
Department of Health

Digitally Enabled and Connected Care

Digitally Enabled and Connected Care

This principle, ‘Digitally Enabled and Connected Care’, outlines a strategic intent to provide healthcare professionals with the digitally enabled clinical tools they need to provide better and safer healthcare services in the future. Such tools will include access to digital health records for patients, access to data driven, digitally enabled capabilities such as advanced diagnostics, clinical decision support tools, AI capabilities, personalised medicine, and access to clinical trials. This will require the health system to better connect ICT systems and infrastructure to create a more modern and better ‘joined up’, digitally enabled health service. The core focus for this principle is on the systems required to support direct delivery of care.

This framework sets out a ‘North Star’ for digital whereby everyone who receives care and treatment in this country will have a digital health record. This is essential if we are to deliver commitments under principle 1, empowering patients by giving them access to their own digital health record as envisioned under the EU Digital Strategy https://digital-strategy.ec.europa.eu/en/policies/europes-digital-decade, and principle 2, digitally enabled workforce, by giving them access to the tools they need to do their job, specifically to joined up patient management systems, clinical information systems and digital health records.

Whilst recognising the need for short- and medium-term investment in critical clinical information systems, principle 3 outlines the basis upon which strategic investment in these systems should be approved. It underlines the importance of the standards needed to enable these systems to be connected together, which will make it possible to create a digital health record for everyone.

Furthermore, this principle provides national policy on the governance, approval, procurement and deployment of enterprise level electronic health record (EHR) systems. EHRs are costly and are likely to represent the single largest area for investment in digital health across the health system. Investment in EHRs must therefore be underpinned by a clear roadmap, agreed up-front interoperability and data standards, appropriate governance and robust business cases. Experience from other jurisdictions recommends that implementation of EHRs should be clinically led, operationally driven, and ICT enabled, with phased delivery in parallel with the creation of national shared care and summary care records.

Despite significant commitment and additional funding approved by Government in recent years, Ireland continues to be ranked poorly by comparison with other EU member states. This is primarily due to Ireland starting from such a low base. Recognising the fact we are a late starter, through this principle, we will seek out opportunities for Ireland to leap-frog other countries, to find newer and better ways to deliver digitally connected care, using the latest technology that industry has to offer, novel approaches and agile development techniques, and leveraging our indigenous digital health ecosystem.

Digitally Enabled and Connected Care

Ambitions

As someone who delivers patient care, I will have:
Digital Patient Record: access to an integrated healthcare record that contains the information needed to provide safe and effective care, regardless of whether that patient is being treated in an acute care facility or in the community.
Real-time access: high-quality information using digital records that enable me to do my job effectively and efficiently at the location where I work. Shared access by different healthcare professionals at the same time makes it possible for multi-disciplinary teams to review patient information together and more easily make evidence-based decisions.
Less reliance on paper records: no dependency on being able to locate the paper based 'patient chart' or concerns about different parts of the patients medical history being recorded on multiple charts in multiple hospitals. No need to recall paper charts from storage in preparation for outpatient clinics.
Medications information: digital prescription and dispensing data available in one place, regardless of where the patient is being cared for. Less reliance on the patient having to remember their medications upon admission to hospital or repeat this information over and over.
Visibility of previous episodes of care: visibility of all other parts of the health service where the patient has been treated before. Access to the data from those encounters or the means to obtain key information relevant to the patients care. Better quality data for patients being referred to hospital. Better information about patients being discharged from hospital to the community.
Access to data for clinical audit and research: enabled through access to high quality patient data that is recorded digitally, using standardised terms, data models, clinical classifications and coding schemes.
Consistent care models: supported through the implementation of regional and national enterprise EHR systems that are configured to support the implementation of standardised care pathways that ensure the delivery of repeatable and consistent, safe care and treatment for patients.
More choices to offer patients: better information about the services available to my patients through onward referrals and associated access times. The necessary digital tools and applications that support integrated models of care, such as telehealth and remote monitoring.
Privacy and security: reassurance that patient data will be processed and stored securely, with the highest respect for privacy. Individual and role-based access controls and robust audit logs of who has previously updated, accessed or reviewed the patient record.

Digitally Enabled and Connected Care

Why this is important

Timely access to patient data at the point of care is critical to the safe care and treatment of patients. The way to achieve this is to deploy joined up patient management and clinical information systems that enable healthcare professionals to capture patient data in digital format so that it can be accessed and updated by all care providers during each and every encounter. This is consistent with HSE policy to 'make every contact count'[21].

To build trust in these digitally enabled, connected care systems, patients and healthcare professionals need to be confident that patient data is stored safely and securely. The criminally motivated cyberattack on the health service in 2021, whilst devastating at the time, has led to a significant improvement in cyber resilience through increased monitoring capacity, better staff training and awareness, and improved response and containment capabilities.

Clinical data recorded in digital format must be accessible wherever and whenever it is needed, to support direct patient care, but only those who are authorised to access that data must be permitted to do so.

This requires healthcare professionals to have a unique digital identity and for the health service to have comprehensive audit systems that can record who has accessed what record and when. Patient access to their own digital health records will require similar capabilities.

We will deliver connected health and social care through a combination of the national patient app, the national shared care record platform and a targeted, stepwise investment programme in clinical information systems and enterprise EHR solutions. The national shared care record will enhance our ability to join data from existing systems and generate a digital patient record to clinicians and patients, within the constraints of what existing systems can provide. However, these forms of digital records are only as good as the data that can be derived from the source systems. For this reason, in parallel with the national shared care record, we must continue to invest in core clinical information systems and accelerate investment in the large enterprise electronic health record (EHR) systems, similar to those already deployed at St James Hospital, at our large maternity hospitals and procured for the new National Children's Hospital.

What good looks like

Health systems use a wide variety of digital systems to support the provision of care. In the Irish health system, there has been much criticism in the past that not all of these systems are 'joined up'. In the context of this principle, it is important to note that not all systems need to be 'joined up'. What good looks like is ensuring those systems that need to be joined up, are connected, so that the data that needs to flow between them can do so.

To enable data flow requires technical and semantic interoperability. Technical interoperability means that that the data can be transmitted. Semantic interoperability is the ability of computer systems to exchange data with unambiguous, shared meaning. This is needed to support the flow of usable health information about the patient, between systems, so that it is available at the point of care and is a key requirement within this principal. Achieving semantic interoperability between connected systems in health is a non-trivial task and continues to be a significant and ongoing challenge for all healthcare organisations, globally. Standards and technologies needed for semantic interoperability have matured in recent years, which gives Ireland an advantage to leverage best practice.

What good looks like in the context of this principle means the following:

- Selecting which systems need to be connected
- Understanding what data within those systems needs to be shared and for what purpose
- Establishing the level of interoperability that must be achieved
- Selecting the standards that are most appropriate for the recording, sharing, and processing of health data, such that the level of technical and semantic interoperability required to deliver digitally enabled and connected care is achieved
- Supporting safe care by delivering a comprehensive view of the patient's information to healthcare professionals, wherever and whenever it is needed

Digitally Enabled and Connected Care

- Ensuring patient data is processed safely and that the appropriate controls are in place to ensure only those who are permitted should have access. Digital audit trails will be required to provide this assurance
- Ensuring primary and secondary use of patient data is managed in accordance with patient wishes and applicable legislation
- Being able to provide patients with access to their own digital health record, which they can then share with those who care for them, including healthcare professionals

The ultimate ambition for modern health systems that provides digitally enabled and connected healthcare is to have digital health records in place for every individual who receives care. Ideally, there should be just one overarching electronic health record for each person.

It is acknowledged that Ireland is still behind many of its peers in relation the use of electronic health records. Investing in a single nationwide roll-out of an EHR system for both our acute hospitals and community services presents a significant challenge that requires capacity and capability to deliver such a large and complex programme.

In recent years, the Government has invested considerably in digital health, enabling the HSE to build resources and expertise to meet this challenge. Whilst there is still a need for further investment, the health service in Ireland is much better placed now to take on such an ambitious programme. Furthermore, the establishment of the health regions in 2024[2] with a mandate to provide an integrated care service for the population of each region, all point towards the need for a single, integrated healthcare record for every patient using services within that region. From a strategic perspective therefore, the question is only how best to achieve this.

Some important factors that need to be considered include costs versus benefits, risk appetite, capacity and expertise needed to deliver, competing priorities, change management and impacts on staff and services, to what extent existing operational and clinical practice and processes need to change – and indeed be aligned - at national or regional level.

Whilst we consider the optimal approach for investment in enterprise EHR systems, it is essential that we also recognise more immediate and competing demands from acute hospitals for important clinical information systems such as order communications systems, medication management systems, ED systems and PAS system upgrades, which cannot wait until the EHR programme is ready to deliver to every site in the country. Community based healthcare is still mostly paper based, and there is significant pressure to create healthcare records for these patients and for the healthcare professionals who care for them, to facilitate better co-ordination of care within the community, whilst reducing our over reliance on acute hospitals.

There is a natural tension between the desire to retain and deploy ‘best of breed’ systems that serve the needs of certain specialties very well, versus the option to deploy enterprise EHR systems that serve all specialties but perhaps not as well as a best of breed solution. However, this comes at the cost of delivering separate and unconnected systems, with limited interoperability and lack of ability to share data with a single electronic health record. As part of the research to inform this strategic framework, evidence suggests that most countries that have a ‘national EHR’ have delivered them by collating data from local, regional, and national systems, and presenting this data as a singular patient view, with pointers back to the actual data sources. Access to these patient records is provided to healthcare professionals involved in the direct provision of care to those patients. Increasingly, patients themselves are being provided with apps that enable them to access key information contained within their own patient record. Very often these ‘national EHR systems’ are read-only and can only be updated by writing back to the source systems. We are starting to see evidence that the legacy systems used to support this approach are now being replaced by enterprise EHR systems, mostly at regional or multi-regional level, within a national ruleset that ensures the national EHR record can be maintained and improved.

This is positive for Ireland because it means that we can build on the existing investments made in EHR and related clinical information systems to date, and take a positive, structured, and stepwise approach to delivering integrated healthcare records. It is also consistent with our policy direction and the procurement that is underway for the National Shared Care Record platform, allowing both patients and their health providers access to a shared digital health record. This will allow us to begin to meet both patient expectations in terms of being able to access their own health

information, and healthcare providers accessing their patient's health information whilst enabling Ireland to meet targets outlined in the EU's Digital Decade[22], and its obligations under the (forthcoming) European Health Data Space (EHDS) Regulation[11]. This approach is also reliant on high-quality robust data sources and having the required associated data and interoperability standards in place, to provide the data in a form that is compatible with the creation of a meaningful and reliable national electronic health record.

Based on the experience to date of deploying enterprise EHR systems in Ireland and health systems internationally, we are aware that these are a major undertaking, requiring significant investment of resources in terms of people and funding. Whilst enterprise EHR systems do offer considerable benefits, their implementation represents a significant challenge. This challenge is mitigated by providing strong service/operational and clinical leadership, technical expertise, capacity and capability of the project teams (provided by both the vendor, contactors, dedicated clinical staff, and the project teams that are assigned to design, configure and deploy these systems, and ensure optimisation post go live). The scale of these projects is such that they typically require external peer review, to provide oversight and ensure risks, costs and benefits are managed appropriately in line with investment guidance[23].

