Board Overview:
eHealth at a Crossroad

May 2022

1. **Provide updates and seek strategic guidance on New Priorities**
   - Pivoting back to Sláintecare's EHR goal
   - Cyber transformation
   - Digital innovation
   - Overall governance of eHealth
2. **Highlight eHealth Sláintecare achievements to plan**
3. **Outline investment implications for eHealth transformation**
   - New priorities
   - Current priorities
   - Discussion

eHealth definitions vary somewhat but have common themes

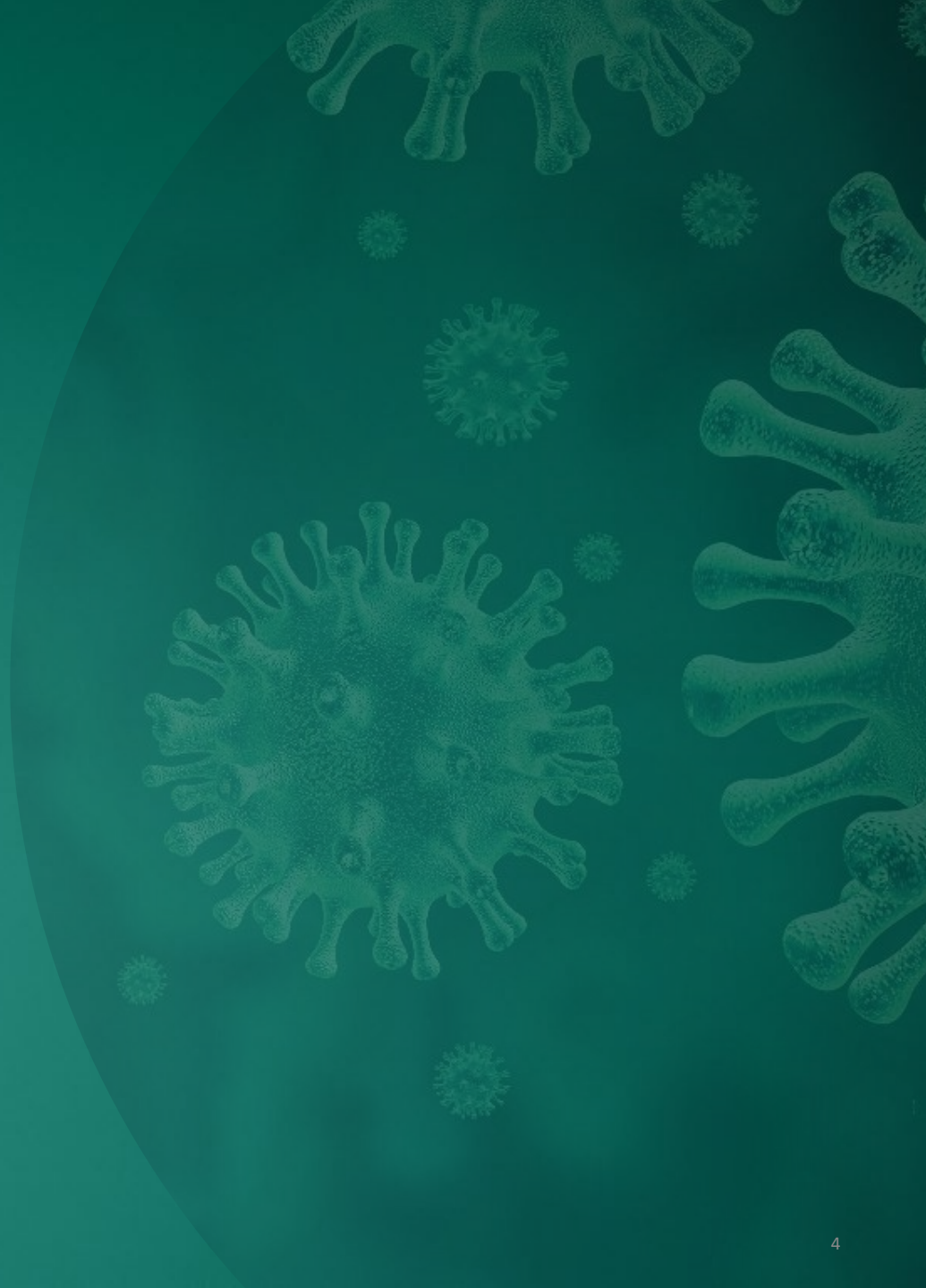
World Health Organisation	The cost-effective and secure use of information and communications technologies in support of health and health-related fields, including health-care services, health surveillance, health literature, and health education, knowledge and research
European Commission	The tools and services using information and communication technologies (ICTs) that can improve prevention, diagnosis, treatment, monitoring and management
NHS	The use of information and communications technologies in medicine and other health professions to manage illnesses and health risks and to promote wellness
US (govt)	The use of web-enabled systems and processes to accomplish some combination of the following goals: improve or enhance medical care; improve patient involvement in their medical care and their overall satisfaction with the health care experience; streamline operations and business practices; control expenditures

The HSE eHealth Vision guides strategic action by pointing to the future state the HSE is trying to achieve

eHealth provides connected and complete digital patient records across all patient pathways and care settings

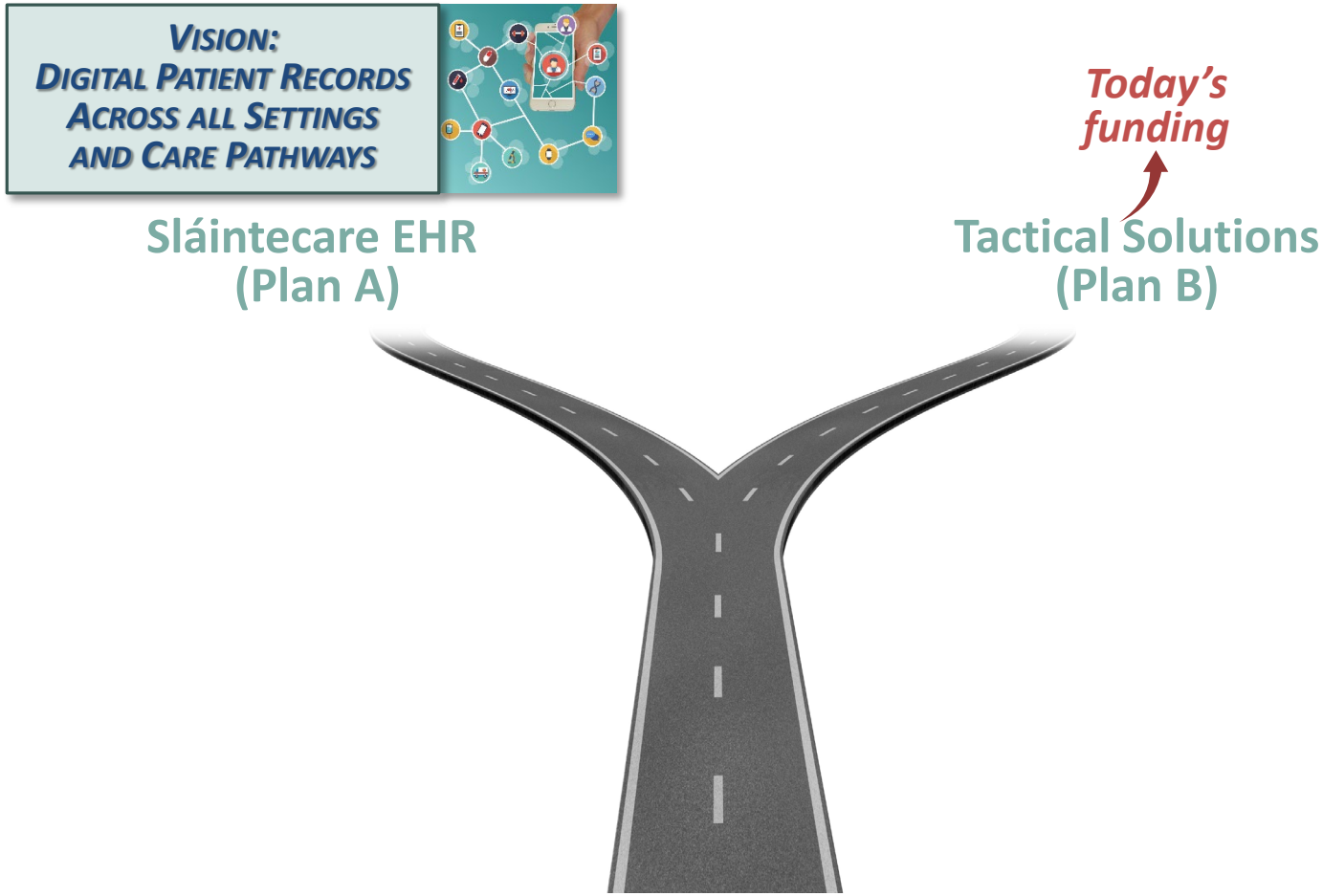
For further definitions of terms, see Glossary in the Appendix

