Digital Transformation @HSE

How to scale innovation faster for patient and population benefit

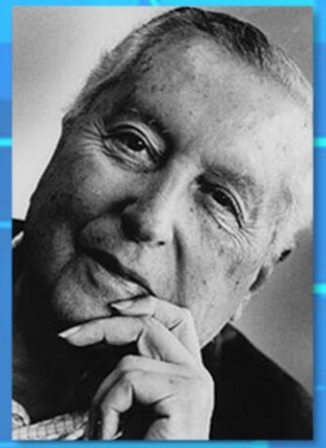
Martin Curley

HSE Director of Digital Transformation

@martingcurley1

HSE Digital Transformation

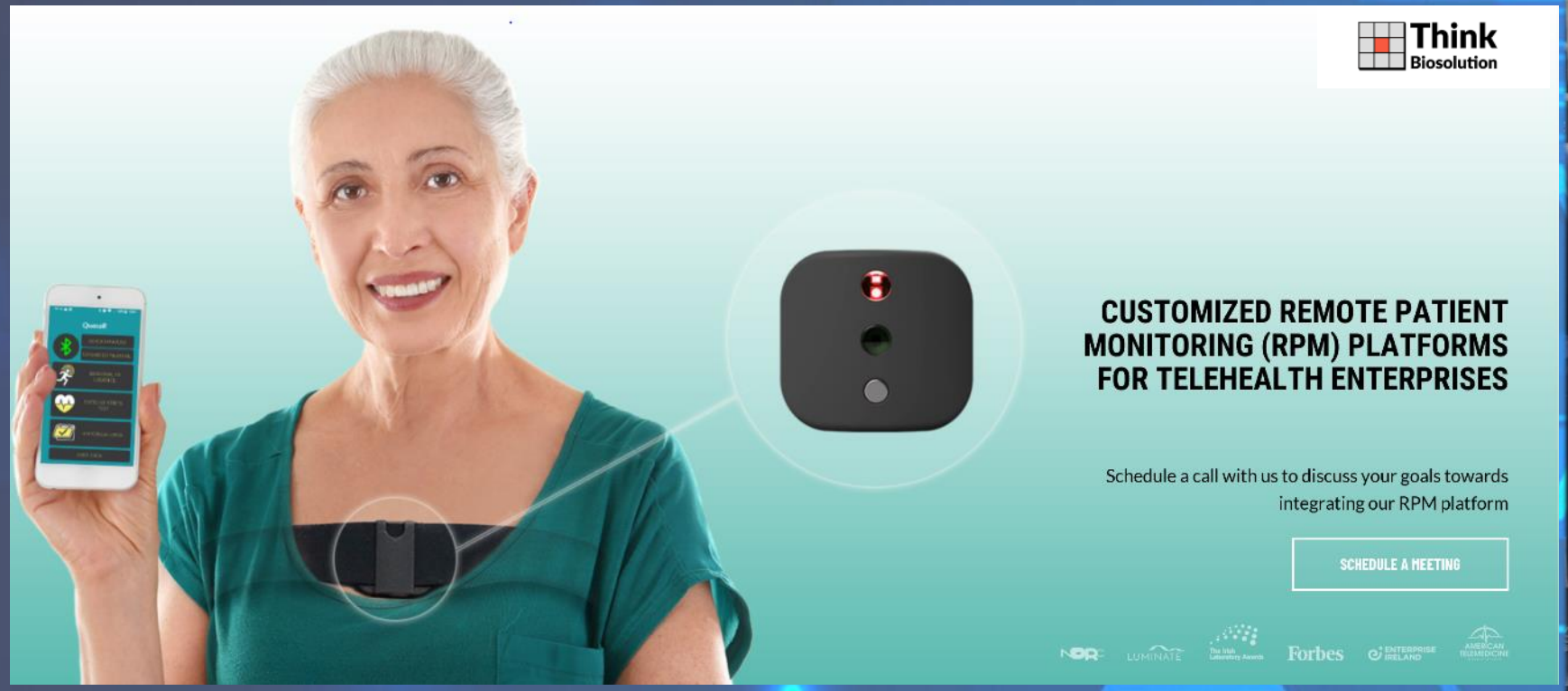
• “In an unstable complex system, small islands of coherence have the potential to change the whole system.”



Ilya Prigogine

Russian/Belgian physical chemist and
The Nobel Prize winner in Chemistry 1977

Digital Disruption upon us!



"We choose to digitally transform the Irish Health Care System, Not because it is easy, but because it is hard!"

..Ireland as a European Digital Health Leader (2025-2027)
…Ireland as a Global Digital Health Leader (2030)

Build a roadmap for ambition, implementation and success

	Maturity Levels	Digital Health Macro Capabilities			
		Digital Budget	Digital Capability	Digital Value	Digital Business Model
5.	Optimizing	Sustainable Economic Model	World Class	Optimized Value	Value Centre
4.	Advanced	Funding Amplification	European Leader	Managed Yield and Portfolio	Investment Centre
3.	Intermediate	Managed Spending	Average	Value Measurement	Service Centre
2.	Basic	Low Spending	Mediocre	Establish Benchmark	Cost Centre
1.	Initial		← Beginning →		