In the absence of a defined national approach to EHR implementation, multiple solutions have emerged in previous years through a series of individual procurements. Ultimately the approach of pursuing multiple solutions presents challenges to the vision for a seamless patient journey across the continuum of health and social care services. While point solutions may serve the individual needs of a service or a location, we now need to present a more coherent vision as we seek to transform the model of care across the wider health service and to ensure we have a single, longitudinal, patient record which is available to both patients and clinicians.

Therefore, there is now a clear need to consolidate the number of solutions deployed across the health service, not just to manage complexity, data, standardisation, and interoperability, but also to build a critical mass of core capability in terms of the expertise needed to deploy and support these complex systems into the future.

Taking all this into account, and procurements that are currently underway including building from the delivery of a national shared care record, this section sets out the future policy direction in relation to the national roll-out of electronic health records (EHRs). This also leverages the opportunities offered now through the establishment of the six health regions and their intended function, namely the provision of integrated health and social care services for all patients within their geographical area.

Working closely with all stakeholders, including the large acute hospitals, community care and new regional health area management, through collaboration the Department of Health, HSE, Health Information and Quality Authority (HIQA) , National Standards Authority of Ireland (NSAI) and other relevant standards and regulatory bodies will define critical national standards for data sharing and use to be adopted, interoperability and clinical terminology and establish a national procurement framework for future EHRs resulting in a shortlist of successful enterprise level EHR vendors. This aims to strike the appropriate balance between providing regions with some choice and ensuring competitive tension between vendors, whilst still managing complexity and making interoperability possible. Regions will draw down from this shortlist of successful vendors for their EHR deployment. There will be a number of specific conditions of sanction that regions and hospitals will need to sign up to, in order to access the framework, and associated resources required for implementation, and these are summarised as follows:

- The configuration of the selected EHR must accommodate both acute hospital and community requirements
- The configuration of the selected EHR will need to cater for the needs of all regions that share the same EHR
- Approval of a regional EHR deployment, subject to affordability, will be contingent on a single instance per region
- Where the same EHR vendor is selected by multiple regions, these will only be sanctioned on the basis of sharing a single configuration
- In addition to GDPR[24] and Data Protection Act 2018[62], the EHDS[11] and the Health Information Bill will provide the legal basis for the sharing of data across the health system

Digitally Enabled and Connected Care

- Under the Health Information Bill[6], there will be a duty to share health information for care and treatment between all health services providers. Information-sharing to the HSE for the performance of it's functions will also be enhanced. There will be further obligations as defined under the European Health Data Space Regulation[11]. Enterprise EHR systems will be key to meeting healthcare providers legal obligations under this directive, including proof of EHR system interoperability and EU login compliance, both of which must be demonstrated through a mandatory self-assessment. The HSE shall define the minimal dataset required to support the national shared care record, and the regions and relevant service providers shall ensure that their solution/EHR planning process is fully compliant with these datasets which will be in alignment with EHDS requirements.
- GDPR and privacy concerns will be addressed through digital identity and audit trails, so that it is clear who has accessed which records and for what purpose. As such, all those accessing EHR systems will require a digital identity (verifiable digital ID) to facilitate audit trails. Patient trust and confidence in these systems and all those who operate them, will depend on our ability to keep their data safe, to be able to prove who has accessed their records, and patients will rightfully demand this level of transparency.
- In the context of introducing digital health records at national and regional level, there is a need for a concerted effort on the robust identification of patients. Without this it will simply not be possible to ‘join up’ patient data from digital systems in different parts of the health service. The PPSN will be the primary identifier for this purpose.
- Sanction of EHRs will be contingent on standard operating procedures being in place to ensure that patients are always asked for their PPSN as part of their registration. Patients who do not have a PPSN will be accommodated through ‘other identifying particulars’, as provided for under the Health Identifiers Act (2014)[25] and subsequent amendments, which also provide the legal basis for the use of the PPSN. The role of the IHI will be to act as the medical record number within the EHR, and associated systems that share patient data and provide data to the National Shared Care Record.
- There will be a mandatory requirement to implement nationally agreed standards, for data, interoperability (e.g. HL7[26] and FHIR[27]), clinical terminology (e.g. SNOMED[28]) and related standards to facilitate sharing, use and reuse of data. The overall provision for these standards will be informed by the Health Information Bill and the EHDS. The HSE will be responsible for ensuring compliance with these legislative requirement and setting any additional required guidelines
- There will be a requirement for all hospital and community led services within the integrated health areas that form the health regions, and between the regions, to link with and share the data required to support a national electronic health record, in the form of a National Shared Care Record as outlined above.
- The role of the central team will be to co-ordinate the development of business cases, secure approvals, determine affordability, drive agreement on procurement requirements, manage the procurement process, work closely with the hospitals, community services and regions to agree resourcing and support levels, provide core configuration capabilities, establish data and interoperability standards, oversee deployment and optimisation of the EHR system, which will be owned by each region, but aligned to national standards and policy.
- Regions, whilst also playing a key role in driving these activities, will primarily drive clinical and stakeholder buy in, agreement on requirements, deployment, adoption, optimisation, and management of these system post go live, as part of ‘business as usual’ operations. The key principle here is that these are regional programmes to deliver regional capabilities and value, whilst delivering national electronic health records.
- Any interim, short or medium-term solutions, will be planned through the HSE centre, working closely with the Regions. This includes for example, ongoing considerations by the HSE in relation to the immediate need for community patient management systems such as interim ECC, ICCMS etc.
- The criteria for deployment of short or medium-term solutions that contain patient data is that they must be compatible with the National Shared Care Record and align with the objective of consolidation and alignment with Regional EHR plans. This will require careful planning and engagement to minimise duplication of effort, resources, and cost.

Digitally Enabled and Connected Care

A business case , aligned to investment guidance, will be developed, leveraging much of the work that has been done to date for other EHR programmes. This will set out the requirements for funding and resourcing of these programmes and will be used by the Department of Health and the HSE in their engagements with the Department of Public Expenditure NDP Delivery and Reform to advise Government and inform the annual service plan and the national development plan.

In summary, a structured, planned and resourced 'stepwise' approach to the delivery of electronic health records, building from and linked back to a national shared care record, is typical when compared to many other countries. It also facilitates a good balance between the need to make progress, whilst at the same time managing the risks and complexity associated with rolling out large and complex electronic health record systems. It should be noted that countries that are recognised as leaders in digital health have been working in this area consistently for over 20 years. Whilst Ireland has some considerable catching up to do, we have two advantages: We can learn from lessons in other countries, and we can leverage the latest technology and mature standards that were not in place for other countries.

Our policy for delivering electronic patient health records for all follows this stepwise approach by pursuing the following initiatives:

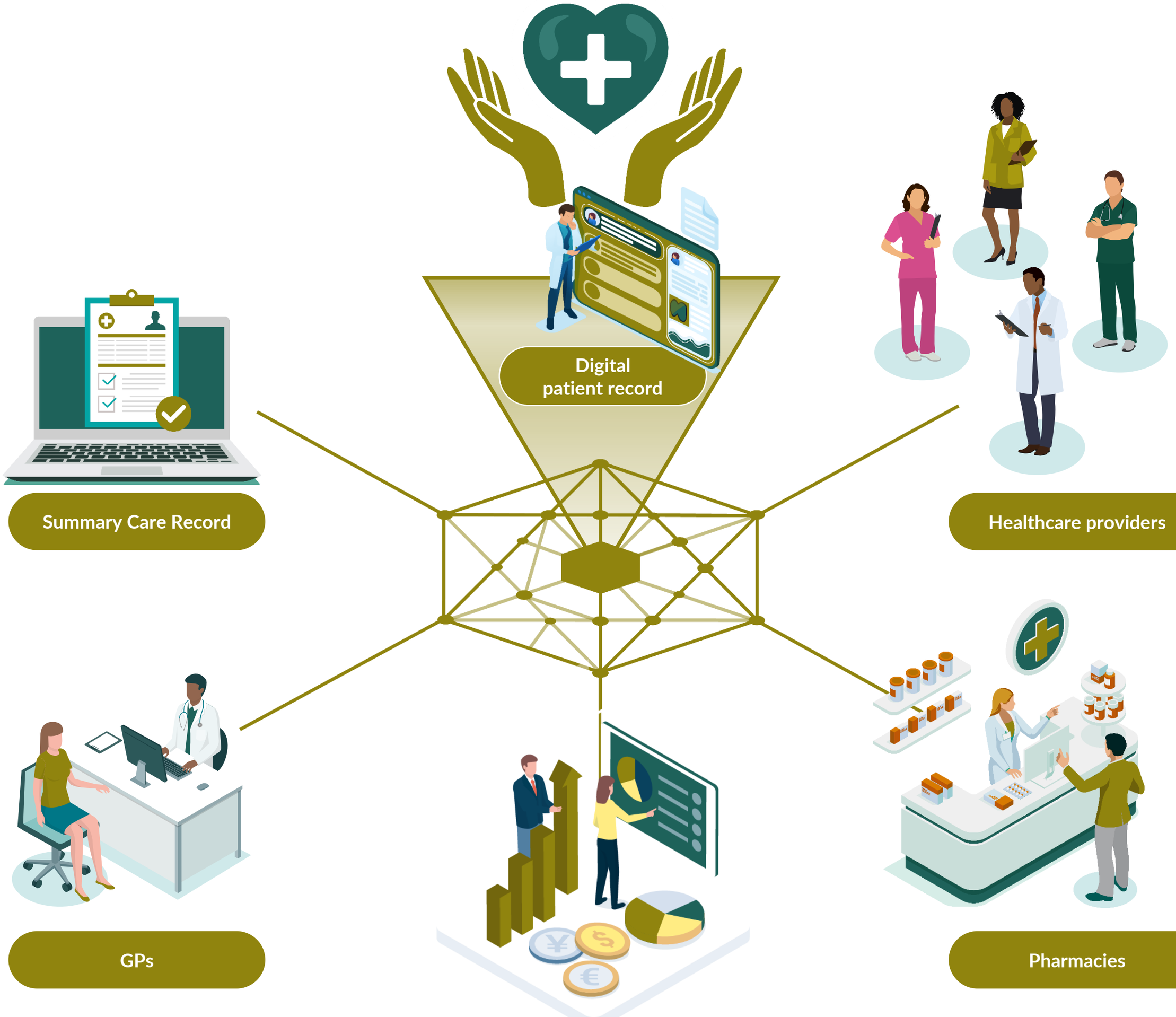
- A national patient app to provide patients with access to their own digital health record, the content, and functionality of which will grow over time
- A national Shared Care Record that combines information held within GP practice systems, community, and hospital systems to give an integrated view of patient health information
- Building on the successful deployment of EHR systems at St. James's Hospital, across our larger maternity hospitals, The National Rehabilitation Hospitals, the National Forensics Hospital, we continue with the ongoing deployment of an enterprise EHR system across the New National Children's Hospital
- Continue to plan the national deployment of EHR systems for palliative care services and Child and Adolescent Mental Health Services (CAMHS) and wider community services
- Plan for deployment of a consolidated number of enterprise EHR systems, delivered regionally, with single instances and agreements in place for data sharing within and between regions
- For regions that are not first in line to receive an enterprise EHR, delivery of clinical systems needed to deliver the core data required for a digital health record, subject to them being able to provide this data in accordance with requisite standards
- Delivery of a series of core projects needed to supplement the data provided by these enterprise and clinical systems, to include universal deployment of patient summaries, medical imaging studies and reports, laboratory reports, electronic referrals, electronic discharges, and electronic prescribing
- Delivery of key enablers such as digital identity for staff accessing Digital systems (such as EHRs, National Shared Care Record, Telehealth solutions, etc.) and associated audit tracking and consent management systems

Deployment of enterprise EHRs will complement other important digitally enabled systems for connected care. Notable examples include the ePharmacy programme, the national cancer information system, the national imaging system and others, all which require significant investment in technical infrastructure and other enablers as described under principle 6.