eHealth and EHR



Sláintecare targets

- The leading Sláintecare Action for eHealth is *Implement Electronic Health Record System*, <u>but this is not on a national delivery path</u> because funding has not been approved
- Approval was deferred in 2019 until after reviewing the outcomes of the CHI EHR
- This left only one option for digitising and unifying patient records – delivery of multiple Tactical Solutions



digitised patient records

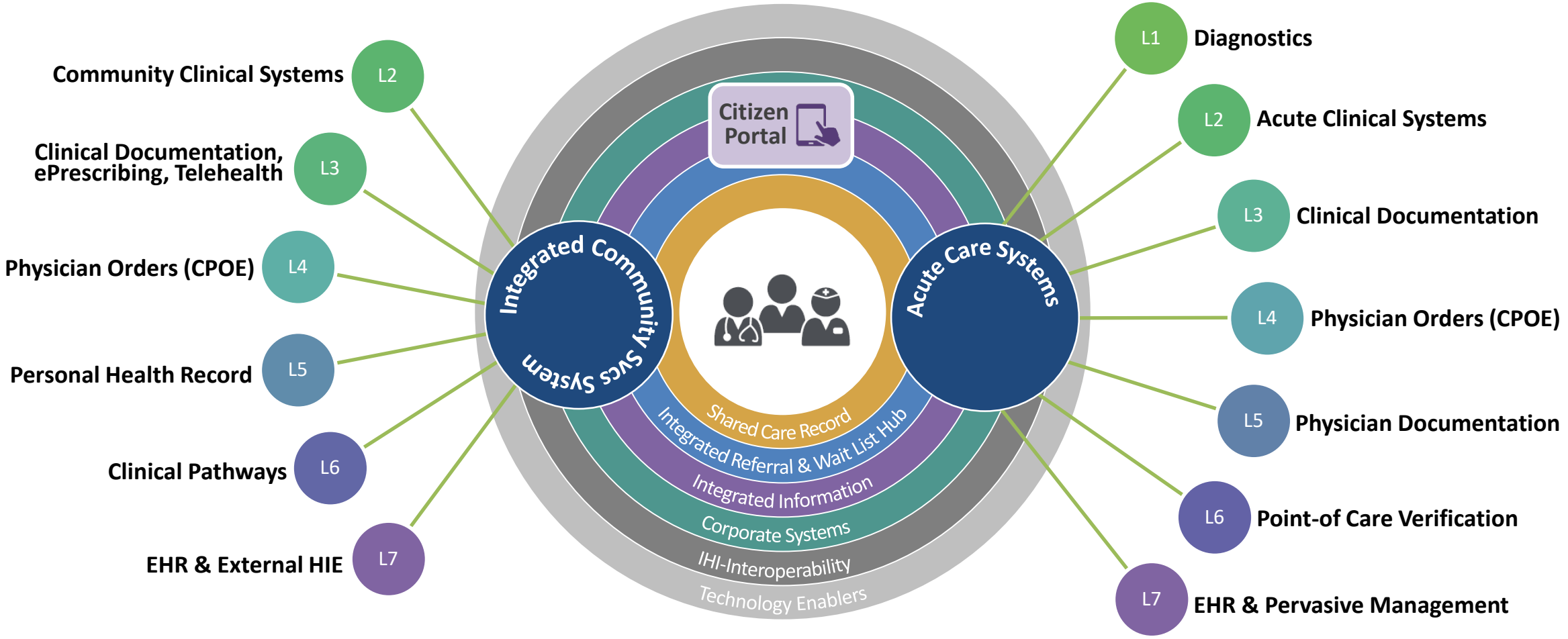
- Because of this, we still have hospitals and community organisations across the country who are left with the problem of paper patient records
- Current funding does not provide a path to solve this nationally

Plan B is a temporary detour, not a stand-alone option; it both extends the timeline for achieving the vision, and ultimately increases cost

- What do we want to do about it?
- How do we get back to Plan A?

Comprehensive view of the patient	Dynamic patient-centred records enable clinicians to track a patient's care continuum over the person's lifetime, in sickness and health. Having a single, continuous record for a patient provides a holistic view of overall health for better diagnosis and lifetime treatment.
Seamless care pathways	With digital records, clinicians can more easily coordinate and track patient care across practices and facilities. Services can be coordinated and scheduled over the course of a single visit, rather than time-consuming multiple visits. Clinicians across specialties and disciplines also collaborate on patient outcomes as a team to ensure better care.
Shared information	The ability to share information across disciplines, specialties, pharmacies, hospitals and RHAs, as well as have on-demand access to charts via mobile devices, enables faster diagnostic turnaround times and allows for better and more timely decision making, particularly in critical situations. At the regional level, information sharing allows for informed allocation of both patients and clinical resources.
Reduction in medical errors	Digital records allow for better tracking and more standardized documentation of patient interactions, which has the potential to improve patient safety by reducing medical error. With digital paper trails, illegible handwriting in clinicians' notes or prescriptions is no longer a problem, and coding for procedures or billing is easier. Integrated systems can also be set to flag drug interactions and other indicators of potential harm.
Streamlined workflows	EHRs increase productivity and efficiency of clinicians while cutting down on paperwork. Patients and staff have fewer forms to fill out, leaving clinicians with more time to see patients. Referrals and prescriptions can be sent quickly, cutting wait times for appointments and pickups. Automatic reminders can tell patients when it's time for annual check-ups or alert them as they approach milestones that require regular screenings. With integrated patient tracking, billing and insurance claims can be filed in a timely manner.
The power of data to inform health strategy	Continuous data collection allows for greater personalization of care, allowing providers to address health issues in a preventive manner. Also, 'big data' analytics and aggregated patient data may be able to alert providers to larger health trends such as potential outbreaks and which flu strains are prominent during each flu season. On a macro level, analysis of system-wide population and health data informs the development and evolution of health strategy.
Greater efficiency and cost savings	Digital records and integrated communications methods can significantly cut administrative costs, including reducing the need for transcriptions, physical chart storage, as well as facilitating care coordination and reducing the time it takes for hard-copy communications among clinicians, labs, pharmacies, etc.