Timeline

2030

2027

2019

Defining Digital Transformation

Digitization

- Conversion of Analog or Physical information into digital format

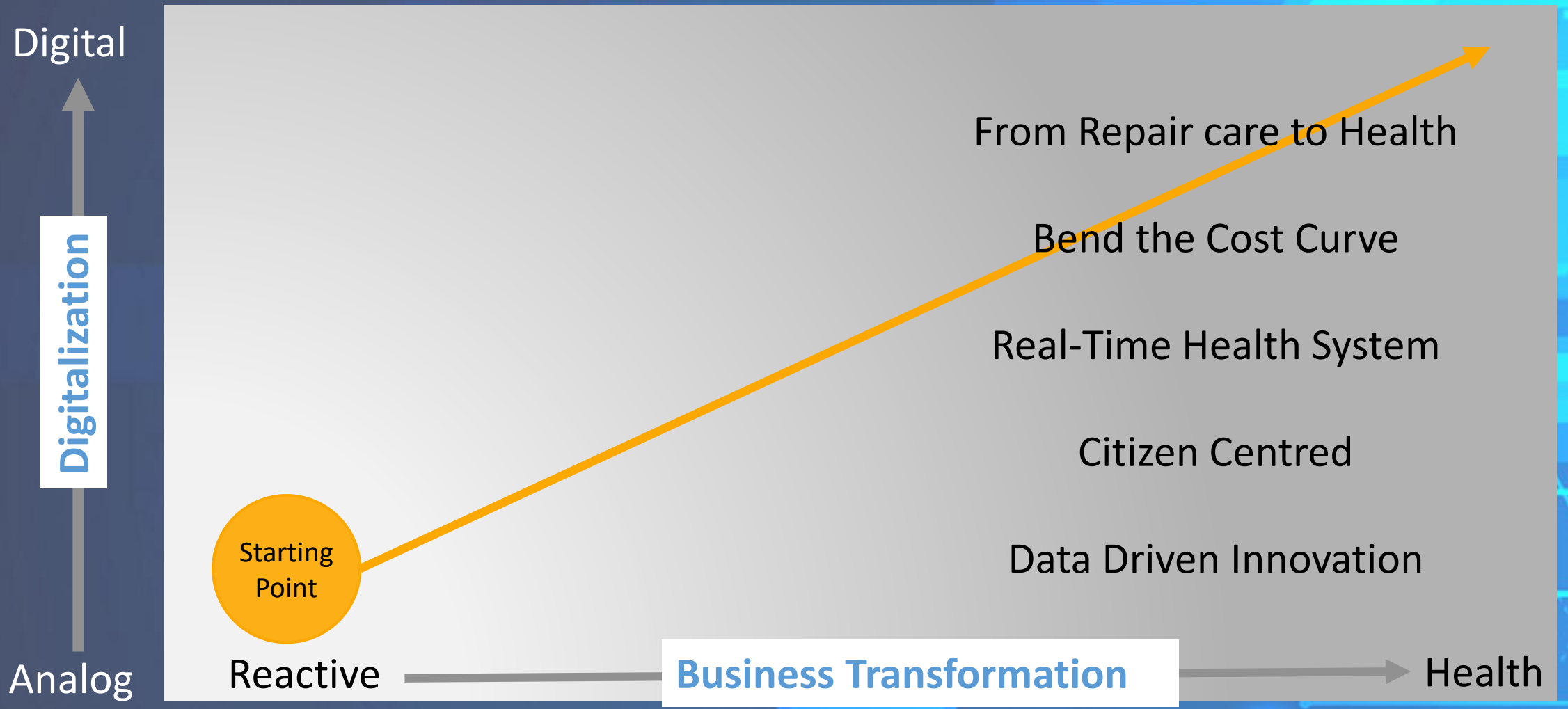
Digitalization

- Use of Digital Technologies to enable or improve business processes or outcomes

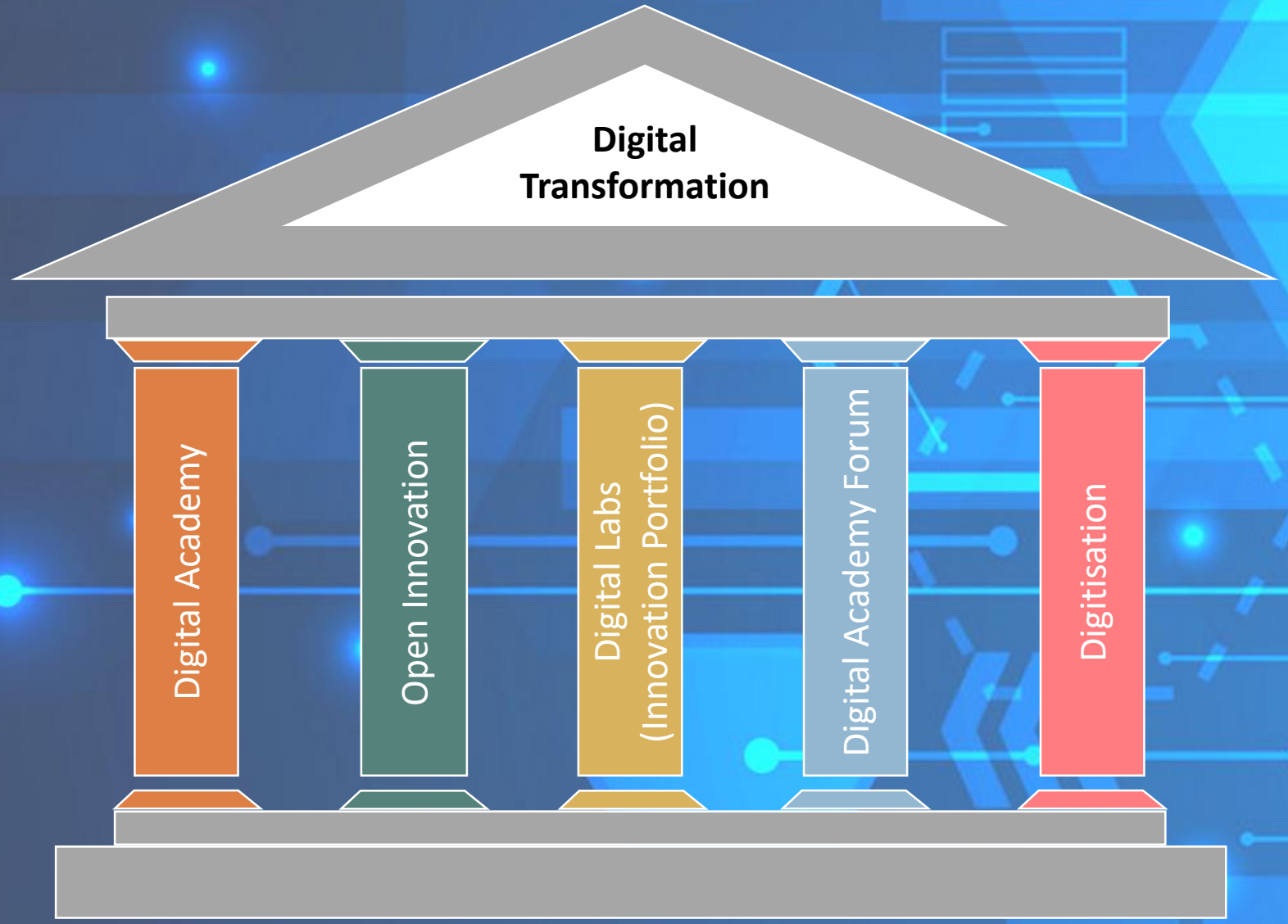
Digital Transformation

- Coordinated Digital Change effort at scale throughout all aspects of the organization and ecosystem