Digitally Enabled and Connected Care

Seamless Digitally Enabled and Connected Care

We will establish a seamless connection between our health and social care services, drawing information from different data sources from healthcare providers including GP's, hospitals, and pharmacies to provide seamless high quality integrated care.



"This will allow data to follow the patient wherever they go, supporting the workforce to access information at the right time in the right place for patients"

An Roinn Sláinte
Department of Health

Data Driven Services

Data Driven Services

This principle, Data Driven Services, recognises the value of the data we collect across the health service and the need for us to improve our ability to leverage that data to inform the way in which we manage our health service. The Government has allocated €23.5bn for health in 2024, and it is essential that we have a clear strategy that focuses on building enhanced data infrastructure and skills, to provide the information and insights needed to deliver the maximum benefit from this investment, and drive improvements in services, transformation, patient care, population health, and research including secondary use of data. Through this principle, we aim to improve the level of visibility that staff and management have on service activity and expenditure. This will enable services to make decisions based on better data and direct funding to where it can have the greatest impact. In principle three, we focused on the need to invest in connected clinical information systems that act as systems of record for patient data. Leveraging the value inherent within this data will also help in predictive modelling, planning capacity for the future, and directing care and resources around the needs of categories of patients.

Ambitions

As a decision maker, I will have:

- **High quality information:** access to the right information though a range of systems and dashboards to make the best evidence-based decisions.
- **Efficient patient flow:** a clearer understanding of how to manage and improve patient(s) interactions with services across care pathways as patient needs change over time.
- **Enhanced performance and responsiveness:** access to data and analytics capabilities to manage and improve performance of the delivery of health services when responding to short and long-term challenges at the local, regional, and national level.
- **Evidence for policy evaluation:** a more informed understanding of the impacts of ongoing health and social care policy (including Sláintecare reforms) on services in real time. I will be able to identify areas that require additional effort and attention based on clear evidence.
- **Improved resource planning:** access to services that can improve how to manage stock, facilities, and tooling needed for planning purposes and resource allocation across both the workforce and health and social care services.
- **Optimised corporate solutions**: ability to use data and business intelligence through a variety of corporate management systems to gain visibility on current and projected expenditure.
- **Population health planning:** enhanced visibility of granular population level information in a digital format to analyse, predict, and respond to the population's health and social care needs to aid the delivery of universal healthcare for all, be able to identify disease transmission pathways, thus taking actions to prevent diseases or conditions and be able to better predict health outcomes and increase the effectiveness of treatments.

Data Driven Services

Why this is important

By using data to derive insights, we can make informed decisions that improve patient outcomes, address health inequalities and address population health challenges. Data is a valuable resource to the health and social care services and is used by the Department of Health, HSE and other agencies to provide clear insights for evidence-based decisions in policy development, operation excellence, patient safety, workforce planning, health and social care expenditure analysis, enabling accountability, future planning, and population health management.

When workforce leaders, management, and staff are provided with access to real-time and accurate data about the delivery of clinical and operational services and have access to robust forecasts of future service demand / capacity, better decisions can be made to improve:

- Quality, efficiency, and the overall healthcare experience for patients and workforce
- Visibility and insights on the investment required to operate effectively
- Productivity across services
- Targeted delivery of services

By collecting the right data and compiling a solid evidence base on the key issues affecting population health and disease, services can gain valuable insights on increasing demands. This, in turn, can enable the workforce to provide better quality of care to patients.

The value of data and its increasing importance is also understood at a European Union level, with the objective of the European Data Strategy (February 2020)[17]to make the EU the global leader in the field of digital and data. The EHDS will be the first of 14 planned EU sectoral data spaces that will leverage the value of data, enhance research, benefit citizens and bring about economic benefit.

The EHDS will mean that the relevant health data will safely and securely follow the patient throughout the EU ensuring continuity of care via the MyHealth@EU service. The applicable health data will be used for secondary use via the establishment of the Healthdata@EU platform to provide support for health research, innovation, policy-making, regulatory activities and personalised medicine.

What good looks like

There has been much progress made in modernising our data capabilities and architecture in recent years with the continuing development of the Integrated Information Service in the HSE and with the increasing coverage of the PPSN and Individual Health Identifier (IHI) across health datasets. This capability will be expanded and enhanced with continued investment in our data infrastructure to enable our health sector to become a data-driven, evidence-based service. This will, in time, result in a fundamental change in terms of how we collect data and how we choose to invest in future clinical and operational systems. Data collection will be used as part of the capacity planning process, facilitated through the use of operational systems so that capturing structured data becomes part of service provision, that will then be used to inform service planning, rather than being a separate independent (duplicate) process.

This can be achieved by focusing on the potential of utilising data across three main areas:

1. **Data for service improvement and transformation:** We will continue to increase investment in data systems and data sources that health and social care services need to plan budgets and allocate resources effectively and manage capacity, demands, and cost pressures across the system. Through increased visibility of demand and capacity, services can further ensure that the clinical needs of patients and business needs of the organisation are aligned, delivering cost-effective investment for government.

   By collecting more data in the right way across the health service, we can develop stronger data analysis tools and capabilities that allow us to understand more about how well services are performing and discover new solutions to

Data Driven Services

transform services and meet future health and care needs. For example, greater use of data will allow us to better predict and match resources to address the many increasing pressures on our services. In the future, tools based on well-structured data will increasingly support the workforce in their everyday work. This will ensure that patients will receive high quality services based on making use of integrated information from a wide range of data sources.

By investing in new digital systems and our data analytics workforce, we can increase the quality and timeliness of the data collected in a range of areas, including clinical, financial, and resource data across both acute, community, and corporate settings. To ensure the workforce is leveraging data to effectively inform decision making, we must continue to build and invest in a strong data analytics capability across health services and embed robust, effective data management strategies in line with the Public Service Data Strategy[29], Harnessing Digital – The Digital Ireland Framework[5], Connecting Government 2030[8], and Civil Service Renewal 2030[7]. This will, in turn, allow us to capitalise on the power of data to drive service transformation so we are ready to deploy new advanced technologies of the future such as Artificial intelligence (AI).

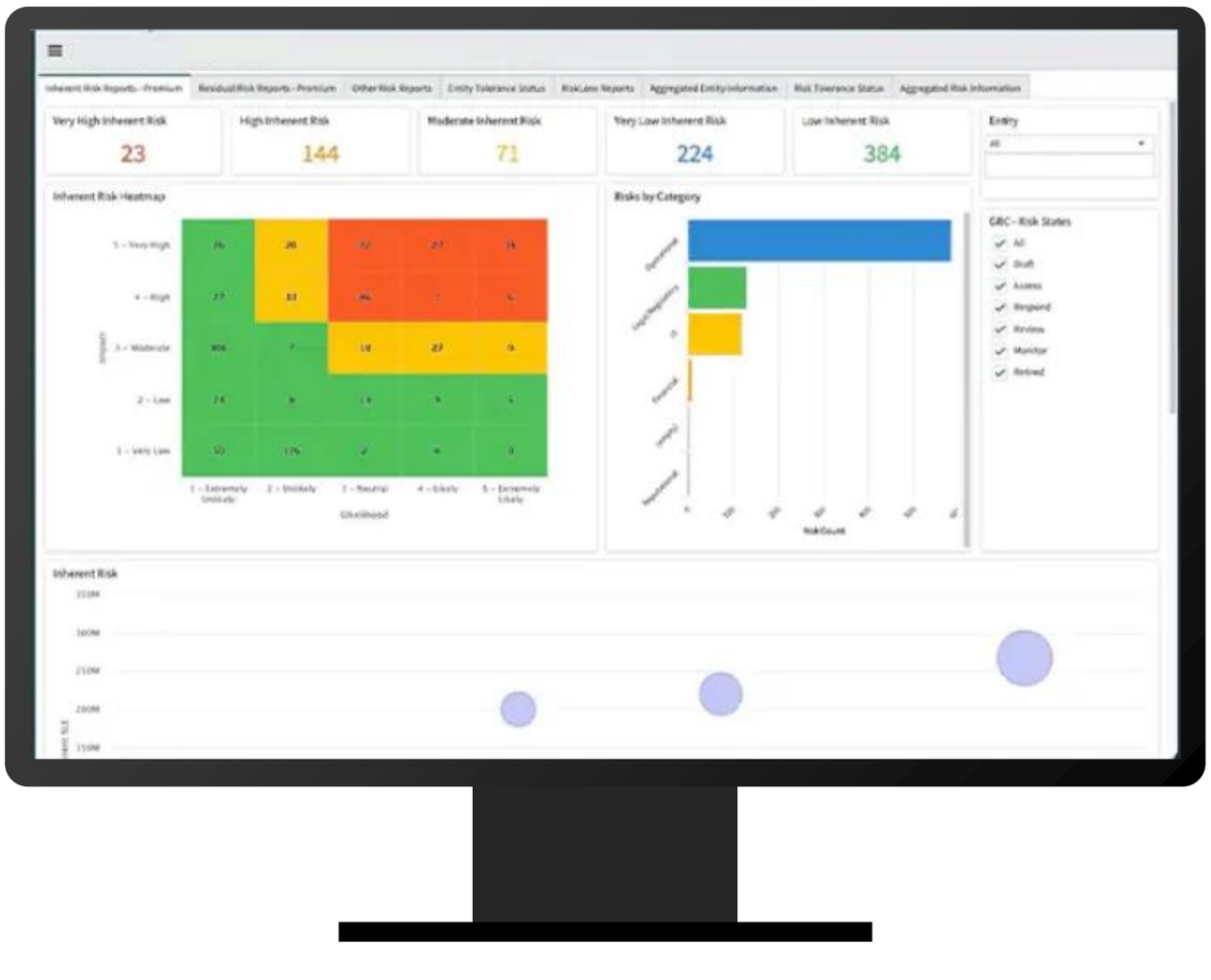
2. **Data for population health:** The seamless and secure exchange of health data between patients, the workforce, health care providers, health systems managers, and health data services will allow for use in health system-wide intelligence platforms to analyse longitudinal datasets (including primary, secondary, mental health, social care and community data) to understand different population cohort needs. By linking up data across the system and aggregating up to population level, we can use data to understand more about different peoples' needs across the population and design services and target interventions specific to different groups. This will allow services to plan more effective population health strategies for the benefit of our citizens, ultimately improving outcomes for all.

3. **Data for research including secondary use:** Health data collected within the health service will be made more readily available to the research community through a more secure and improved data-access model, in line with the objectives of the European Health Data Space (EHDS) Regulation[11]. By increasing the quality and amount of data available to our researchers, we can unlock new insights into complex health policy issues and translate this into evidence-informed policy. Increasing opportunities for secondary use of health data, via a trusted secure environment for clinicians and researchers in Ireland, is vitally important to improve the quality of health care and research effectiveness in health services.