es to HIMSS* maturity levels



HIMSS: Healthcare Information and Management Systems Society

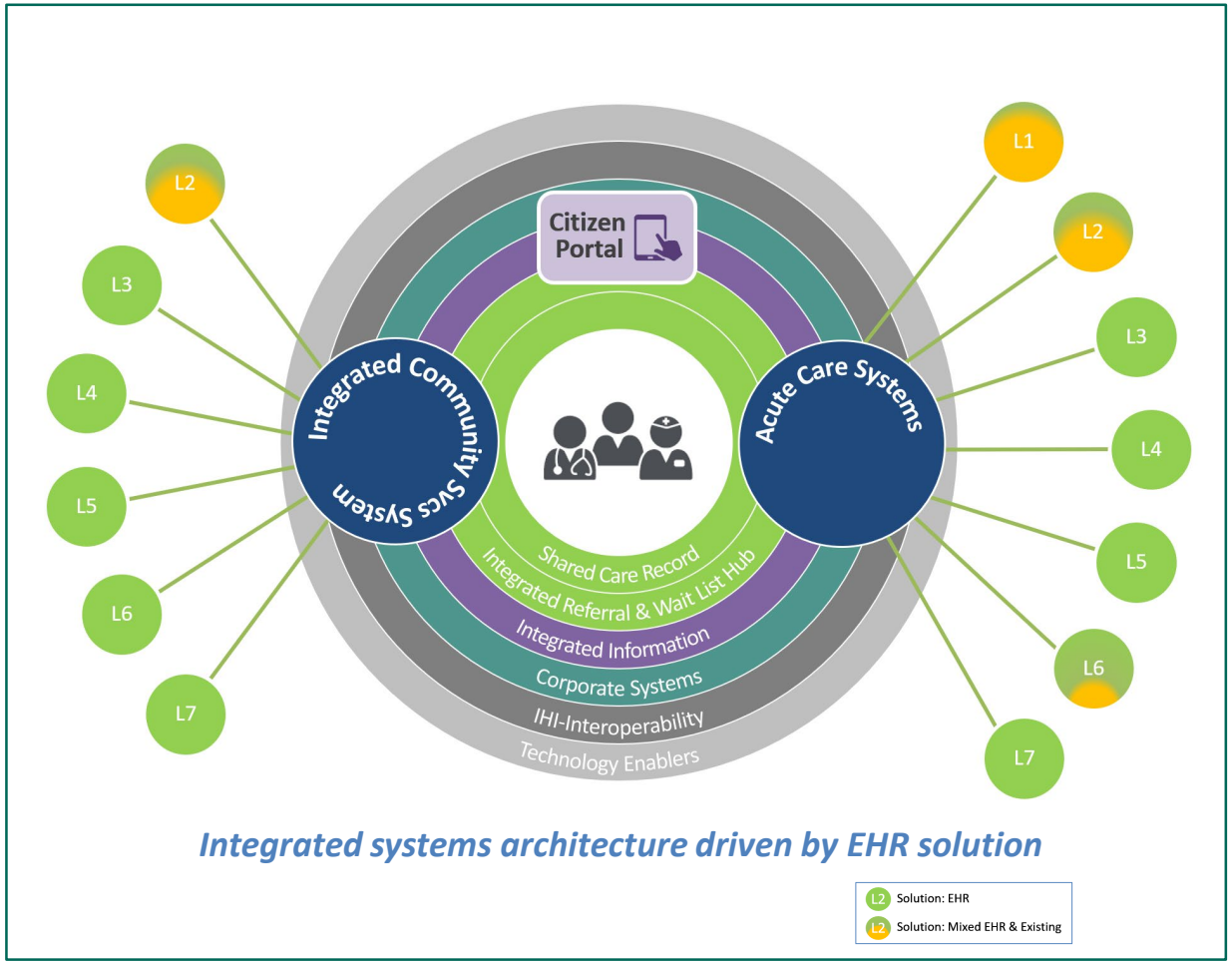
Note: L1-L7 solution categories based on HIMSS EMR Adoption Models (EMRAM)

ut on hold

Sláintecare EHR (Plan A)

Comprehensive solution where patient data and records are shared across care settings to enable integrated care

- A goal of Sláintecare and what the service wants
- Gives us a single “North Star” – an ultimate destination
- Would require some point solutions, but they would be integrated into the EHR
- Supports the development of RHAs
- Every other EU/Western country is pursuing a version of Plan A
- HSE business case cost estimates for an EHR are consistent with international experience
- A national EHR is not funded at this time
- Government approach – wait for completion of CHI EHR implementation (2025 opening) before revisiting a National solution



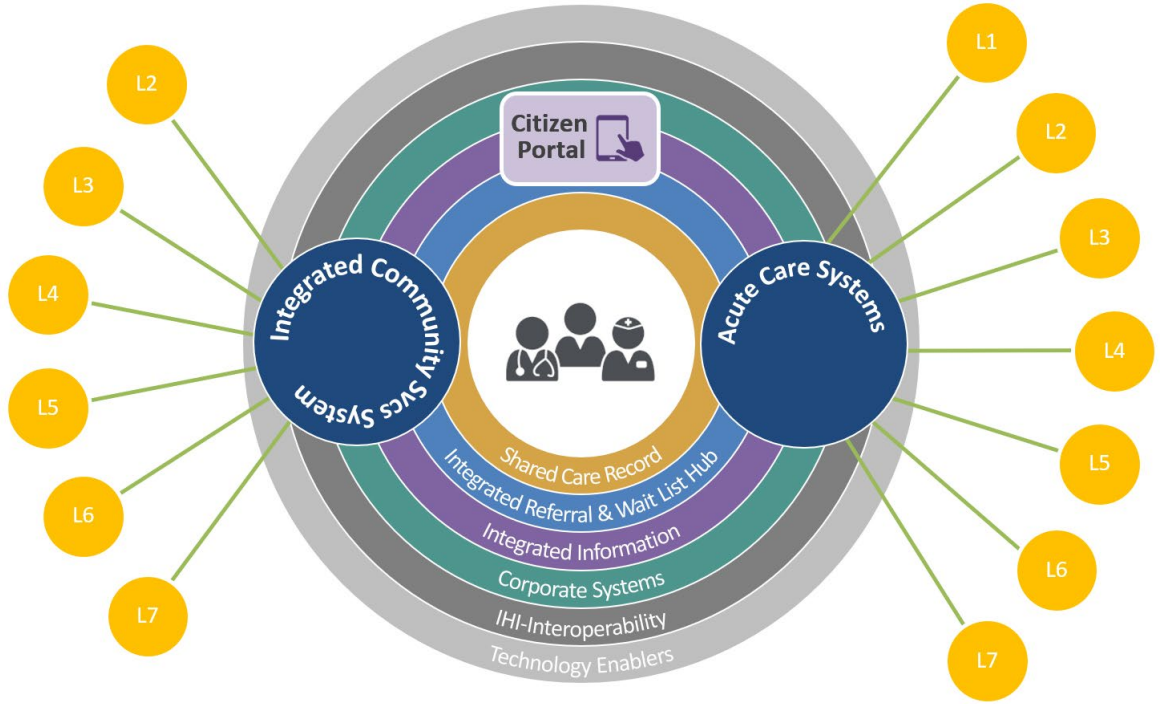
Integrated systems architecture driven by EHR solution

t they will never deliver an EHR

Tactical Solutions Deployment (Plan B)