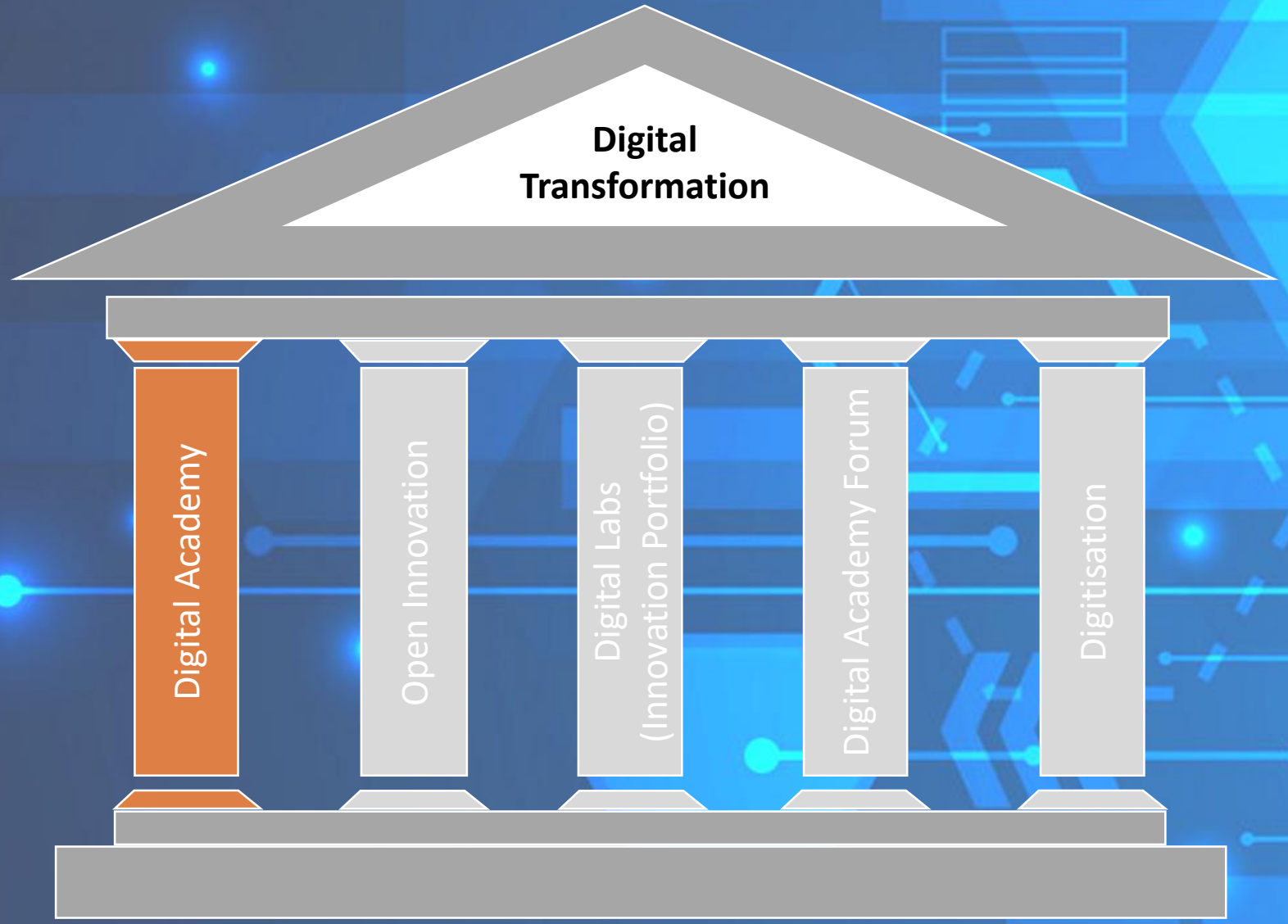
The Transformation of the Business of Healthcare



Five Pillars of Digital Transformation



Pillar 1: Digital Academy



Digital Academy Architecture

Digital Health Research/PhDs

Masters in Digital Health Transformation (UL et al)

Postgraduate Diploma In Healthcare Innovation (TCD)

Bachelor in Digital Health (LYIT)

Ambassadors in Digital Health Innovation (TCD)

CHIME CHCIO

Certificate in Digital Health (GMIT)