   In line with the Government's Open Data strategy[30], we will also make more health data sets available to the public, in anonymised form and where appropriate, to encourage and drive the uptake and use of Open Data and, in doing so, add value to the economy by increasing transparency, stimulating new business applications, building trust in health services, and improving the lives of citizens by delivering better services.

Data Driven Services

The workforce is provided with robust tools and analytics that support decision-making, planning and evaluation of patient care.



1

Capturing Data

Health centres and medical services input patient data to their digital applications daily on areas such as: patient care, referrals, discharges, investigations, medications, and assessments

2

Dashboard

Clinicians and managers can view the aggregated data on their application's dashboard. This allows them to track patient flow, waiting lists, and fluctuations in demand or availability

3

Decision-Making

Dashboards can be tailored to provide a view of the most critical data for management and corporate operations. Based on a daily feed of data, advanced analytics can be efficiently employed to predict upcoming demand, allocate resources, and procure equipment or medication

4

Audit

The captured data provides an audit trail for the health service in tracking changes to patient care, changes in demand, and times from referral to treatment. This provides a comprehensive dataset across the health service which can be queried and evaluated to inform efficiency changes and enhancements to patient care

> *"I, as a decision maker, have access to the right information at the right time and right place, enabling me to make evidence-based data driven decisions"*

An Roinn Sláinte
Department of Health

Digital Health Ecosystem and Innovation

Digital Health Ecosystem and Innovation

‘Digital Health Ecosystem and Innovation’ will foster an environment that encourages innovation through ongoing collaboration between the health service, industry and academia, tailored procurement pathways that support smaller, indigenous companies, increased opportunities for international engagement, and research excellence. Through continuously innovating and refining digital solutions, we can deliver meaningful value that ensures continued success for both patients and the workforce. Embedding this approach will allow services to capitalise on new and emerging technologies, such as artificial intelligence, robotic process automation, and precision medicine, to drive patient care and service advancements, and enable meaningful workforce contributions to new innovative digital services. The work carried out by the digital transformation team at the HSE and the associated transformation strategy, provides clear signposting on how best to leverage innovation and the digital health ecosystem in Ireland.

Ambitions

As someone working in the digital health innovation eco-system, I work in an environment that fosters:

Digital innovation culture: an ecosystem that encourages change, and allows the workforce the time, and space to deliver innovation at scale to improve both patient and workforce experience.

Creative mindset: creativity, controlled risk-taking, and drives progress through an openness to new ideas, challenging set norms and beliefs.

Clear communication channels: two-way communication channels between services and management to promote ease of use and greater visibility on digital change and new opportunities

Enhanced digital services: creation of necessary digital tools and resources to improve end-to-end patient and operational services available to all, enabling better experiences and outcomes for the patients and the workforce.

As an innovator creating or deploying new technology, I will have a clear understanding of how to work with the health and social care system and have:

Standardised innovation pathways: transparent and standardised pathways available to me to apply and receive support, funding, and resources for innovation projects that may improve services.

Research and quality improvement excellence: mechanisms available to apply for access to safeguarded, pseudonymised health data, subject to strict governance rules, in order to improve the health and well-being of patients and the quality of services we provide.

Opportunities to work with the health service: through procurement processes that are suitable for engagement with smaller, innovative companies and facilities like living labs that provide a safe and controlled environment for the health service to assess the value of new and agile solutions, whilst enabling companies to develop their solution for mass adoption.

Digital Health Ecosystem and Innovation

Why this is important

The WHO defines health innovation as a new or improved solution with the transformative ability to accelerate positive health impact. This definition includes new ideas, practices or objects whose application leads to added value, such as better health and care outcomes or savings[31].

Patients can benefit directly from new and innovative ways of addressing old problems. The nature of the health service and the safety critical nature of services provided, means that very often the service will only engage large, well-established systems providers. This mitigates against the opportunities offered through innovation and agile ways of developing solutions. There were many examples of where innovative solutions helped solve real issues for the health service during the pandemic and it is important that we do not lose that momentum.

Government recognises the value of innovation to the health system, economy, and wider society and strives to put research and innovation at the heart of addressing Ireland's social, economic, and environmental challenges, maximising its impact on public policymaking and implementation, and nurturing and attracting talent across the health service. Investing in innovation across government, industry and society and embracing creativity can have a transformative impact on services by allowing the workforce access to modern cutting-edge technology and therapies that allow us to address our most pressing challenges in healthcare.

Focusing on a culture that is proactive towards innovation can allow services take advantage of the opportunities presented by the availability of new innovative digital health technologies, which will ultimately lead to:

- Greater digital adoption rates
- Better cost control in service delivery
- Increases in productivity across services
- Improved return on investment
- Sustained attractiveness for investment

What good looks like

To maximise the impact of research and innovation on many national policy priorities in health, there needs to be a focus on:

Stay Left, Shift Left: We will continue to develop health innovation pathways supported by new digital technologies, in line with the objectives of the "Stay Left, Shift Left" strategy[32], to accelerate the reorientation of service delivery towards general practice and community-based services. "Stay Left" is about keeping people well, or if you happen to have a chronic or long-term condition, to manage this closer to home. "Shift Left" is about moving patients as quickly as possible from an acute to a community or home-based setting. Progressing solutions that align with "Stay Left, Shift Left" will lead to both incremental and radical digital innovations that complement each other and help produce multiplicative rather than additive results. In time, this will allow us to leapfrog from a health system that is mostly paper based, requiring face-to-face presence and is acute hospital centred, to one which is digital, community or home-based, and most importantly is patient centred.

Agile development: As we increase the provision of digital services across healthcare, we will encourage the uptake of agile delivery methods in health innovation to build high quality digital health services. The use of agile development was used extensively by the health service in response to the pandemic.

An agile methodology is a way to manage a project by breaking it up into several phases or 'sprints'. It involves constant collaboration with stakeholders and continuous improvement at every stage. Once the work begins, teams' cycle through each 'sprint', which is a process of planning, executing, and evaluating. Continuous collaboration is vital, both with team

members and project stakeholders. The goal is to deliver customer value early, consistently, and adapt to changing requirements iteratively.

Promoting this approach across the digital health innovation ecosystem will empower innovators to build quickly, test what they've built and iterate their work based on regular feedback and other useful data. The launch of the Patient App in 2024 offers a unique opportunity for innovators to utilise this new digital health architecture to design, develop, test and deploy new solutions in real time directly to patients. By developing new services through the Patient App that are aligned with an agile approach, we can produce new people-centred digital services and innovations that can have a meaningful impact on patient's health and wellbeing.

Ongoing collaboration across the Digital Innovation ecosystem: The Digital Health Innovation Ecosystem will encourage collaboration across health and social care services by building appropriate open innovation networks and fostering relationships externally to incentivise a culture of innovation and digital service development. By streamlining collaboration across the digital health innovation ecosystem, we can ensure that innovators in the health service are actively informed on important new developments in health and digital services, innovation, and new ways of working. This will allow people to share learnings on best practice, avail of training, and take on new upskilling opportunities. All these initiatives will contribute to the building of a culture that is supportive and receptive to nurturing innovation.

Building on good practice and current collaboration in the system, innovators will have greater access to bodies that can support the adoption and scaling of digital health and social care innovation such as the Health Innovation Hub Ireland (HIHI)[33] which is supported jointly by the Department of Health and the Department of Enterprise, Trade and Employment. HIHI plays a significant role in the development and support to indigenous and innovative start-ups and SMEs in the Irish healthcare sector.

Digital technologies are exponential technologies and create the opportunity to deliver significant improvements in the delivery of health care. There has been good work in recent years on the co-design and testing of new digital solutions with health service managers, clinicians and patients in a network of Digital Living labs which have demonstrated or delivered significant benefits. By investing in the right innovation capabilities and aligned innovation entities (HIHI, Spark Innovation Programme[34], CTTO HSE Innovation function and Commercial innovation bodies), we can streamline structures within the Digital Health Innovation ecosystem, increase opportunities for sharing, spreading, socialising new ideas and accelerate rapid development and implementation of worthwhile digital innovations. The Department of Health and the HSE will continue to support open health innovation structures that allow for scoping, prioritising, piloting and scaling of innovation in digital health products, services and processes. The Sláintecare Innovation Fund[35] is well positioned to support initiatives of this nature.

There are also many opportunities for innovators to participate in cross border and international groups such as the Co-operation and Working Together (CAWT)[36] and the Irish Scottish Health Forum.

We will continue to champion innovation and secure collaboration, as required, across all of government, industry, and society to improve overall health service efficiency, effectiveness, and experience.

Supporting educational opportunities in digital health: The Department of Health and HSE will continue to embrace and support opportunities for those in the Digital Health innovation ecosystem within higher and further education. We will continue to invest in people and build research capacity in digital health through the continued delivery of numerous educational programmes. These include, but are not limited to, certificates, diplomas, and post-graduate Digital Health awards currently available such as Digital Health Transformation MSc (University of Limerick)[37], Health Informatics MSc (University of Limerick)[38], Graduate Diploma Healthcare Informatics (University College Dublin)[39], and the Certificate in Practices in Health Informatics (Atlantic Technological University Sligo)[40]. These programmes are developing a new generation of digital health leaders who can drive digital change and transformation of the health and social care system.

Digital Health Ecosystem and Innovation

Tailoring procurement processes: The Department of Health will work with other government departments to ensure there is a strategic approach to procurement frameworks available to innovators and that models for scalable innovation are in place to enable agile and effective digital health technology deployment across health services.

Innovative care models will be promoted to stimulate increased digital health adoption, aided by the Sláintecare Integration Innovation Fund[35], supporting proof of concepts and potential scaling through the annual health systems budgetary process.

A robust governance framework for innovation will help coordinate the necessary resources within the Digital Health ecosystem including funding, human capital and infrastructure to provide comprehensive guidance to professionals working in this space. These structures will be backed up by consistent standardised procedures for evaluating, selecting, and scaling innovative digital solutions to ensure the innovative ideas are utilised to their full potential.

Promoting research excellence in healthcare: Health services will deliver on the commitments in "Impact 2030: Ireland's Research and Innovation Strategy"[41] to maximise the impact of evidenced-informed research on public policymaking and implementation. A targeted programme of Healthcare Research initiatives in the HSE will create a research-friendly environment through actively connecting and supporting the research community.

We will strengthen collaboration with universities, academic health networks, and health innovators across the health system who play a crucial role in supporting innovation. Stronger partnerships in innovation will bring together the right expertise, resources, and diverse perspectives from across the health and innovation ecosystem to drive advancements in research, health care delivery, and technology adoption.

Utilising technologies of the future: In the healthcare space, Artificial intelligence (AI)[42] and automation, underpinned by good health data, can reduce administrative burden on people by reducing errors and freeing up time for direct patient care. These advancements can also optimise resource utilisation, enhance workflows, and foster a patient-centric healthcare environment. Other technologies such as Precision Medicine Support can improve healthcare services, allowing for more targeted treatments and better patient outcomes.