Implementing individual solutions across healthcare and integrating them together

- The Health Service depends on the functionality and reliability that our technology continually delivers; every hospital has a digital backbone
- Range digital solutions delivered successfully, fundamentally changing service delivery:
  - Acute - NIMIS, Maternity, BloodTrack, iPMS PAS
  - Community - Nursing Home Support, InterRAI assessment, Audiology
- Covid pandemic accelerated development of new platforms and solutions and drove reprofiling of priorities:
  - Joined Pharmacy, GP, Vaccination, Test & Trace into a single workflow
  - Accelerated Community digitisation initiatives
  - Advanced telehealth
- Does not enable clinical workflow between applications and services; Shared Care Record simply provides a read-only view of information



With no EHR, point solutions are delivered, but fragmentation is inevitable

Although delivery is advancing, the outcome will always be suboptimal, with massively increased complexity

Sláintecare Progress

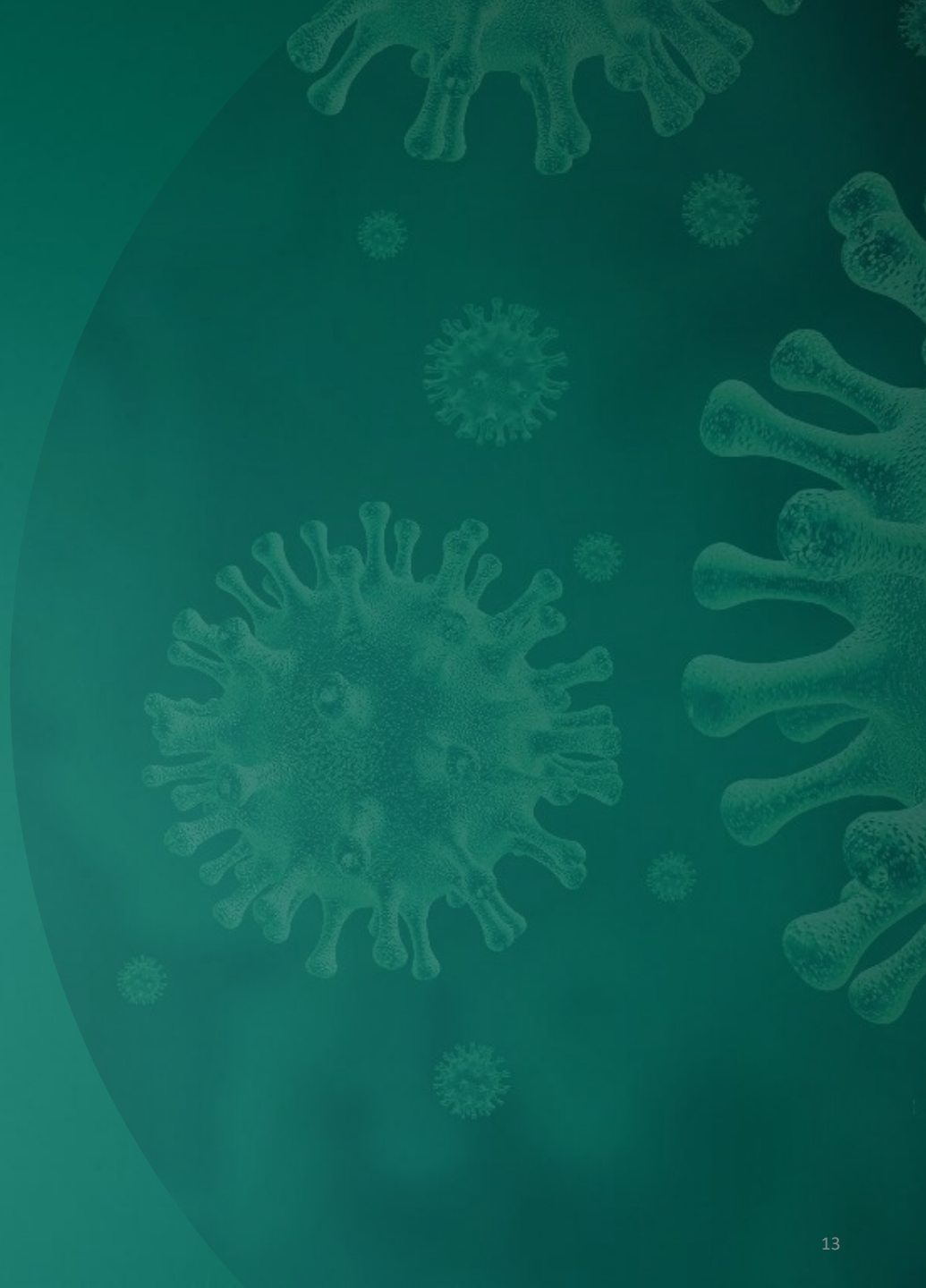
for Sláintecare...

2019 Sláintecare Implementation Plan - eHealth	eHealth Deliverables / Progress to date
10.1 Implement Electronic Health Record system 1. Implement CHI EHR; prepare for national roll-out	• Procurement process of EHR in CHI completed • Internal approvals and preferred vendor selection completed; awaiting external approval
2. Implement EHR for community-based care	• Business engaged in advancing ICCM system; 5 vendors selected for demos • IT infrastructure analysis process defined and commenced
10.2 Implement Community Care Solutions 1. Commence implementation of **community care solutions**; this will include implementation of **ePrescribing and summary care records**	• Hospital ePharmacy solution paused during Covid, but now in vendor contract negotiation, ePrescribing became operational during Covid, with throughput of 55,000 electronic scripts daily • Shared Care Record paused during Covid; now progressing through development of an MVP demonstrator project using existing eHealth technologies • Advanced delivery of multiple community and public health clinical systems through more than 137 projects; most programmes were paused during early Covid period (2020) and during cyber recovery (2021)
10.3 Develop New ICT Systems to Support the Health Workforce 1. Provide a **digital workplace**	• Delivered Windows 10 upgrade (70% complete), MS Teams (20k users) • Provided upgrades to backup systems • Rolled out mobile and computer device across the HSE • Provided remote working solutions
2. Develop **clinical ICT systems (list here)**	• Advanced delivery of multiple acute clinical systems through more than 310 projects • Most programmes were paused during early Covid period (2020) and during cyber recovery (2021)
3. Provide **telehealth solutions**	• Rolled out during 2020 • Provided 225,000 remote consultations to date
10.4 Develop New ICT Infrastructure to Support Integrated Care 1. Implement **financial/corporate systems**	• IFMS progressed to a design completed stage but challenges with vendor led to re-tendering for a new vendor • Invitation to Negotiate has issued to the three shortlisted candidates • Key pre-deployment projects progressing in advance of new vendor commencing
2. Provide **cloud infrastructure** for the whole health service to **support a more secure and safe data environment**	• Cloud Services Build continues for clinical and back office programmes (HPVP, Recruitment Portal, Hub Drive, Healthlink migration) • Security Improvement Programmes ongoing at various stages; Secure Web Gateway procurement commenced
3. Provide for improved **information architecture, including standards, information and identity**	• HPVP system developed and Phase 1 rollout (28 hospitals) progressing, due for completion Oct 2022 • Procurement for remaining hospitals underway
10.5 Implement the Digital Maternity System 1. Implement the **digital maternity system**	• EHR system live on 4 sites, covering 40% of all births • Recently approved 2 additional sites, which will increase birth coverage to 70% (and 90% neonatal)
10.6 Develop Information and Research 1. Consolidate and invest in **data and R&D infrastructure and capabilities** to ensure that evidence is at the core of routine decision making	• Integrated Information Service organisation established • BI data lake put into place; multiple dashboards deployed in support of Test & Trace, Vaccination, Recovery & Transformation, Cyber Recovery