HSE Digital Change Guide

Digital Health Passport

Digital Skills Proficiency

MSc in Digital Health Transformation

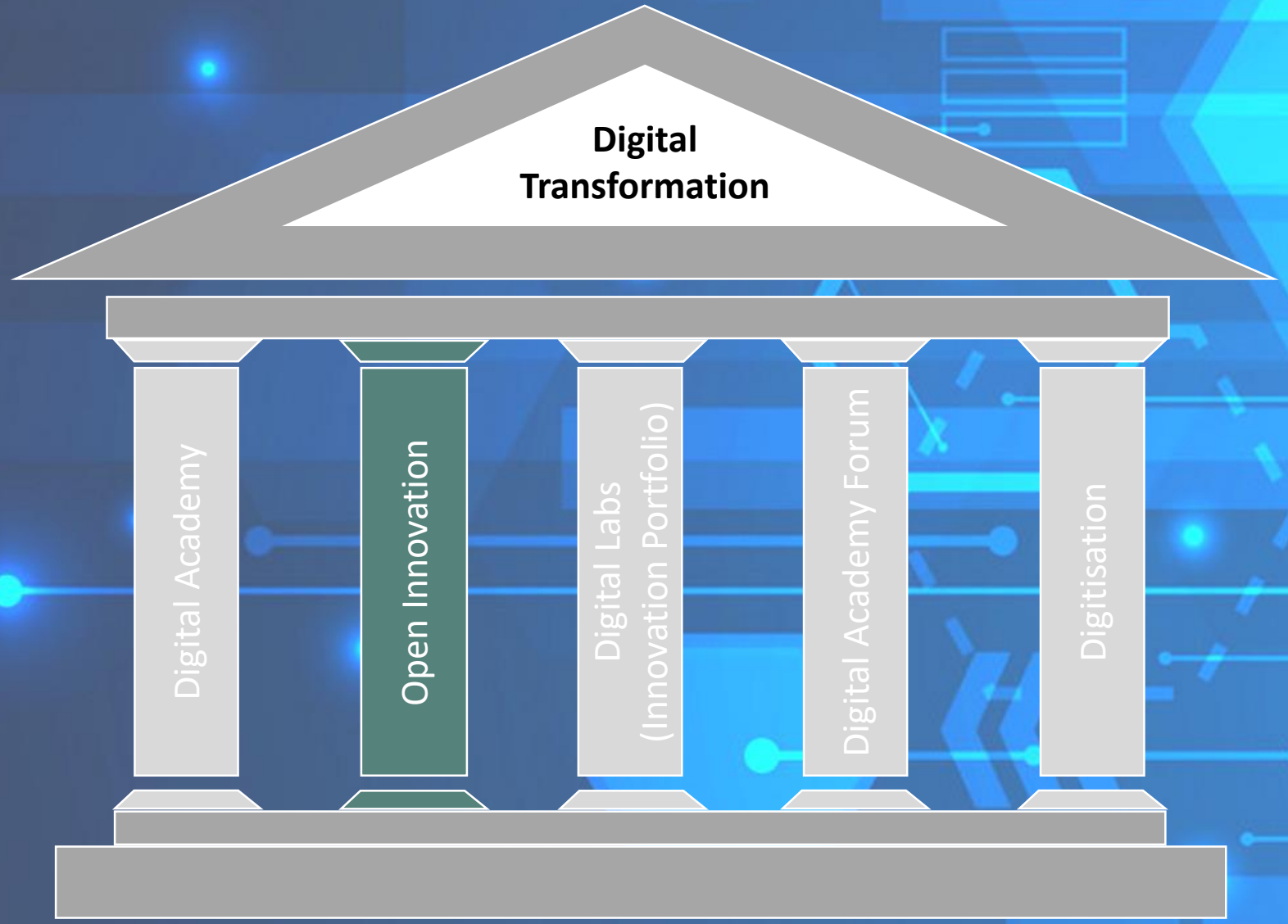
www.digitalhealthtransformation.ie

Mater Hospital as a Digital Skills living Lab

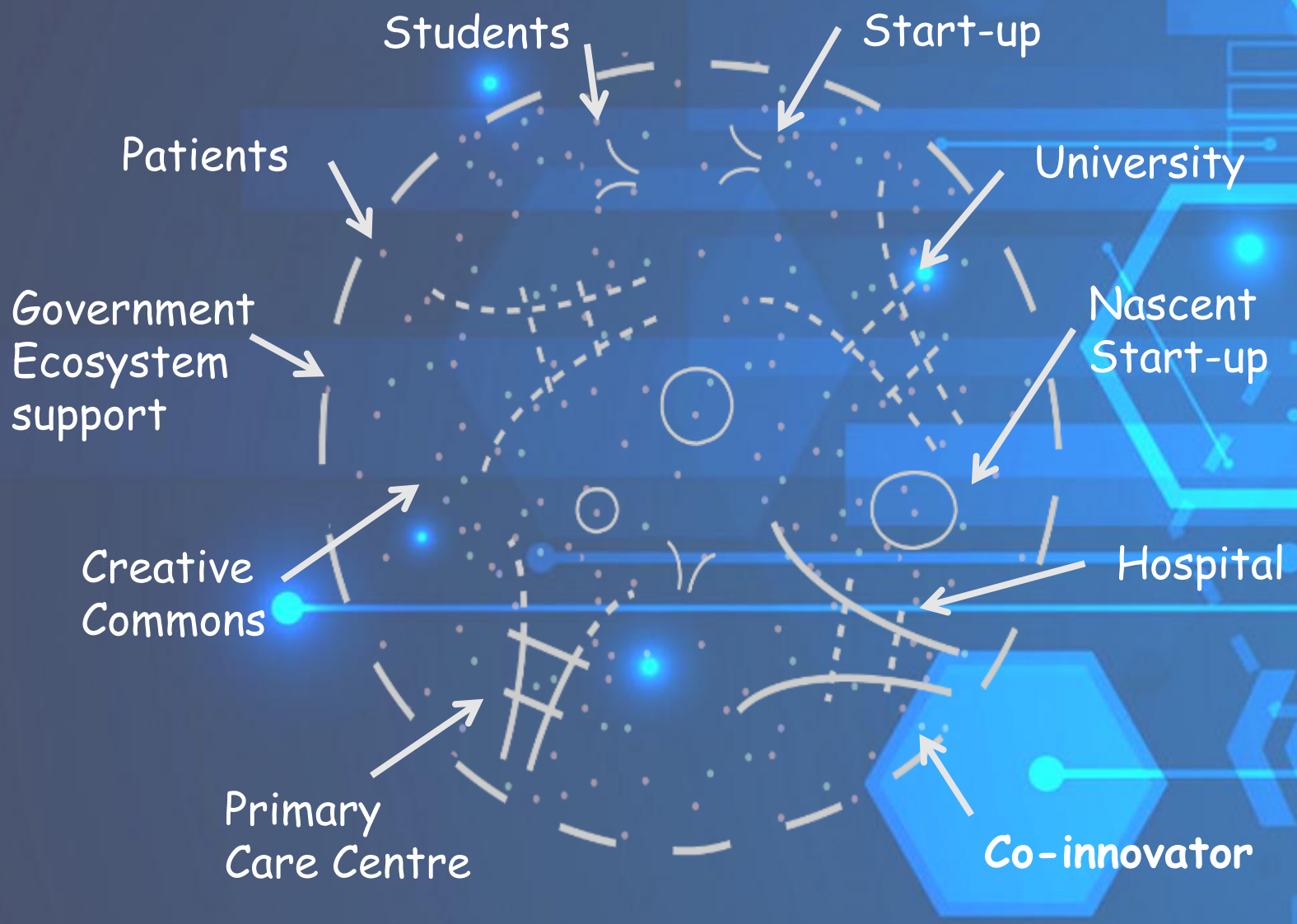
- Collaboration with Suzanne Brown, CNIO and Loretto Grogan, ONMSD
- Performing Digital Skills Assessment across Nursing and HCA population
- Perform analysis and then devise, develop and deliver training offerings
- Scale Assessment and Training offering nationally

Mater Hospital Dublin

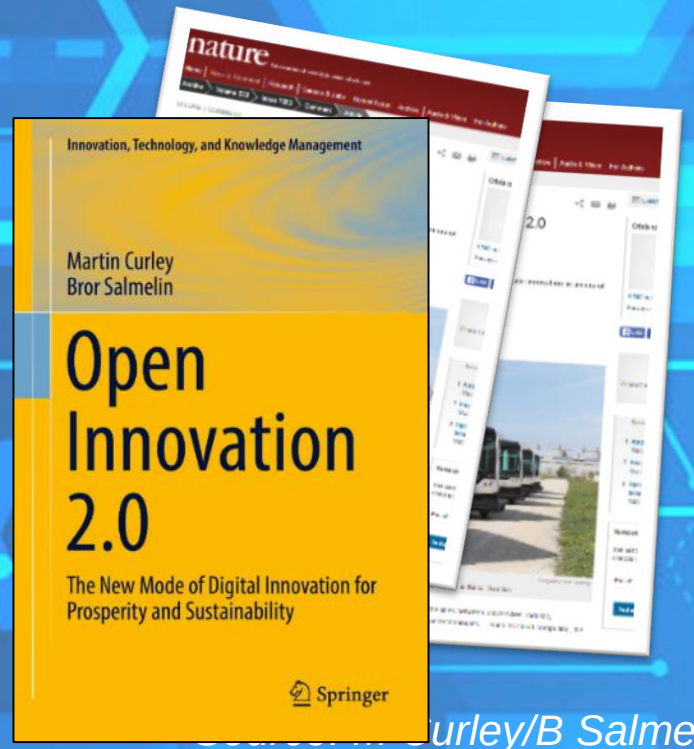
Pillar 2: Open Innovation



Open Innovation 2.0: The new mode for Digital Innovation;



Leveraging Collective Intelligence and Energy; Multiplicative, Synergy and network effects