1. **Artificial intelligence (AI)**

   Ethical use of AI technologies, based off strong data and digital infrastructure, has the potential to revolutionise how healthcare is provided in the future. AI can help analyse vast amounts of data in real-time, devise new digital solutions that can improve decision-making, support diagnosis using high quality images and scans, assist with patient triage, and support development of care treatment plans. This will allow us to automate low value, repetitive, and labour-intensive tasks, enabling the workforce to focus on patient care and a shift towards more preventive and personalised health and care. Additionally, AI can be deployed to support clinical decision making for diagnostic precision and powering medical devices for improved treatment. In this context, the role of AI is to support the healthcare professional who remains the is the final arbitrator in decisions directly related to patient care and treatment.

   AI technology will be developed in healthcare in line with existing and future Government and EU policy and guidance - including 'AI – Here for Good: National Artificial Intelligence Strategy for Ireland, 2021[8]', 'The AI Act' [43] recently agreed at EU level, and 'The Medical Devices Regulation (MDR), 2021' [44], National guidance on the use of AI in the Public Service[45] approved by Government and international AI ethics and governance guidance[46] published by the WHO.

   It is imperative that the risks with this new technology are acknowledged and that developers of new AI technology align with existing regulations and the available guidance on the use of AI and automation in health and social care. This is necessary to ensure AI based tools, products, and services, are used securely, are clinically safe, and are applied in a manner that is fair and transparent.

Digital Health Ecosystem and Innovation

It is recognised that skillsets in data and AI in the health service need to be developed and retained to enable the health workforce to leverage the benefits and understand the risks of these innovative technologies. The HSE's Talent Identification and Development initiative will support the building and training up of a technically proficient workforce in AI to allow us to realise potential gains offered by this technology.

2. **Automation in healthcare (Robotic Process Automation)**
   Robotic Process Automation (RPA)[47] is a technology that allows a computer programme (or robot) to replicate otherwise manual processes in an automated, repeatable, and reliable manner. Robots can be developed to mimic repetitive, mundane, and labour-intensive work, freeing up the workforce to focus on higher value activities such as problem solving, exception handling, troubleshooting, and customer facing activities. The HSE already use robotic process automation (RPA) to automate a number of routine, repetitive, and labour-intensive tasks. During the pandemic, machine learning was used to analyse the nature of queries from people contacting the health service and those insights were used to design the online portals for Digital COVID Certificates. The centre of excellence in RPA established within the HSE will continue to build a pipeline of projects that use RPA methods into the future to free up resources in the health service and make services work more effectively.

3. **Precision medicine support**
   We will continue to invest in Precision Medicine Support which shifts from a disease-oriented 'one size fits all' approach in healthcare, to a more personalised, tailored, predictive, preventative, data-driven, and cost-effective approach.

This will be achieved by implementing the National Genetics and Genomics Strategy[48], which was developed by the HSE in collaboration with the Department of Health, which provides a five-year vision for Ireland's development of a national genetics and genomics service. We will also continue to build our genomic capacity to meet the ambitions laid out by Europe's 1+ Million Genomes Initiative (1+MG)[49].

Digital Health Ecosystem and Innovation

An improved innovation and service improvement mindset will be encouraged and nurtured within health and social care services to improve patient care and enhance ways of working.

Mary Deegan, from North Donegal, diagnosed with Chronic Obstructive Pulmonary Disease (COPD).

1

Mary is 68 years old who has been admitted six times this year with repeated severe chest infections related to her COPD. While at her Respiratory clinic appointment, a discussion with the team reveals Mary is eligible for virtual ward care. Mary agrees to this care plan. Mary's consent is documented in her digital patient record.

2

Mary meets with the Respiratory Advanced Nurse Practitioner (Respiratory ANP) to discuss the upcoming care plan in further detail. Mary is informed that she will be monitored using continuous vital monitoring technology and artificial intelligence from the comforts of her home.

3

The Respiratory ANP receives an alert through the digital patient record application about Mary's vitals, indicating that Mary's breathing rate has increased from her usual rate over the last 24 hours. The Respiratory ANP reviews Mary using the telehealth platform connected to the digital patient record application.

4

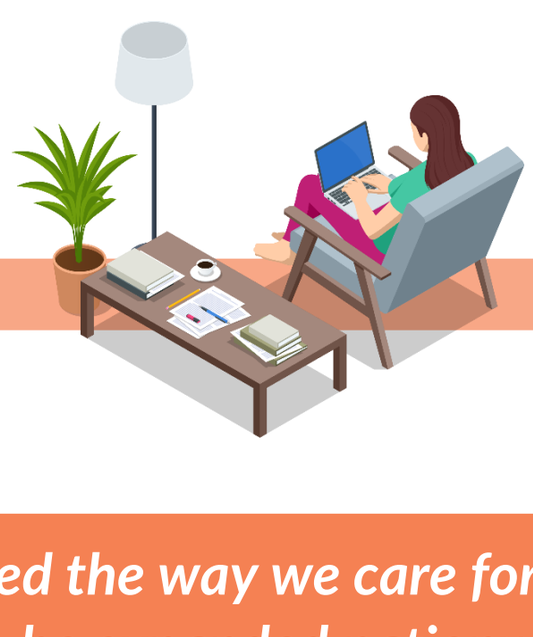
Mary states that she is not feeling herself today and explains her symptoms. The Respiratory ANP utilises the digital patient record application to organise a mobile X-Ray unit and radiographer to attend Mary's home and take a chest X-Ray. The Respiratory ANP proceeds to contact Mary's General Practitioner (GP) highlighting the situation and requesting a review of the X-Ray.

5

Mary's GP prescribes rescue antibiotics and steroids for Mary which allows her to remain at home. Mary continues to be monitored and has a daily review with the Respiratory ANP. Mary completes her course of antibiotics and steroids and recovers well from the comforts of her own home.

6

The Respiratory ANP utilises the digital patient record application to organise follow-up appointments with Mary's General Practitioner and the Respiratory team to ensure Mary requires no further treatments or change to her current treatment plan for her COPD.



"Virtual care wards have changed the way we care for patients and have the potential to be expanded nationwide"

Digital Health Ecosystem and Innovation

Our health service has a workforce capable of driving change to improve patient's health outcomes and experience, creating impact without clear pathways.

Joe Mulvaney, from South Dublin, diagnosed with Parkinson's disease.

1

Joe is 84 years old, residing in a nursing care home in Dublin. Joe has a diagnosis of Parkinson's disease and experiences recurrent falls with regular attendances to the Emergency Department at Hospital A. While out for his daily walk, Joe falls in the corridor.

2

The nurse looking after Joe immediately contacts his General Practitioner (GP) for a review and advice. The GP reviews Joe and determines a hip X-ray is required. The GP recalls a new mobile X-ray service for nursing home residents experiencing a fall opened recently.

3

As Joe's GP is providing information for the X-ray order, an Artificial Intelligence (AI) clinical decision support tool screens the information entered and recommends a mobile unit hip X-ray is ordered.

The GP reviews the recommendation and is satisfied that Joe can remain comfortable at the nursing home and undergo testing. The GP submits the hip X-ray order with St. Vincent's Hospital, specifying for the mobile X-ray unit and Radiographer to attend the nursing home for Joe.

4

The AI clinical decision support tool screens the X-ray request and flags that an urgent test was ordered requiring review by the Radiologist. As a result, the Radiologist reviews this request quickly and approves it. The order is confirmed on the National Integrated Medical Imaging System.

5

The mobile X-ray unit and Radiographer arrive at the nursing home and complete Joe's hip X-ray. The image is uploaded to the National Integrated Medical Imaging System for review. This is reviewed by the Radiologist who determines there is no fracture which warrants hospital attendance.

6

Joe's GP is notified of the available imaging report and reviews the hip X-ray report demonstrating there is no fracture. Joe is informed of this result and requires no treatment. Joe is relieved that he does not need to attend the Emergency Department on this occasion.

"Healthcare has been brought to me, allowing me to be relaxed staying in a familiar setting"

An Roinn Sláinte
Department of Health

Secure Foundations and Digital Enablers

Secure Foundations and Digital Enablers

The successful delivery of this strategic framework and associated implementation roadmap requires robust technical infrastructure and key enablers, such as legislation and standards to be in place as part of a wider programme of investment. Failure to deliver these key enablers will negatively impact the delivery and intent of all other principles contained within this framework.

Ambitions

As someone who delivers or who uses healthcare services , I will see the following critical capabilities in place:

Legislation and regulations: a robust legislative basis for the creation and delivery of digital health records, such as the national shared care record and regional enterprise EHRs, the legal basis and obligation for health service providers to share the data needed to build these records, as provided for under the forthcoming Health Information Bill[6] and European Health Data Space Regulation[11].

Secure and resilient infrastructure: to ensure patients' health information is kept secure and protected from cyberattacks.

Digital identities and audit logging: full traceability of who has accessed digital health records, when, where, and why.

Interoperability: standards implemented to ensure data can be captured in a structured way and shared consistently to enable the creation of digital health records. Interoperability capable of enabling connected, seamless exchange of secure health information for the workforce to deliver better patient care and improved patient outcomes.

Data: a data strategy outlining how data should be connected and used across services taking account of privacy, integrity, and confidentiality of patients to improve patient care, service and future planning, research development, and innovation.

Robust infrastructure: that meets the needs of healthcare facilities, healthcare professionals, support staff and the public. A clear strategy in relation to the adoption of cloud hosting, that strikes the correct balance between scalability, cost, and security. Simplified access to systems by staff through single sign-on and related technologies. Access to digital tools and resources to promote collaboration across our health service, remove organisational silos, improve efficiency and streamline the provision of services and patient care.

An environment that welcomes change: a workplace and culture that is open to reform and welcomes change that improves how we deliver services to patients and citizens through transformation and digitisation of services.

Secure Foundations and Digital Enablers

Why this is important

Digital Health offers the potential to transform how we deliver services for the better. Improvements are needed to join-up new and existing systems so that we can better manage the health service and provide enhanced care for patients. An approach whereby data, processes, and people are aligned and connected is the foundation for a well-functioning health and social care service. However, we can only unlock this potential if we have the right building blocks in place.

Everyone interacts with the health services at some point in their life. This means that the current health information landscape consists of both paper and electronic records often held in disparate systems across multiple organisations. Digital Technology is changing the way healthcare information is collected, stored, used and shared. This provides enormous opportunities to the way we organise and deliver healthcare that is becoming increasingly connected but also increasingly complex. It is important to break down organisational silos that hold data, and build foundations that provide a unified architecture, open standards and better interoperability. This will enable more efficient collection, connection, use and sharing of health information, enabling data to flow seamlessly across the system

It is critical that data remains secure and strictly governed so we can deliver safe care while also protecting patient privacy. We must continue to align with legislation on health information including data governance and meet or exceed all data privacy and security requirements.

Secure foundations go beyond just infrastructure and data. Critical success factors that are outlined in this framework, like building a strong culture, driving transformational changes, and attracting talent are also fundamental to achieving the ambitions laid out in this Framework to help drive long-term success.

What good looks like

The appropriate infrastructure, solutions and tools for staff to do their jobs effectively and to provide high quality and safe care.

There is sustained investment in core ICT infrastructure to enhance patient and workforce experience and provide the highest quality of patient care. Digital technology and solutions will be functional and fit for purpose and as such, patients and staff will have the opportunity to contribute to their design, development, and deployment. Through the delivery of a programme that includes foundational infrastructure, architecture, cyber, digital identity, interoperability, standards, change management, and staff initiatives, the workforce will be provided with the correct hardware and software and access to training and support.