...however, Sláintecare is not achievable without a National EHR; this requires significant additional investment

**Infrastructure, Covid, Service, Innovation*

Cybersecurity, Innovation, and Governance



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An Roinn Caiteachais Phoiblí agus Athchóirithe
Department of Public Expenditure and Reform

"Innovation Definition : The creation of a new, viable offering that adds value"

DPER, Making Innovation Real, 2020

Innovation has many forms, and we have seen it in action across the HSE

ECOSYSTEM INNOVATION

Developing an "ecosphere" of new alliances and partnerships to enable innovation

Our **virtual healthcare** vision for **Clare Island** with our partners is ecosystem innovation in action

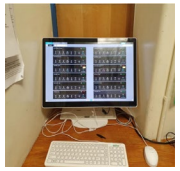
PRODUCT & SERVICE INNOVATION

Designing new products and services for our patients/service users, clinicians and operations stakeholders

RespiraSense continuous respiratory rate monitoring provides continuous and non-invasive monitoring and is rolled out across **20 hospitals**

DIGITAL INNOVATION

Going digital to create a frictionless and integrated experience for patients/service users, clinicians, operational functions and partners



Vital Signs Automation improving hospital point of care performance and resulting in a shorter average length of stay

BUSINESS / HEALTHCARE MODEL INNOVATION

Reimagining business, operations and models of care by expanding into new solutions and partnerships

A digital health platform which provides a truly Virtual Health Care Platform

Our goal is to now put the strategy and structures in places to scale innovation

WHERE ARE WE NOW?

Pillars of Innovation – clear and well articulated pillars of innovation, with good engagement by the Digital Academy and Digital Forum

Initial **innovation process** and high-level governance body and process defined

Ecosystem mapping of **partnerships and alliances** well established

+

WHAT DOES GOOD LOOK LIKE?

Define the **overall scope of innovation**, including a clear vision for where we want to be in 3 years

An agreed Governance with **eHealth, Spark Programme, Academia and Health Innovation Hub Ireland** in scaling innovation across the Health Service

Work with **MedTech** and **Life Sciences** to co-create new innovations based on global trends and best practice

- Good progress has been made in recent years, laying the foundations for scaling of innovation across the HSE
- Building on this progress, the HSE will develop a comprehensive ***HSE Innovation Strategy and Implementation Plan 2023-2026*** focused on scaling innovation.
- Draft Strategy to be shared with EMT and Board September 2022

cross the organisation

- Digital Innovation in the HSE is currently being advanced and delivered by a number of teams, all under different management and governance

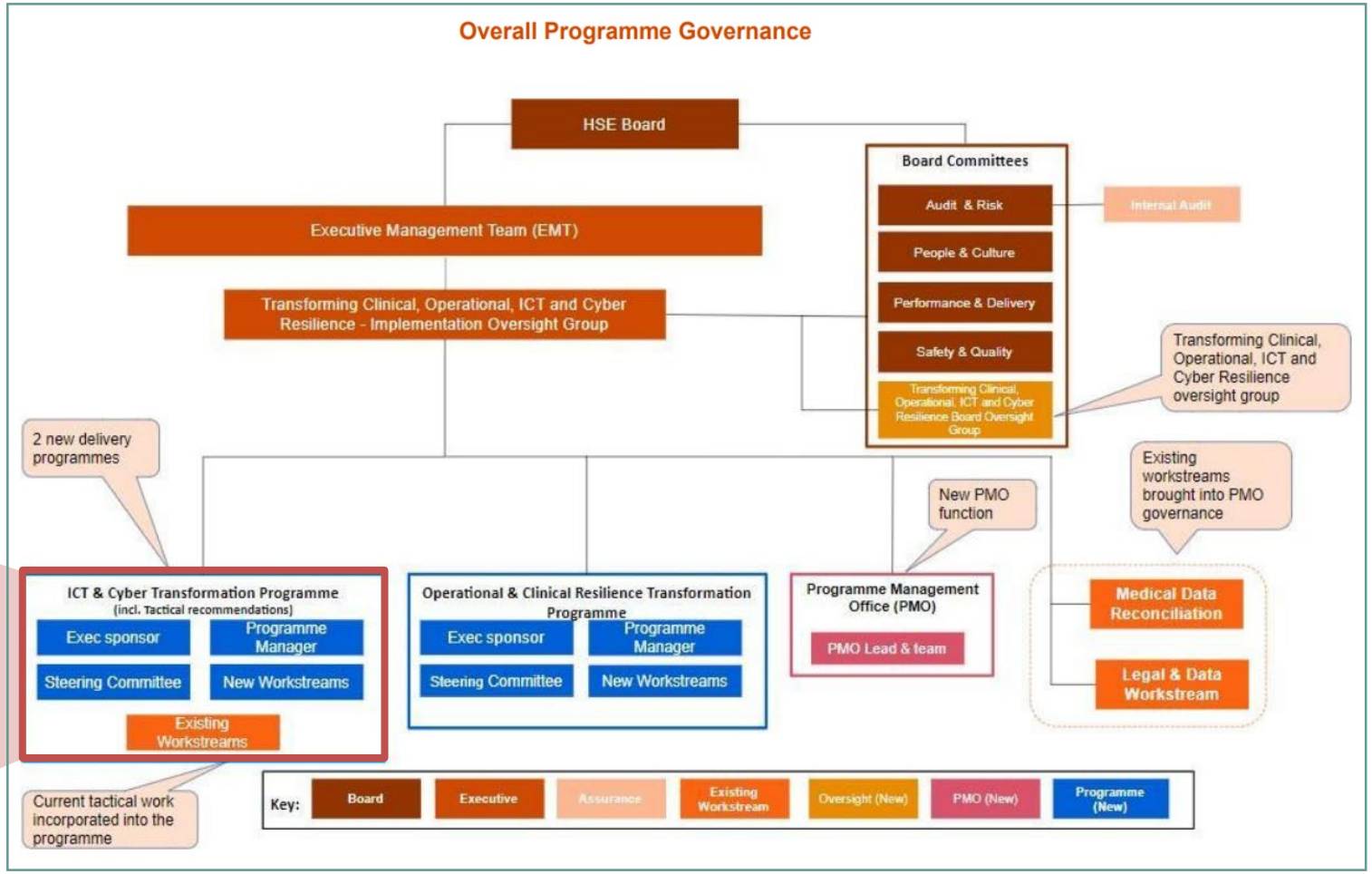
Innovation Team	Reporting to	Areas of Focus
Digital Transformation	Healthcare Strategy – Innovation, Improvement and Optimisation (National Director for Change and Innovation)	• **Raising Digital Awareness** – education of staff in Digital Skills through the Digital Academy, Masters in Digital Health Transformation and Digital Skills Starter Pack • **Open Innovation** – government, industry, academia and citizens/patients work together with the HSE to co-design healthcare solutions • **Digital Living Labs** – user-centred research and innovation processes to test solutions/ideas within a public-private-people partnership
National Virtual Health	eHealth & Disruptive Technology (Delivery Director, Community)	• **Video Enabled Care** – enabling clinicians to consult with patients remotely through webinars and video technology • **Home Health Monitoring** – using ICT to monitor patients at a distance using web-based apps to capture health statistics at home and using SMS reminders for patients
Robotics Process Automation Centre of Excellence	eHealth & Disruptive Technology	• **Robot Delivery & Operations** – provide opportunity assessment and process re-engineering leading to deployment of virtual workers (robots) using automation software, hosted on central platform • **Methodology & Standards** – central governance to ensure compliance with automation best practices, oversight of all deployments, asset optimisation and security standards • **Organisational Adoption and Skills Development** – Cultivate an automation mindset that socialises and encourages staff ideation and innovative use of automation; provide setup support of local RPA delivery hubs