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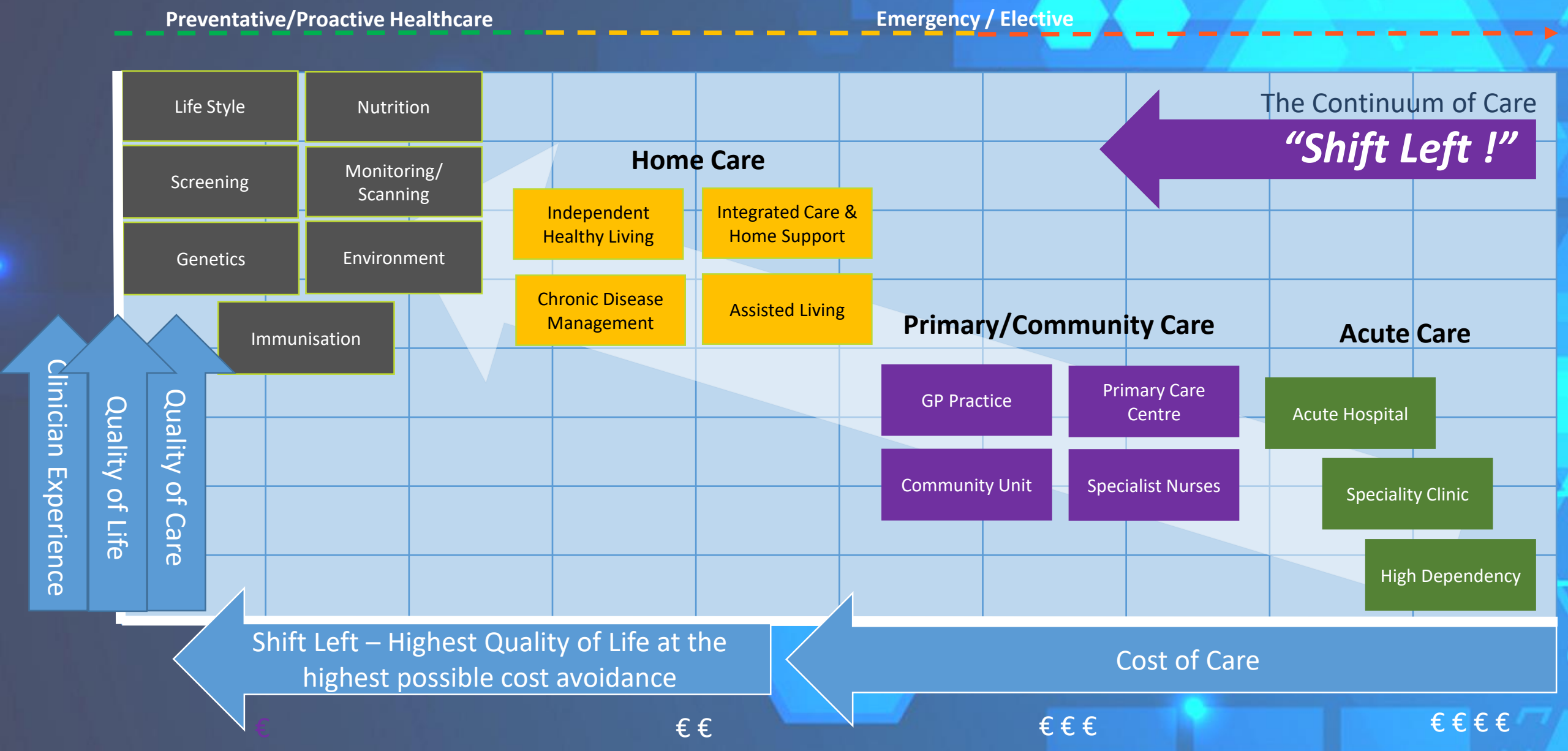
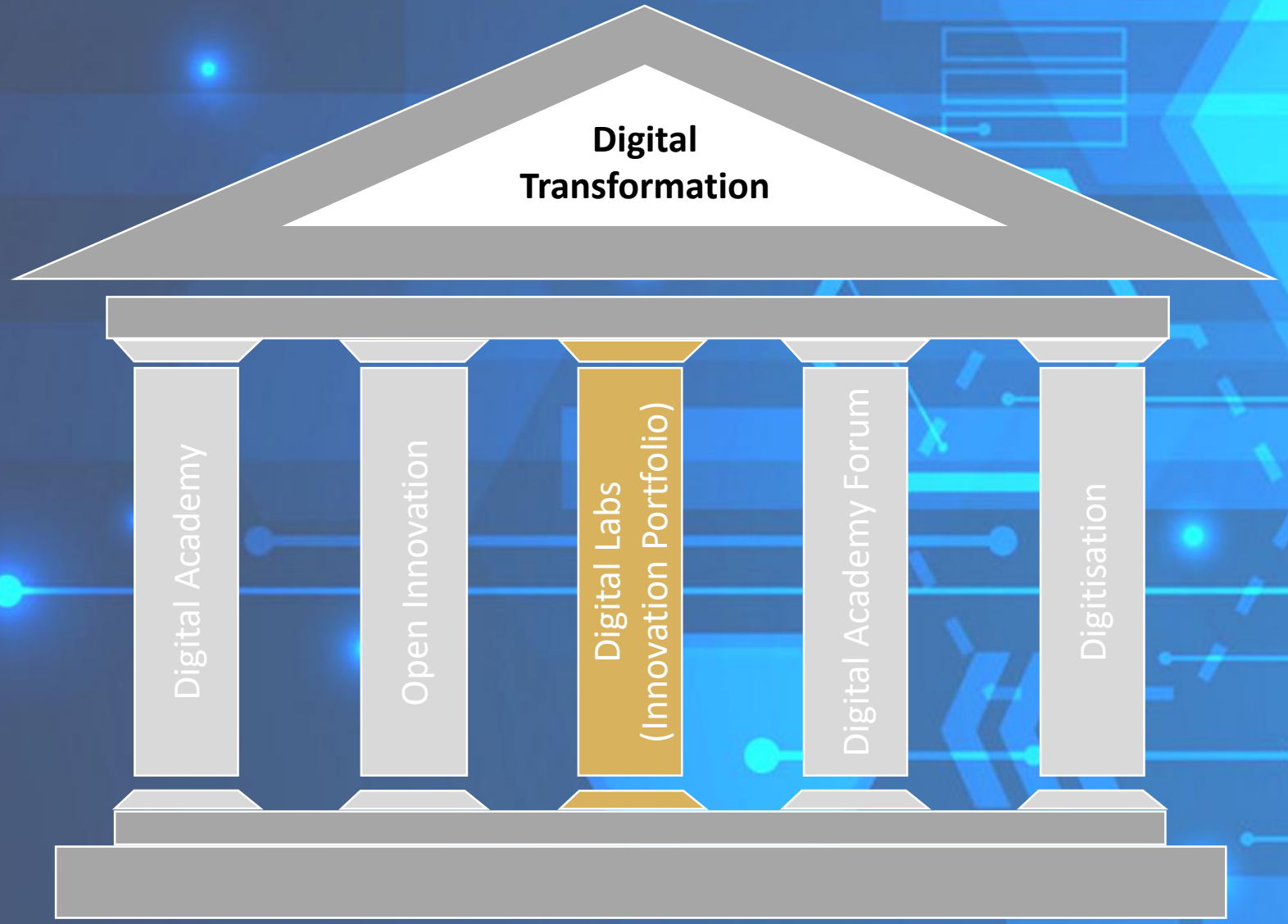
Sláintecare: Stay Left, Shift Left



Pillar 3: Digital Labs (Innovation Portfolio)



Digital Innovation Portfolio

HSE Digital Labs

- The Digital Lab currently has a portfolio underway of over 50 programmes and projects. These consist primarily of disruptive Digital Health solutions which are currently being evaluated and piloted throughout the HSE.