Legislation is in place to facilitate the creation and maintenance of national, regional, and local digital health records. Obligations of healthcare providers in the public, voluntary, and private sector in relation to the sharing and use of patient data for primary and secondary purpose are clear under legislation as a result of the Health Information Bill[6] and the European Health Data Space regulation[11].

There is continued investment in the ICT cyber programme to ensure data is safe and there is strong cybersecurity and resilience built into all IT infrastructure, processes, and practices. This will enable us to safely extend the digital footprint, digitise services and health records with the assurance that we are also protecting patient data.

There is a robust digital identity programme in place to ensure all staff have their own unique digital identity to facilitate audit logs when accessing digital health records. Registered users across health and social care services will have single sign-on and secure access to applications through the HSE's Healthcare Worker Identity & Access Management initiative. Patients will be able to identify themselves using their PPSN. Patients without a PPSN will be able to identify themselves using any of the 'other identifying particulars' provided for under the Health Identifiers Act[25]. The IHI will continue to be used as a way of uniquely identifying digital health records and associated data.

There is an increased focus on integration, interoperability, and data engineering across services that will ensure health information is collected, used, and shared as part of the routine care given to patients. Data will be captured in a structured form using agreed national definitions and using health information standards.

Secure Foundations and Digital Enablers

These standards must be uniformly adopted across the health and social care service and used consistently to ensure the data can be safely shared, analysed, and used without change in meaning.

Strong governance and infrastructure is established at a national level to strengthen how standards are developed and adopted. A new national governance committee is in place to set the strategic direction and lead on the development of a national roadmap for HI Standards. All significant work completed or underway by the key players involved in standards (HSE, HIQA, and NSAI and at EU level) will be leveraged.

A review of all appropriate standards is required to identify the appropriate standards for specific use-cases, which will facilitate a standards framework consisting of a unified set of internationally-approved interoperability standards, such as HL7[26], FHIR[27], and openEHR[50], for use across the health and social care service. We will accelerate the adoption and endorse the use of more modern standards — HL7 FHIR[27] for data exchange across various healthcare systems, apps, and platforms. We will continue to endorse SNOMED CT[28] as our principal standard for clinical terminologies, alongside the ICD classification systems[51] for disease coding. The objective will be to capture data once, using SNOMED[28], and to create other coding sets as needed, through suitable mappings. We will continue to adhere to best practice design principles for developing Health Information Standards including the adoption and adaption of International and European standards where relevant.

Consistent implementation of standards is dependent on the publication of implementation guidance notes, alongside publication of the standards themselves. Strategic projects and programmes recognise this, develop guidance, and provide support for implementation.

We will develop a Data for Care Strategy to 2030 with the aim to improve people's lives through the use of data and will put public trust and confidence in the safe use and access to health and social care data. Good quality data collection, use, and data sharing will be enhanced.

The HSE Strategic Implementation Roadmap will provide detail on what is required to deliver the digital enablers described under this principle.

An Roinn Sláinte
Department of Health

Critical Success Factors

Critical Success Factors

We have identified six critical success factors that are essential to influence successful outcomes of this digital health strategic framework. These are based on our own experience in Ireland and evidence from successful digital health transformation programmes in other countries. These factors align closely with the recommendations from HIQA in their publication 'The need to reform the health information system' (2021)[52] and are as follows:

- Governance and Leadership
- Stakeholder Engagement and Change Management
- Funding
- Standards and Interoperability
- Robust Infrastructure
- Legislation and the Health Information Bill

Governance and Leadership

Governance

Governance is concerned with the structures, policies, and processes to manage organisations efficiently and effectively. Governance for the delivery of the framework and associated implementation roadmap, is required to make the specific roles and responsibilities of each stakeholder explicit, to ensure that legislation, policies, procedures, and standards are consistently applied right across the digital health ecosystem and to ensure appropriate levels of oversight and controls are in place for such a significant undertaking. Governance also provides a mechanism to manage risk and promote informed decision making. Through the governance structures that are established, there will be the opportunity to revisit the framework on an annual basis to confirm we are still on track and to make course corrections as required.

Delivery of Digital Health will be guided by our six strategic principles and monitored through rolling multi-year action plans that aligns with the National Development Plan[53] (NDP) and annual HSE National Service Plans[54] (NSP). Implementation of these plans will lead to increasing digitisation of health and social care services at national, regional, and local levels.

Proposed Governance Model

Governance of digital health in Ireland needs to be well-structured with appropriate boards, groups, and committees established. A national Digital Health Strategic Board, co-chaired by the Department of Health (DOH) and the Health Service Executive (HSE), will be convened to oversee implementation of the framework and report on progress to the Minister for Health. Board membership may also comprise of senior official inter-agency government organisations. The Board will provide leadership, direction, oversight, support, and guidance to ensure a coordinated, integrated, effective approach to digital health across the healthcare system.

The role of the Board will be:

- To ensure an integrated and co-ordinated approach and planning framework is developed for all prioritised digital health programmes of work with appropriate timelines, deliverables and milestones and assignment of appropriate responsibility/expertise to lead the delivery of the programme
- To receive formal progress updates on digital health programmes and monitor overall implementation progress
- To serve as the escalation path to resolve issues and make resource changes to the scope of a project if necessary
- To ensure priority digital health programmes of work outlined in the Framework are adequately resourced and supported
- Promote capacity building for leaders of public and private health services, service partners and patient/service users to make informed decisions to support digital health investments

Critical Success Factors

To deliver on this framework, we need to actively engage stakeholders from across the health and social care service and beyond. Citizens, patients, and healthcare professionals and workers will be the most important beneficiaries from our investments in digital health. Their feedback was sought in the development of this framework and will be sought again during the planning and implementing phases. The Department, in conjunction with the HSE, will consider how best to engage with the diversity of stakeholders in the healthcare system, to provide advice on how best to deliver benefits for digital health across the healthcare sector. The views of other key stakeholders, such as those responsible for funding and managing the health system, will also be sought during this time.

We propose the creation of a Digital Health Advisory Board that will be established on an administrative basis, to ensure systematic engagement with key stakeholders. Whilst the role of the Digital Health Strategic Board will be focused on delivery, the role of the advisory board will be to provide a voice to the key beneficiaries of the systems we deliver and assurance that we are not just delivering, but that we are delivering on the right things. Similar structures are now commonplace in other countries. The role of the advisory board will be inclusive and provide an opportunity for management at the centre and in the regions, clinical leaders, healthcare professionals, digital health leaders, regulators, and patient representatives to inform the future direction and priorities for digital health developments in Ireland. The work of the advisory board will also inform the Digital Health Strategic Board.

The establishment of the national Digital Health Strategic Board co-chaired by the Department of Health (DOH) and the Health Service Executive (HSE), and supported by the Digital Health Advisory Board, will fulfil recommendations from the 2013 eHealth Strategy[55] and the 2021 HIQA report for the establishment of a single entity, 'eHealth Ireland'[52], that will be responsible for delivery of digital health in Ireland.

Leadership

Successful transformation of the health service using digital health will require a whole system leadership approach across Government, across and within the Health Service, (Centre, Regions, Hospitals and community services) and it's partners that make up the Irish health system. In this regard, the role of the Technology and Transformation committee at the board of the HSE, the Chief Technology and Transformation Officer (CTTO), the Digital Health Strategic Board and Digital Health Advisory Board, will be critical to success.

A review of best practice advises that the delivery of clinical systems should be clinically led, operationally driven and ICT enabled. The selection, deployment and benefits realisation of clinical information systems should be led by health care professionals and their teams, as they are the ones that know what service intervention is needed, are best placed to manage the changes required when they are introduced and are best placed to understand how to derive value from these systems once they are embedded within day-to-day practice. Networks of healthcare professionals who are allocated time to act as chief clinical/ nursing/ allied health professional information officers, will be critical for to the delivery on this framework, however, these networks cannot be the only clinical leaders we rely upon, as local ownership will always be needed to drive change successfully. Leadership that supports staff and clinicians working together on the frontline and at middle and senior management levels is fundamental to improve digital health services and lead effective change management and advance digital innovation and research.

Corporate systems should be led by the functional area within the health system who sponsors these programmes, in the same way the National Financial Management System[19] (IFMS) is led by the Chief Financial Officer and the National Staff Records Systems[20] (NiSRP) is led by the Chief People Officer. Whilst the ICT teams have an important role to play in providing guidance and advice during the selection, implementation and operation of these system, ultimately leadership and ownership must come from the relevant functional area to ensure a seamless transition to business as usual.

The HSE and voluntary organisations operate one of the largest ICT estates in Ireland. Working closely with the ICT teams in the large voluntary hospitals, the leadership team at the Office of the Chef Information officer (CIO) and the Office of the CTTO at the HSE will take the leadership role in decisions around architecture, standardisation, cyber resilience and delivery of technical infrastructure and related services.

Critical Success Factors

In the short term there needs to be a drive towards levelling up the infrastructure footprint between health regions and addressing obvious gaps, such as the provision of Wi-Fi to staff, as highlighted during engagement sessions that informed the development of this framework. This work will need to be co-ordinated centrally but can be implemented regionally.

The Chief Security Officer and team at the HSE will continue to take a leadership role in building cyber resilience to protect our systems, clinical and non-clinical data. The HSE will take a leadership role in implementing cloud policy, consolidating domains (Health IRL), introducing digital identities for staff and patients and providing the communication systems, server and client infrastructure to support our clinical and corporate systems.

Stakeholder Engagement and Change Management

Digitisation of the health service will require a significant shift in how we operate today. The deployment of any systems must be preceded by a streamlining of existing processes and agreement amongst healthcare providers and organisations on a common way of operating. This framework can only be achieved through supporting a change management approach within the health and social care workforce. This change management approach will help stakeholders gain a better understanding of what must change and why, build the skills they need, and provide the support and engagement required to gain momentum and deliver results.

Significant support and investment in our people will be required to reorganise and redesign existing work practices to accommodate the expansion of digital health solutions across the health services. There will be a focus on helping the workforce adopt digital health to enhance the way they work. To achieve this, we need to embed digital literacy across all learning and training pathways as it is critical that our workforce is comfortable working with the systems that are delivered, and supporting new ways of delivering services that are enabled through digital technology.

Digital health deployments can be disruptive in nature. International best-practice demonstrates that re-engineering work processes is highly dependent on collective leadership (both clinical and organisational), collaboration and buy-in from all stakeholders.

A network of clinical digital health champions, who understand the benefits and value of digital health and encourage the upskilling of the workforce across the health and social care system into the future, is important to build momentum and a critical mass of digital health proponents.

Leadership, that supports staff and clinicians working together on the frontline and at middle and senior management levels, is fundamental to improve digital health services and lead effective change management and advance digital innovation and research.

Funding

Introduction: Funding for digital health has increased steadily over the term of this Government, reflecting the need to invest in this area to enable health service reform. Recognising that Ireland started from a very low base, additional funding has been provided consistently, to build resources (through additional ICT staff), capacity, and capability.