- Coordinated governance of all strands of innovation would enable alignment of overall HSE innovation goals and activities
- We need to concentrate our effort to deliver big focused innovation rather than lots of small, individual solutions

- We recommend pulling together the multiple strands of eHealth into a single “Transformation Oversight Group”, chaired by the CEO
- Roles of new CTTO & CISO incorporated into new governance

ICT & Cyber Transformation Programme:

1. Cybersecurity and cyber resilience
2. eHealth transformation (Sláintecare)
3. Digital innovation
4. Maintenance of existing systems



Investment and Discussion

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- Current level of IT spend in the HSE is substantially lower than peers according to Gartner analysis, which suggests annual spend should be 2-3x higher than current

Organisation	IT Spend* as % Operating Expense	IT Spend per Employee
HSE	1.19%	€2,030
Healthcare Providers Median	4.40%	€6,345
HSE Gap to Peers	**27% Median**	**32% Median**

**IT Spend = ICT Capital + ICT Revenue in eHealth Division only*
Note: ICT Revenue spend outside of eHealth would add another 0.8% of Op Exp

- Transformation goals of Sláintecare and Cybersecurity can't be achieved without significant additional sustained investment

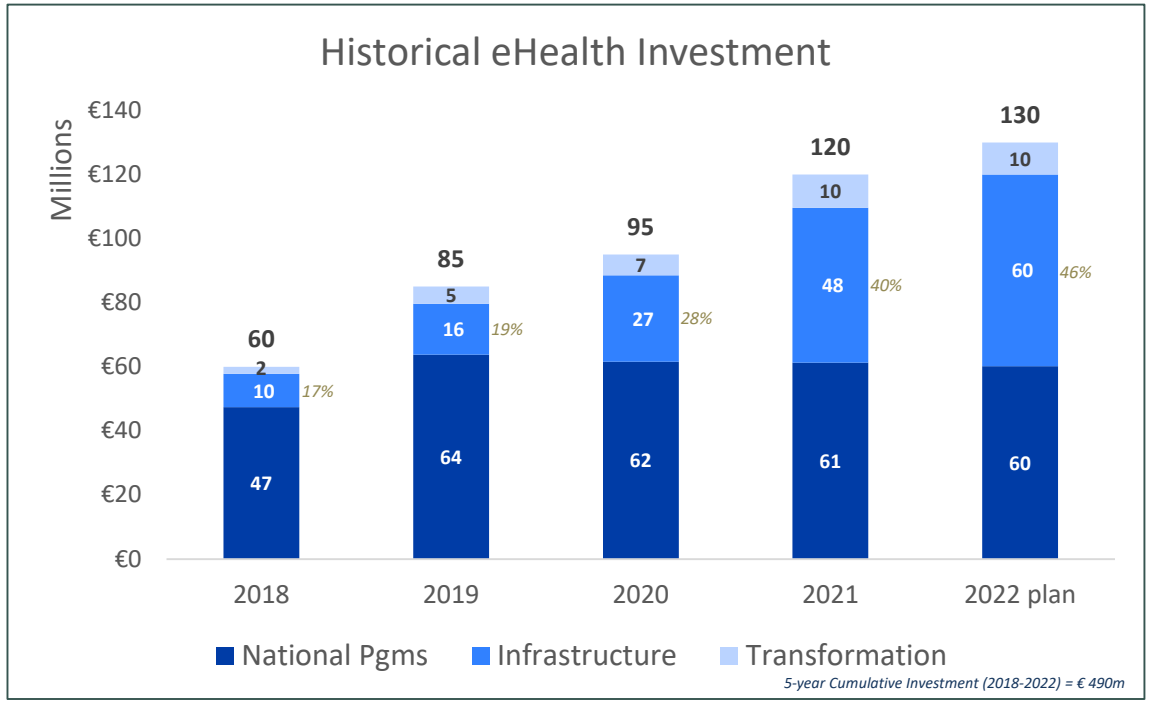
			10-year Investment Requirements (2023-32)		
Strategic Priority	**Strategic Priority**	**2022 Investment**	**Current Path (Plan B)**	**Transformational Path (Plan A)**	**Investment Gap** (Transformational - Current)
Current	Foundational Infrastructure*	€49m	€643m	€985m	€342m
	National Programmes[3]	€60m	€795m	€633m	-€162m
	Transformation Priorities	€10m	€132m	€202m	€70m
Subtotal-Current		**€119m**	**€1,570m**	**€1,819m**	**€249m**
New Priorities	Cybersecurity Transformation	€11m	€147m	€800m	€689m
	EHR Plan A[4]	€0m	€0m	€960m	€960m
	Application Management	€0m	€0m	€200m	€200m
	Digital Innovation	€0m	€0m	€20m	€20m
	Future Contingency (5% current)	€0m	€0m	€85m	€85m
Subtotal-New Priorities		**€11m**	**€147m**	**€2,065m**	**€1,981m**
TOTAL	**TOTAL**	**€130m**	**€1717m**	**€3,884m**	**€2,203m**

Notes:
Systemic investment includes RHAs, but excludes Voluntary hospitals
*Less current Cyber Security allocation
[1]Current Path: Avg. annual growth rate = 5%
[2]Transformation: Avg. annual growth rate = 12.5% (to 25th percentile of healthcare peers)
[3]Annual savings of €12m due to EHR advancement; assumed to start 2025
[4]Assumed EHR investment starts 2025

➡ **Achieving systemic cyber resilience and EHR delivery will require *more than double the current annual IT spend over the next 10 years***