- Projects pass through four phases:
  - Research
  - Pilot
  - Demonstrator
  - Broad Adoption

Ross Cullen (Digital Innovation Manager) presenting at the HSE Digital Academy Forum Sep. 2019

HSE Digital Labs

Digital Transformation

MPower

Vital Signs Automation

Vital Signs Automation

HANDS
HealthBeacon
Mobiile X-Ray

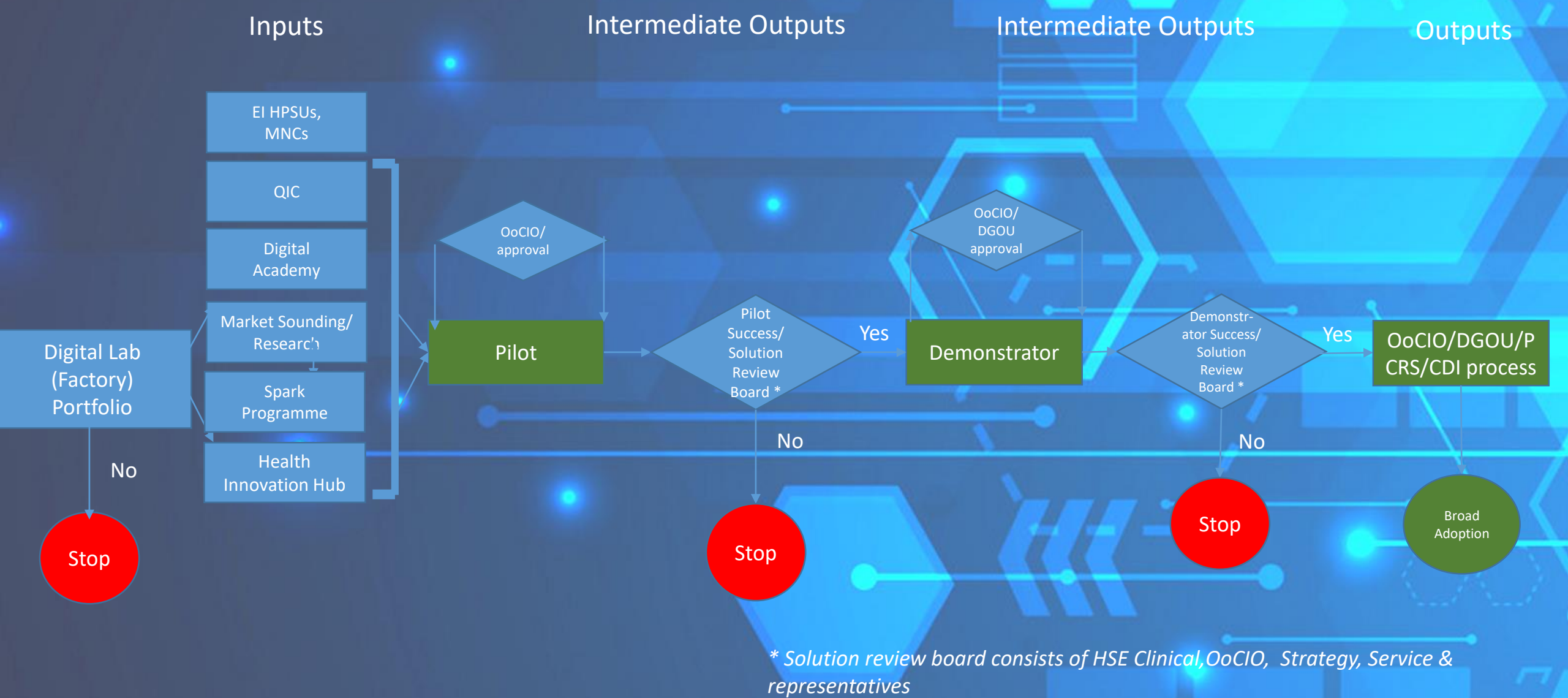
AI for Waiting Lists

Tissue Viability

Carefolk

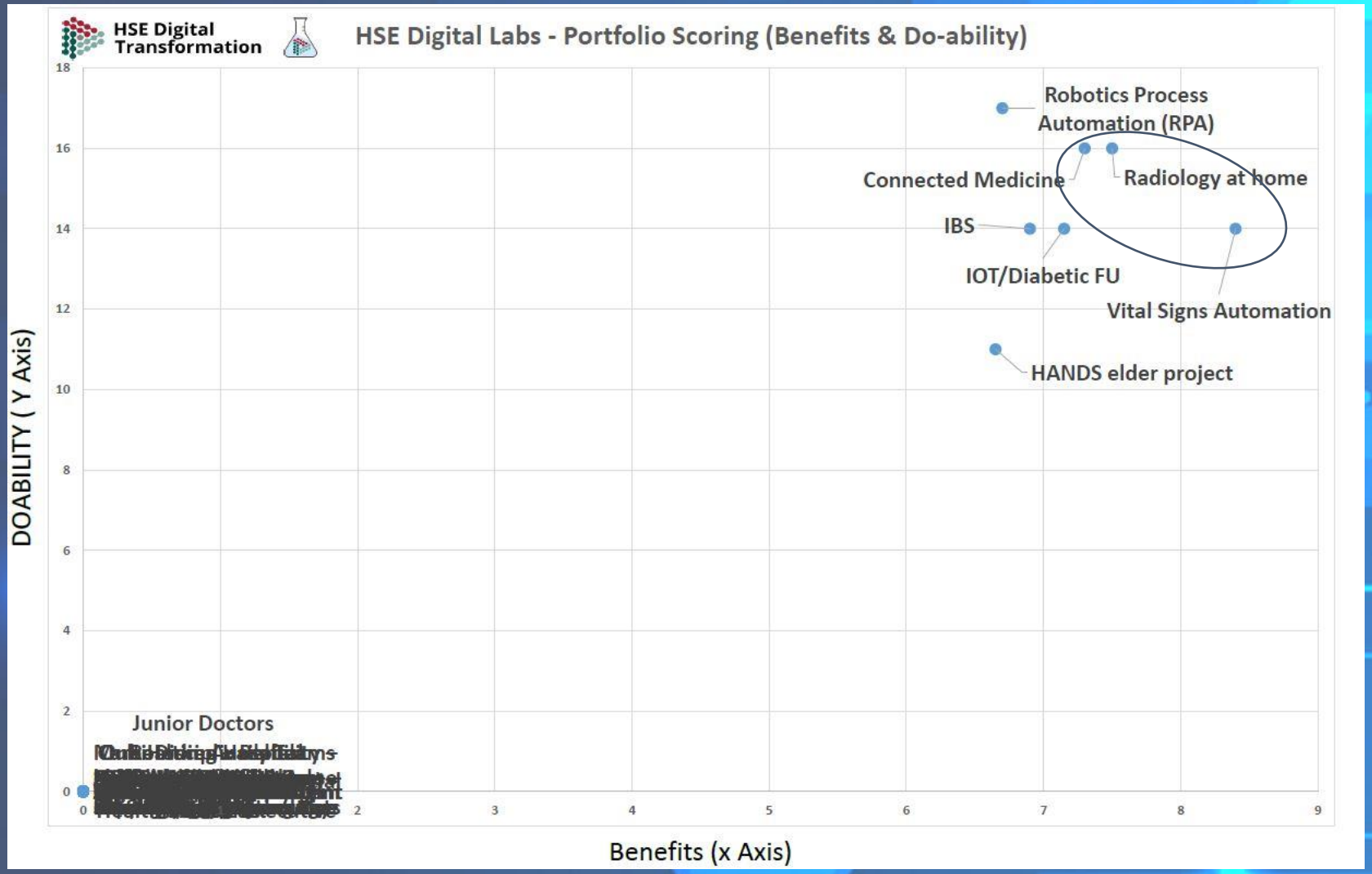
Legend	
	Current Pilot
	Planned Pilot

Digital Innovation Pipeline- Process Flow & Governance



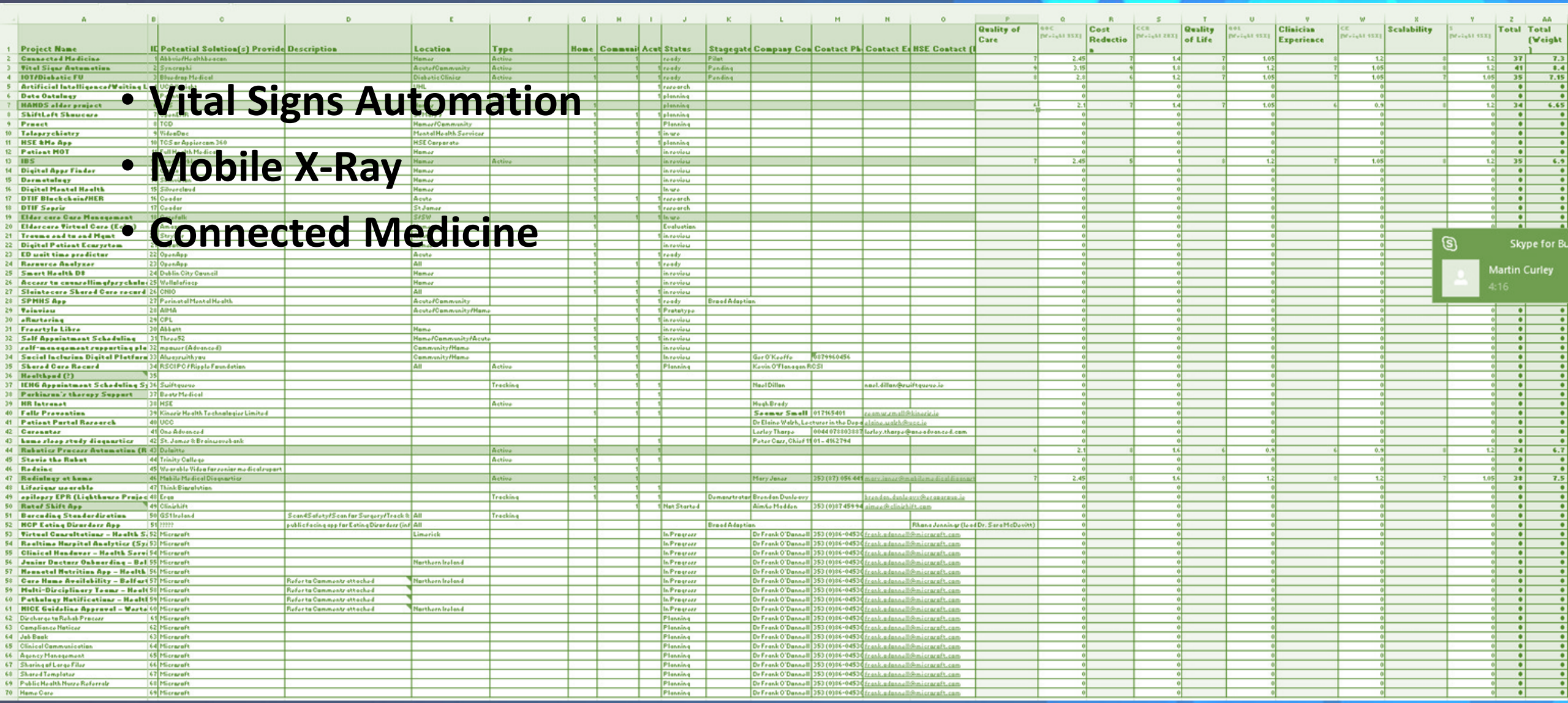
** Solution review board consists of HSE Clinical,OoCIO, Strategy, Service & representatives*

Digital Innovation Portfolio



Three priority projects

- **Vital Signs Automation**
- **Mobile X-Ray**
- **Connected Medicine**



KEWS 300

Hospital WiFi

Hospital Server

Ward Central Station

Improving Hospital Point-of-Care Performance

- Shorter Average Length-of-Stay
- Higher standard of care
- More productive staff
- Elimination of charting and scoring errors

SyncroPhi

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HSE Hospital Capacity

- Unacceptable bed-occupancy rates in acute hospitals (95%-100%)

  "International evidence indicates that high bed occupancy is associated with a number of adverse factors including increased risk of HAI such as MRSA, increased mortality, increased probability of an adverse event, risks to staff welfare and reduced efficiency of patient flow".
  [Ref. p3 Dept. of Health 'Health Service Capacity Review 2018 Executive Report']

- Additional 5,360 – 7,150 acute hospital beds in public hospitals required over next 12 years

  "The development of capacity in line with the baseline scenario is simply not an option"
  [Ref. P3 Dept. of Health 'Health Service Capacity Review 2018 Executive Report']

  "Adding 2,500 extra hospital beds would cost €1m per bed, with an expected annual running cost of €306k per bed"
  [HSE/DOH answer to Parliamentary Question to Minister for Health, Sept 2018]

- An 80% increase in Adult Critical Care beds is recommended (from 240 beds to 430 beds) over next 12 years.