National Development Plan Health Alignment: through the National Development Plan[53] (NDP), Government has set out overall expenditure commitments for a range of strategic investment priorities. The ten-year capital ceilings to 2030 will support economic, social, environmental, and cultural development regionally balanced across all parts of the country, under Project Ireland 2040[56] that ensures the planning framework and capital funding are aligned to national priorities and strategic outcomes. This is in parallel with the National Planning Framework[57] (NPF) which sets the overarching spatial strategy for the next twenty years, while ensuring the planning framework and capital funding are aligned to national strategic outcomes.

Critical Success Factors

The 2021-2030 NDP[53] notes that capital investment in health has a key role to play in enhancing healthcare service provision and in enabling the reform proposals outlined in the Sláintecare Report 2017[58] and successive implementation strategies[30]. The NDP plan identified a number of key areas for investment including, but not limited to, eHealth and ICT. This Framework aligns fully with this NDP ambition and implementation will be guided by funding received through the NDP.

Harnessing Digital – The Digital Ireland Framework[5]: published by Government in 2022, the Digital Ireland Framework reflects Ireland's ambition to remain a digital leader at the heart of European and global digital developments. The strategy sets out a roadmap to drive and enable the digital transition across the economy and society, to maximise the efficiency of public services, the productivity and innovation of enterprise, and our overall competitiveness and sustainability. It places a strong emphasis on balance, inclusiveness, security, and safety, and re-enforces work towards achieving Ireland's climate targets. Targets are included across four dimensions, in line with the EU's Digital Decade – Digitalisation of Enterprise; Skills; Digital Infrastructure; and Digital Public Services. In relation to health, it reinforced the need to develop the Digital Health Framework, to publish the Health Information Bill[6], to develop cyber security capabilities while pursuing a work programme to meet the EU obligation whereby all EU citizens should be able to access their own digital health record by 2030. The digital health strategic framework aligns fully with this overarching ambition.

Investment in Digital Health: sustained investment in digital health is essential to deliver the systems needed to provide safer, more sustainable, joined-up, and efficient health and social care services for patients.

Capital investment is required to implement new systems and recurring funding is required to cover ongoing costs for licenses, maintenance and support, once deployed. With recent trends towards software/ infrastructure/ platforms 'as a service', the option to pay for digital solutions through capital is not always available, putting greater demands on recurring funding from the outset.

In addition to capital and recurring funding, there is a requirement for approval of staff resources (technical and non-technical) separately, in order to implement systems and support them post go live. Whilst specialist contractors are often used to complement existing staff, it is essential that we also embed knowledge within the health system to reduce the risk of an over reliance on third parties, and to ensure we can realise the benefits operationally. Digital health solutions typically require knowledge of how the health system functions as well as expertise in ICT, which limits to some extent the value of external contractors, suppliers, and other third parties.

The ICT environment supporting the provision of health and social care services to the public in Ireland is the largest of its kind in the state, providing 24/7 services to over 70,000 end users across 2,000 interwoven systems and applications. Despite the scale of the ICT environment, the level of digitisation across the Irish health system is less mature than many of our EU partners and Ireland is still ranked poorly regarding the ability to 'join up' systems and provide healthcare professionals and patients with a singular view of patient digital health records.

The eHealth strategy (2013))[55] identified that the annual ICT budget for healthcare in Ireland was approximately 0.85% of total healthcare expenditure compared to an EU average of between 2% and 3%. Whilst considerable progress has been made since then, current insights from Gartner suggest that digitally mature healthcare systems now spend between 4% and 6% of their overall budget on digital health. This equates to between €940m and €1.41bn based on 2024 total expenditure of €23.5bn for the Irish health service[59].

Allocations for ICT now include specific funding that is ringfenced every year to address the recommendations of the independent report commissioned by the board of the HSE in the wake of the cyberattack on the health service in May 2021, to build cyber resilience and maintain defences. There are also ongoing obligations to comply with EU-wide legislation on cyber security for operators of essential services, such as the EU Network and Information Systems Directive 2016/1148 and 2022/2555 (NIS1 and NIS2) [60].

Through successive national service plans, capital and revenue funding has increased year on year. Delivery of this framework will require this incremental approach to continue through 2030 for the majority of projects, plus additional funding (capital and revenue) and staffing, specifically for the following key areas of investment: National EHRs deployed regionally, Cyber Resilience, National shared care record, Patient Engagement & Patient App, Electronic Prescribing, Telehealth and Virtual Wards, Digital Identities, and Standards & Interoperability.

Critical Success Factors

Digital health funding in 2024 and in future years will be allocated to the development of more patient focused solutions, in line with the vision and strategic principles outlined in this framework. There will also be a focus on modernising and equipping the workforce with digital tools, building core clinical and corporate system capacity, data analytics capability, innovation, cyber resilience, and foundational infrastructure. For instance, through the delivery of a patient app and using virtual technology to widen care models in 2024, we will make the benefits of existing digital health systems more visible and accessible to the public.

The health sector has an ambitious forward-looking digital pipeline to deliver on the vision in this framework. Whilst recognising all the critical success factors as described in this chapter, clearly the rate at which we choose to invest in this area will be a key determinant in the pace of roll-out of digital health capabilities and the delivery of the ambition as expressed through this framework.

Data, Standards, and Interoperability

Addressing data, standards, and interoperability is a critical success factor because without them, we simply cannot 'join up' systems and data across the health system. This is one of the most obvious weaknesses across our ICT landscape today so this framework must address it directly.

In a digital ecosystem, data is the most critical and valuable asset. Publicly funded health systems have strict ethical standards to adhere to when managing data as health information is both personal and sensitive. Clinical and non-clinical data that is robust, reliable, consistent, and reusable must be underpinned by standards.

To facilitate data sharing between systems and across the health system, data models must be implemented within the systems used to record, share, and consume this data. Interoperability standards are needed to ensure data 'flows' between digital health systems to enable the joining up of health and social care services. The need to ensure 'data follows the patient' is essential to achieving a joined-up health service where patients can safely transition between healthcare settings e.g. from acute to community and between public, voluntary, and private healthcare providers. Standards are critical for providing patients with access to their own digital health record. Non-clinical data, required to manage the health service and digitise services, also requires standards and needs to be managed in a similarly consistent fashion. A paper[52] published by the Health Information and Quality Authority (HIQA) in October 2021 and informed by experience from other countries, provides a series of recommendations on how best to improve the management of information in the health service in Ireland, with a specific section dedicated to standards and interoperability. https://www.hiqa.ie/reports-and-publications/health-information/need-reform-irelands-national-health-information-system.

Interoperability allows the seamless flow of information between different healthcare systems, settings, and providers, anywhere and anytime, while protecting the privacy, integrity, and confidentiality of patients. For this reason, interoperability enables digitally inclusive, safe, high-quality, efficient care and is essential whether related to direct patient care or non-direct care for population health, strategic planning, or research.

Interoperability is more than just a technical term to describe the efficient flow of information. As well as delivering good technology that overcomes fragmentation between existing systems, wider enablers are crucial for successfully sharing of information including — leadership, information governance, and a skilled workforce. Through this framework, the HSE's Digital Health Implementation Roadmap and associated initiatives, will address these enablers by:

- Delivering the standards and technical infrastructure needed to provide a common platform for digital health deployments across the healthcare system
- Ensuring information governance that is enabling and not constraining
- Developing compatible workflows and pathways across organisations and healthcare settings underpinned by supportive national policies
- Promoting leaders that build relationships on trust across boundaries and who explain the importance of interoperability and the benefit to patients and staff

Critical Success Factors

- Supporting collaborative relationships between staff across the health service and staff who are supported to lead interoperability projects
- Providing the right training and skills to our workforce

These enablers come together to ensure seamless information flow across healthcare settings and to underpin the integration of health services in a way that improves experiences for both patients and staff into the future.

Infrastructure

Robust and extensive national digital infrastructure is considered by many to be a 'basic hygiene factor' i.e. something that you simply must get right. It underpins the delivery and operation of all digital health systems and is essential for the successful delivery of Ireland's digital health ambitions. Not only is digital infrastructure required to support new and existing systems and applications, it is also essential for joining up these systems, for connecting different parts of the healthcare system, and providing simple, safe, and secure access for patients and staff.

Despite significant increased investment in digital infrastructure since 2013, there are still some obvious gaps, with many stakeholders engaged during the development of this framework highlighting the need for wider deployment of Wi-Fi and other core basic standard capabilities across many hospitals and smaller healthcare facilities. These will be addressed as part of shorter-term investments plans. As part of the wider capital investment programme for health, we will also ensure that all new healthcare facilities will be born 'digital by default', in line with the objectives of Connecting Government 2030[8].

Whilst digital transformation of health and social care services will bring significant benefits, it could also increase the impact of cyberattacks. Cybersecurity is an important priority for the Government and significant funding has been allocated in recent years to strengthen cyber resilience. An evaluation of the resources needed to build our cyber resilience infrastructure will be undertaken by the Department of Health and the HSE to ascertain the level of investment and resources needed up to 2030. In the meantime, the HSE will continue to implement the recommendations of the post incident report following the ransomware attack of 2021[61].

Legislation and the Health Information Bill

There must be a clear legislative basis for the processing and management of health information and for the creation and maintenance of digital health records. Legislation is required to make clear the obligations of healthcare providers, healthcare professionals, and others responsible for providing care to patients, for the sharing and processing of clinical data required to build national, regional, and local digital health records.

In Ireland this is addressed through existing Health Acts, the EU General Data Protection Regulation (GDPR), and associated legislation, including the Data Protection Act (2018)[62], Health Identifiers Act (2014)[25], Health Research Regulations and the forthcoming Health Information Bill[6]. The Health Information Bill will complement existing provisions in Irish law, provide greater clarity and certainly in relation to obligations for sharing of information across the wider health service, and help to address national challenges in preparation for the forthcoming European Health Data Space (EHDS)[11] Regulation.

The purpose of the Health Information Bill is to provide a clear and consistent legislative framework to transform the national health information system into one that is fit for purpose and best serves the individual patient, healthcare professionals, and society. The Bill is focused on delivering patient-centred integrated care, improving performance and innovation in the health service, and supporting digital and data initiatives in health and social care. The General Scheme of the Health Information Bill can be view here https://www.gov.ie/en/publication/6f6a6-health-information-bill-2023/ [6]

Critical Success Factors

The Bill completed pre-legislative scrutiny by the Oireachtas Committee on Health in July 2023 and has had priority status for drafting in the Office of the Parliamentary Counsel.

Among its provisions, the Bill will provide the legislative basis for the use of the PPSN across the public and private health service in Ireland, as a robust method for people to easily identify themselves. The use of PPSN is already provided for under the Health Identifiers Act[25] where it can be used for the purposes of assigning an individual health identifier (IHI) and health providers are permitted to retain a copy of the PPSN once this has been done.

Experience from the pandemic and the national Covid vaccination programme, in particular, demonstrated the effectiveness of the PPSN when, combined with first name, last name, gender, and date of birth, was very effective in quickly finding the corresponding IHI. Use of the PPSN with these basic data elements resulted in 96% match rates with the IHI. Once the Health Information Bill is enacted, the role of the IHI will be to act as a technical identifier suitable for processing of digital healthcare records, in the same way social welfare use the PPSN when communicating with the citizen but use technical identifiers within their systems. These technical identifiers correspond to the PPSN but are more suitable for processing by large IT systems. The health service need IHIs in the same way to manage patient data safely. From a practical perspective, the IHIs in this context will be used to safely and unambiguously combine patient data from different systems and parts of the health service. This will become even more critical as we expand the scope of our digital health record and are faced with the task of combining data from more and more systems.