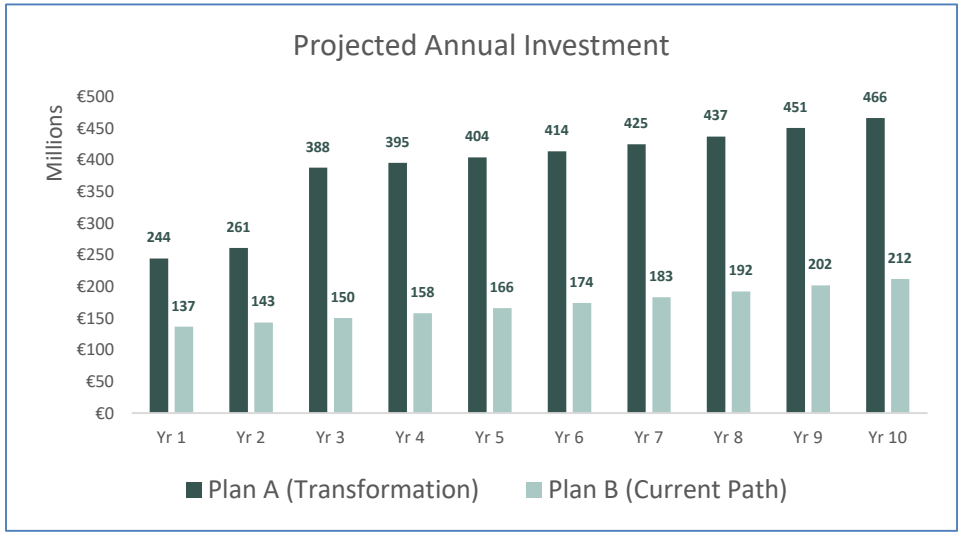
[redacted] bout how fast to roll out; [redacted] nt

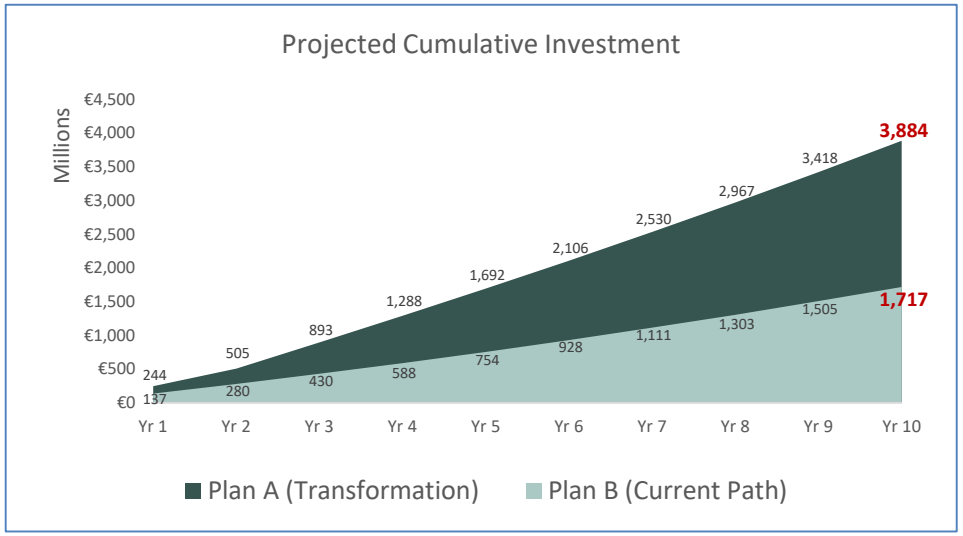
Delivery of this agenda has been hampered by significant year-on-year under investment of IT Capital, resulting in under-prioritisation of both infrastructure and transformation



Note: Historical Capital Investment by eHealth Portfolio is shown in the Appendix here

Almost double the 2022 investment level will be required on an annual basis to deliver Plan A





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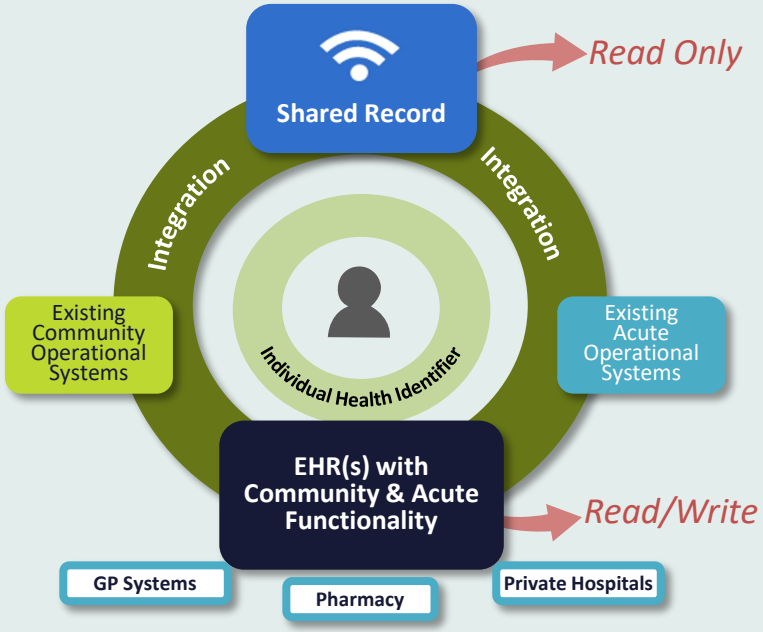
Key Asks:

- ***Endorsement of and support for our "Plan A"***
- ***Endorsement of our suggested governance model***

Appendix

vered without a National EHR

Plan A: Sláintecare EHR



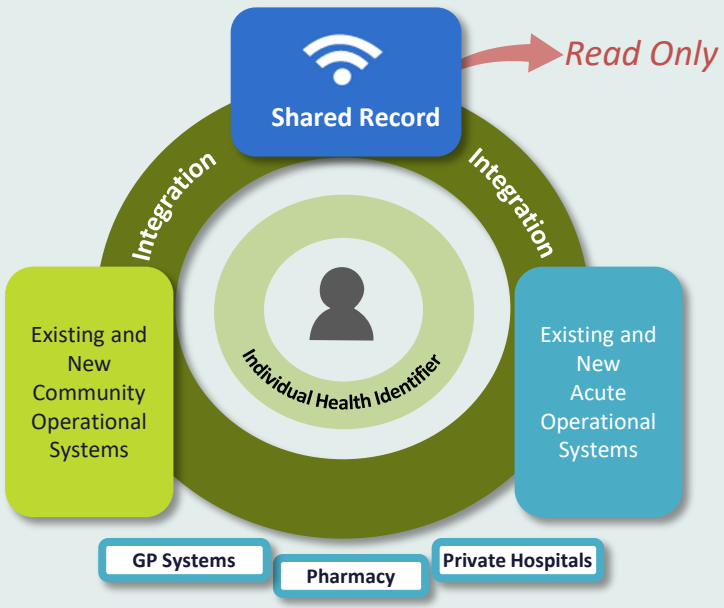
Shared Record
- Read Only patient record

Acute/Community Systems
- Patient data integrated to Shared Record
- Health records integrated into EHR

EHRs
- Read/write patient records
- x49 hospitals & all Community orgs
- Enables clinical workflow across applications and services

Patient Records:
- Digital

Plan B: Tactical Solutions



Shared Record
- Read Only patient record

Acute/Community Systems
- Patient data integrated to Shared Record
- Limited integration of health records

EHRs
- No patient record read/write without EHR
- Only a few hospitals, none in Community
- No clinical workflow across applications