The importance of having a simple but reliable method for patients to identify themselves and for digital identities to be available to patients and staff as we move into the digital health environment and establish digital health records, processing, sharing, and combining health data from across sites and systems, cannot be underestimated as a foundational component and critical dependency/success factor. Ensuring a robust legal basis for this is therefore essential.

The Health Information Bill is aligned with the forthcoming EU Regulation on the EHDS which was agreed in April 2024 and due to come into force in Autumn 2024. The EHDS aims to foster the exchange and sharing of different types of health data, including from electronic health records, registries and other datasets, in a federated manner within Member states and across the EU. The EHDS covers aspects of sharing health data for primary use (care and treatment) as well as secondary purposes including policy making, service planning, research and innovation. The EHDS regulation will have direct legal effect in all EU Member States and will be implemented on a phased basis.

The Health Information Bill will enhance the use of data for secondary purposes within the HSE. Ireland's overall harnessing of health data for secondary use will be further enhanced through the establishment of the Health Data Access Body as required under the EHDS. The Health Data Access Body will operate a transparent and robust governance system that facilitates broader access to health data for the public benefit.

An Roinn Sláinte
Department of Health

Next Steps

Next steps

To deliver our shared vision: *'Better health outcomes enabled by seamless, safe, secure, and connected digital health services and which support health and wellbeing for both our patients and providers'*:

The Department of Health will:

- Ensure policy and funding are targeted towards initiatives that have the greatest impact on patient care, health services, health service management, and meeting our EU obligations under the Digital Decade[63] and European Health Data Space regulation[11]
- Implement governance and performance oversight processes that are commensurate with the scale of investment and support the development of the digital health ecosystem and innovation
- Provide a clear, certain, and consistent legislative framework, via the Health Information Bill[6], to transform the health information system into one that is fit for purpose and best serves the patient, healthcare practitioners, and society
- With Government support, secure investment through the National Development Plan[53] and annual budgetary process to build capacity, capability, and expertise to enhance the delivery of digital health, acknowledging that funding will be a key determinant in the pace of roll-out and implementation of digital health capabilities and electronic health records
- Continue to build partnerships, harness opportunities, and meet regulatory obligations by working with the EU and international partners to ensure we continue to learn from others and share our knowledge, through greater participation in international research and innovation funding programmes, such as the Global Digital Health Partnership, SNOMED International, and the EU eHealth Network

New HSE (Centre and Health Regions), will:

- Complete the corresponding implementation roadmap that describes the governance, organisation, programmes, and projects required to deliver on the vision, mission, strategic principles, ambitions, and commitments as set out in this strategic framework
- Identify and engage with all stakeholders, including patients and carers, healthcare professionals and staff, to understand requirements and information needs for digital health
- Work with other healthcare providers to enable seamless information flow across healthcare settings and to underpin the integration of health services in a way that improves experiences for both patients and staff into the future
- Develop multi-annual plans to deliver all the key enablers, systems, and services described by this framework and the corresponding HSE roadmap
- Use existing partnerships and establish new partnership arrangements where appropriate to ensure successful delivery of digital services across the health and social care system

Glossary of terms

Term	Description
Acute services	Acute care is delivered in a hospital, rather than in the community. Acute care services include: inpatient scheduled care, unscheduled or emergency care.
Artificial Intelligence (AI)	As per EU AI regulation: AI systems should be intended as having the ability, on the basis of machine and/or human based data and inputs, to infer the way to achieve a given set of human-defined objectives through learning, reasoning or modelling and to for a given set of human-defined objectives, to generate specific outputs in the form of such as content for generative AI systems (such as text, video or images), as well as predictions, recommendations, or decisions, which influence the environment with which the system interacts, be it in a physical or digital dimension.
Bi-modal approach	Bimodal is the practice of managing two separate but coherent styles of work: one focused on predictability; the other on exploration. Mode 1 is optimised for areas that are more predictable and well-understood. It focuses on exploiting what is known, while renovating the legacy environment into a state that is fit for a digital world. Mode 2 is exploratory, experimenting to solve new problems and optimised for areas of uncertainty.
Care models	Model of care means ensuring that efficient and effective healthcare services are designed, purchased, and provided through innovative models of care that prioritise primary and community care services and the co-production of health.
Community Services	Community care that is provided within the community rather than in a hospital or institution.
Critical success factors	The key elements or factors that significantly contribute to the success of any programme, national strategy, or organisation.
Diagnostics	Diagnostic equipment, methods, or systems are used for discovering what is wrong with people who are ill.
Digital health	Digital health is the field of knowledge and practice associated with the development and use of digital technologies to improve health.
Digital Identity	A way to gain verification and access to services online.
Digital Inclusion	Digital inclusion involves the activities necessary to ensure equitable access to and use of information and communication technologies for participation in social and economic life including for education, social services, health, social and community participation. Digital inclusion includes access to affordable broadband Internet services, Internet-enabled devices, access to digital literacy training, quality technical support, and applications and online content designed to enable and encourage self-sufficiency, participation, and collaboration. Related concepts include digital divide, digital exclusion and digital inequality however digital inclusion focuses more on the strategies, policies and programs required to address the digital divide.
Digital Services	The use of digital health technologies and tools to enhance the delivery of health and social care services in Ireland.
Digital Wallet	A digital wallet is an electronic device that allows a consumer to store payment information electronically so they can make a payment online.
EHDS	European Health Data Space

Glossary of terms

Term	Description
Electronic Health Record / Single Digital Patient Care Record	An enterprise electronic care record (EHR) provides for both a complete digital health record of a patient's journey recorded by healthcare professionals, throughout their life, across all health and social care settings, for every citizen while automating the patient pathway in the setting that care is being provided. EHRs replace traditional paper based health and social care records with a comprehensive medical record in electronic form that captures care encounters for an individual across different healthcare providers. In this strategic framework, we refer to this as the single digital patient care record. Our vision to realise digitally enabled and connected care within our health service is through the creation of a nationally integrated digital patient care record.
ePrescriptions	A system to digitally transmit medical prescriptions from health and social care professionals to pharmacies.
eReferrals	Electronic referral (eReferral) simplifies the referral process by enhancing communication between primary care clinicians and specialists / organisations and enabling quick and secure referrals to be sent and received through an electronic platform.
Genomics	Genomics in health examines the molecular mechanisms and the interplay of this molecular information and health interventions and environmental factors in disease.
Genetics	Genetics is the study of the genes, whereas genomics is the study of all the DNA needed to build an organism, including the genes.
Governance	The structures, policies, and processes to manage an organisation efficiently and effectively.
Health incubators	Support for those working in the healthcare sector to work towards overcoming common challenges experienced by start-up organisations.
HealthIRL	HealthIRL is a key national HSE Digital Identity programme to migrate all users, devices and mailboxes from 8 legacy regional based domains to a central shared domain.
Healthmail	Healthmail is a secure clinical email service that allows health care providers to send and receive clinical patient information in a secure manner.
HIMSS	HIMSS (Healthcare Information and Management Systems Society) is a global advisor, thought leader and member-based society committed to reforming the global health ecosystem through the power of information and technology.
HL7 FHIR	The HL7 FHIR (Fast Healthcare Interoperability Resources) standard defines how healthcare information can be exchanged between different computer systems regardless of how it is stored in those systems. It allows healthcare information, including clinical and administrative data, to be available securely.
Individual Health Identifier (IHI)	A unique number to identify individual health service users accessing health and social care services.
Interoperability	The ability of different systems, devices, applications, or products to connect, access, exchange, integrate, and communicate in a coordinated way, within and across organisational, regional, and national boundaries, to provide timely and seamless portability of information.
MyHealth@EU	If an individual falls ill or experiences a health emergency during a stay in another EU country, electronic cross-border health services, Patient summaries , ePrescriptions/eDispensations, Laboratory results, Medical Imaging reports and studies and Hospital discharge results will be shared to ensure continuity of care for EU citizens through the MyHealth@EU service.

Glossary of terms

Term	Description
OpenEHR	A technology for eHealth, consisting of open specifications, clinical models and software that can be used to create standards, and build information and interoperability solutions for healthcare.
Patient and Public Involvement (PPI)	Public and patient involvement (PPI) in research means that the public and patients are involved in planning and doing research from start to finish and help tell the public about the results of research.
Patient App / Portal	A patient portal is specially created to allow online access for individuals to their own healthcare information through apps on their smartphone or other devices, or using a website.
Precision medicine	Medical care tailored to specific individuals or small groups of patients based on data.
Pseudonymised health data	Pseudonymised personal data remains personal data and all of the requirements of Data Protection Legislation (e.g. as to transparency for Data Subjects, lawful basis for processing, data minimisation etc) apply.
Real-time access	Immediate access of up-to-date patient information and health related data.
Remote monitoring	Remote health monitoring can harness digital technologies to provide wrap-around care to people in their own homes and reduce the need for hospital admission.
Service partners	In the Irish healthcare context, 'service partners' are organisations, both public and private that are within the healthcare system to offer health and social care services and various supports.
Shared care record	A digital record aggregated from various electronic data sources that provides a holistic view of a patient's health status across healthcare settings. It can contain information about a patient's diagnoses, test results, procedures, care plans, and more. A shared care record facilitates the secure and safe exchange of health information across Irish health and social care settings.
Single sign-on	Single sign-on (SSO) is an authentication method that enables users to securely authenticate with multiple applications and websites by using one set of credentials. SSO will enable clinicians and other staff, who legitimately access patient records electronically, to move between multiple computer applications without the need to log in more than once, enabling them to move seamlessly with the patient.
SNOMED CT	A standardised, multilingual vocabulary of clinical terminology that is used by physicians and other health care providers for the electronic exchange of clinical health information.
Staff App / Portal	MyTime, MyTravel, MyReimbursements, MyQualifications available to health and social care staff.
Summary care record	A digital snapshot of a patient's essential clinical information which provides a summary of patients' important health information accessible in one location related to aspects such as allergies, current medication, current diagnoses, previous illness, investigations and results, etc.
Telehealth / telemedicine	Telehealth (TH) makes use of internet-based technologies to support remote consultations with patients, providing a reasonable alternative to an office visit for many patients in all specialities.
Transformative change	A fundamental, system-wide reorganisation across technological, economic and social factors, including paradigms, goals and values.
Virtual Appointments	Online health appointments let you talk to your healthcare professional online, without having to leave your home. These appointments usually happen using video.

Glossary of terms

Term	Description
Virtual wards	Virtual wards (also known as hospital at home) allow patients to get hospital-level care at home safely and in familiar surroundings, helping speed up their recovery while freeing up hospital beds for patients that need them most. Just as in hospital, people on a virtual ward are cared for by a multidisciplinary team who can provide a range of tests and treatments. This could include blood tests, prescribing medication or administering fluids through an intravenous drip. Patients are reviewed daily by the clinical team and the 'ward round' may involve a home visit or take place through video technology. Many virtual wards use technology like apps, wearables and other medical devices enabling clinical staff to easily check in and monitor the person's recovery.
Wearable technologies	Wearables can be worn or carried by the user or implanted in the user's body. They are equipped with sensors that can sense bodily signals, such as heartrate.

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