Patient Records:
- Paper

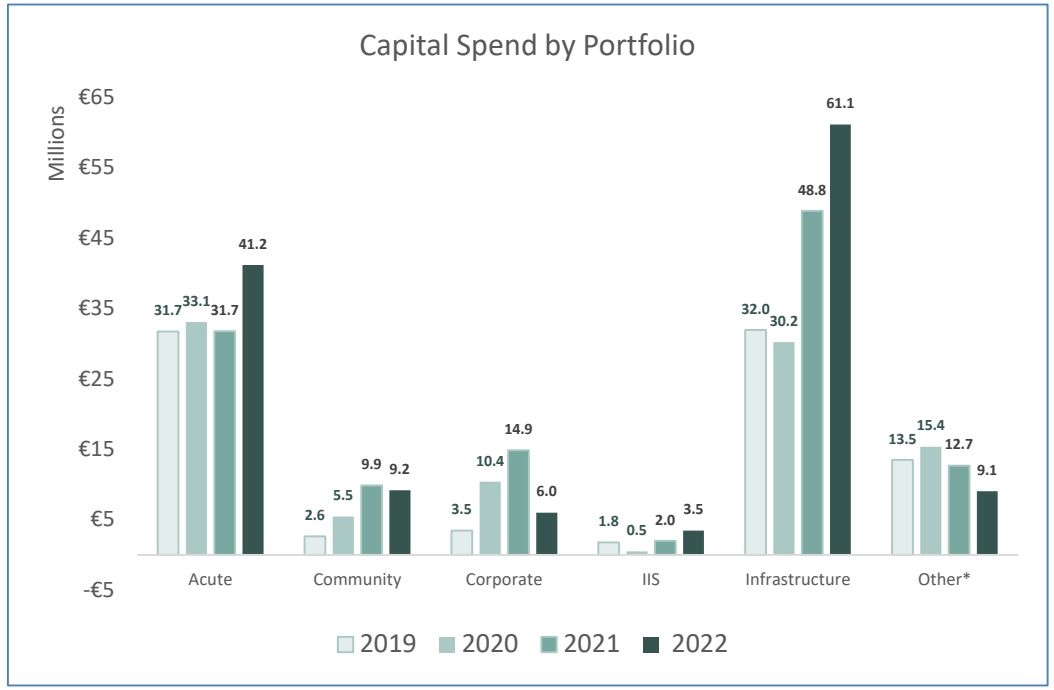
Term	Definition
National Electronic Health Record (EHR)	A National Electronic Health Record (EHR) is a complete digital record of a patient's journey, throughout their life, across all health and social care settings, for every citizen. It will move us from a position where patient records and key information is locked in a paper format and within specific organisations, to an environment where digital patient records are shared securely across care settings with appropriate consent. An EHR contains the information documented by healthcare professionals when they interact with that patient—for example, the patient's symptom history, past history of illnesses and operations, clinical observations made by the professional such as a blood pressure reading, blood and other test results, X-rays and scan results, prescriptions and other treatments, care advice, the course of the illness, preventive and public health activities such as immunisations, and activities undertaken by patients to stay healthy. An EHR system can support healthcare professionals by facilitating, for example, the use of checklists, alerts, and predictive tools, and embedding clinical guidelines, electronic prescribing and the ordering of tests. It can reduce risk of data replication as there is only one modifiable file, which means the file is more likely up to date and decreases risk of lost paperwork and is cost efficient.
Shared Care Record	A digital solution that enables healthcare providers across delivery settings to view patient records for direct patient care but not edit them. It brings together information from various systems into a single place for care professionals to use to support the delivery of care: • Aggregates individual patient health records from healthcare providers, such as Hospitals, General Practice and Community services • Presents these aggregated records to clinicians in a clinically coherent view, to inform clinical decision-making • Makes these records available to patients to promote self-care and transparency
Summary Care Record (or Electronic Patient Summary)	An electronic snapshot of the patient's essential clinical information available to healthcare professionals treating patients in situations such as attendance at an out-of-hours clinic or in an emergency situation. This enables more timely and informed decisions regarding a patient's care, including a reduction in medicines errors, time savings during medicines reconciliation, and the choice of more appropriate care pathways for patients. The kinds of clinical information included in a Summary Care Record include: • **Subject of care** - Patient's name, address, phone number, date of birth, and next of kin details. • **Conditions** - Any diagnosed, long-term health conditions – for example, diabetes. • **Procedure** - Any procedures the patient has had in the last six months. • **Allergies** - Any diagnosed allergies that the patient has. • **Vaccinations** - All vaccinations that that the patient has received. • **Medications** - All the medications the patient is currently prescribed.

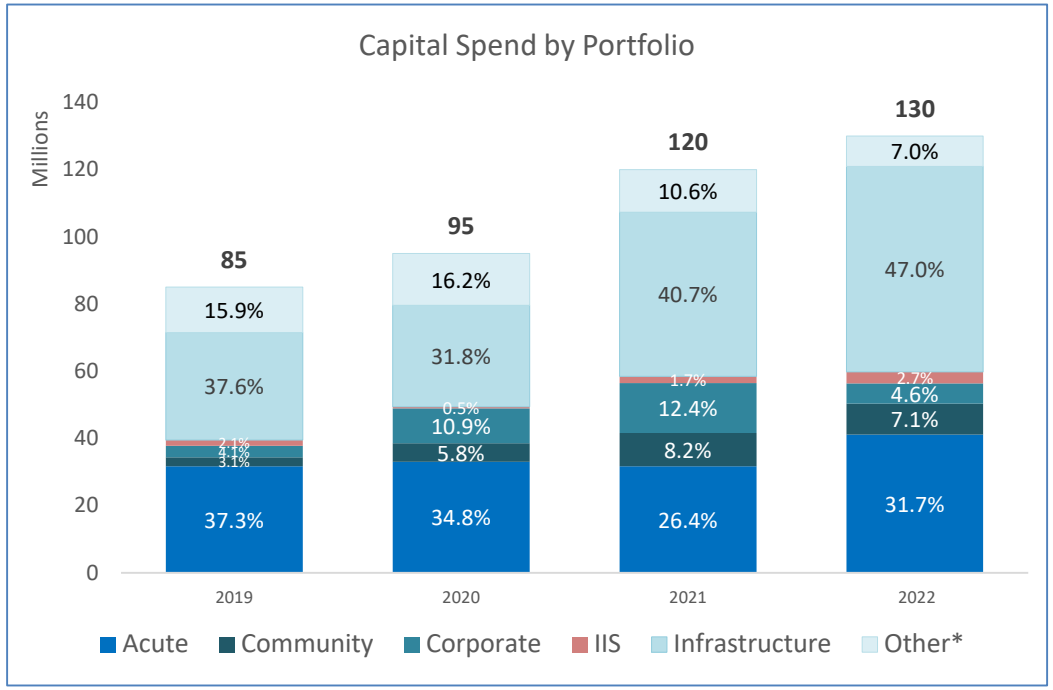
Sláintecare Programmes

Category	Programme	Portfolio
2. National Programmes	Acute Floor Solution	Acute
	Critical Care ICT	Acute
	Medical Laboratories	Acute
	National Cancer Information System	Acute
	National Electronic Blood Track	Acute
	Medical Imaging (NIMIS & others)	Acute
	CHI ICT	Acute
	CHI Crumlin-Temple St	Acute
	PAS iPMS	Acute
3. HSE Transformation Priorities	Endoscopy	Acute
	Cardiology	Acute
	SSW Inpatient Journey Solution	Acute
	Order Comms	Acute

Other Priority Programmes – Agile Delivery

Programme	Portfolio
Covid Case Tracker (CCT)	Corporate
Covid Tracker App	Corporate
Covid Test Appointment Scheduling	A2I
National Vaccination Platform	Community
ePrescribing through HealthMail	A2I





Other = A2I, COO, Enterprise Architecture, Multiple Portfolios