  [Ref. 'Multi-annual National Adult Critical Care Capacity Planning 2019, 2020 and subsequent years –Memo' HSE Critical Care Programme, National Clinical Programmes]

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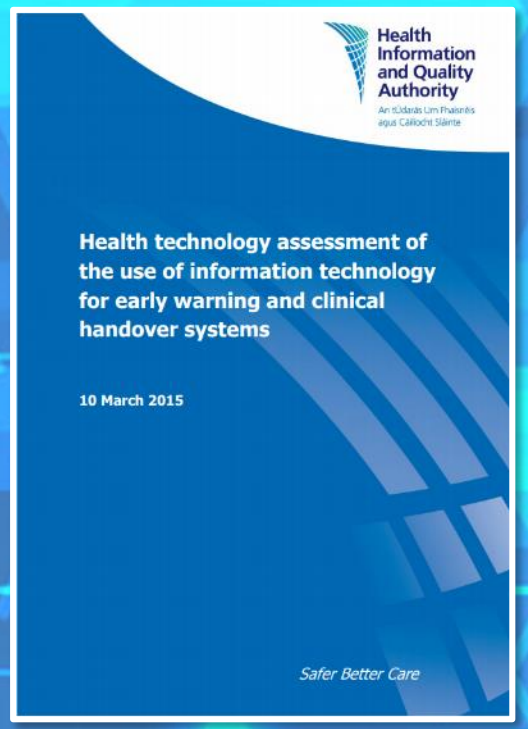
SyncroPhi

Bed Capacity/Trolley Count reduction opportunity

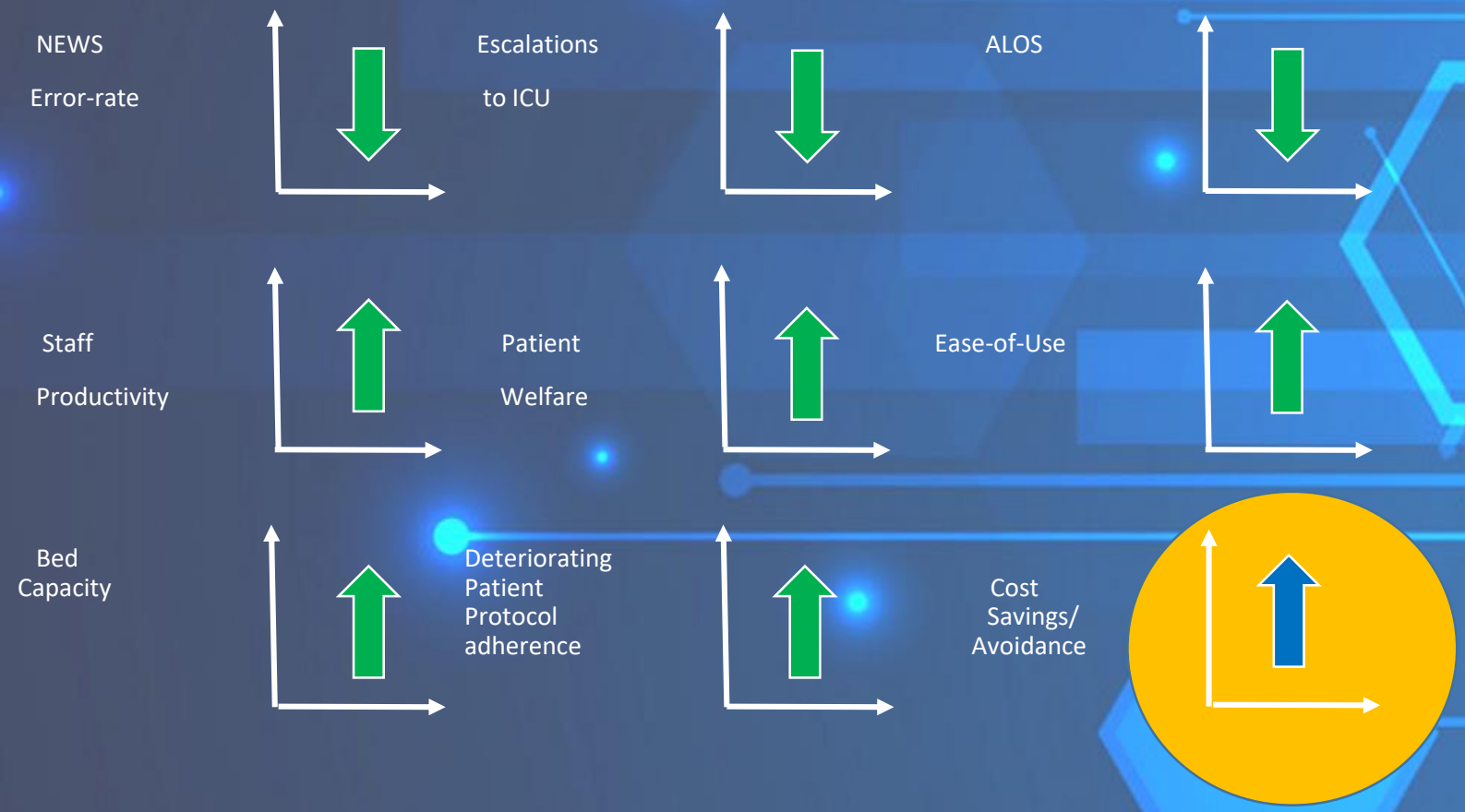
"Using data derived from the systematic review and applying this to the Irish healthcare setting, potential benefits from implementing a move from paper-based recording of vital sign parameters to an electronic early warning system could mean a potential resource gain for the Irish healthcare setting being realised through a reduction in general and ICU LOS of 28.9% (95%CI 18.6%-40.3%) and 40.3% (95%CI 4.6% - 76%), respectively. This translates to a capacity gain at a national level of 802,096 hospital bed days per annum (of a total of 2.8 million bed days per annum) and 30,628 ICU bed-days per annum (of a total of 76,000 ICU bed days per annum assuming 90% occupancy).This potential substantial resource gain would assist the efficient utilisation of acute hospital beds and result in reduced pressure on Emergency Departments, reduced waiting times for elective surgeries and ultimately more appropriate and timely access to acute hospital services.

Other potential benefits include increased efficiencies gained from reduced vital sign recording time, as much as 1.6 times faster than that of a paper-based system. This means more available clinician time to deliver care to patients. When this efficiency gain is coupled with improved accuracy of recording of vital signs and handover information, the potential gains realised through a safer patient environment are important contributions to be noted."



[Source: P11 Health technology assessment of the use of information technology for early warning and clinical handover systems]

Multifactorial Performance Improvement



These are eight performance measures which are relevant and highly impactful in the hospital Ward setting.

The arrows show the desired outcome.

KEWS300 improves performance in all of these dimensions.

These can be monetised to show major cost savings/avoidance.

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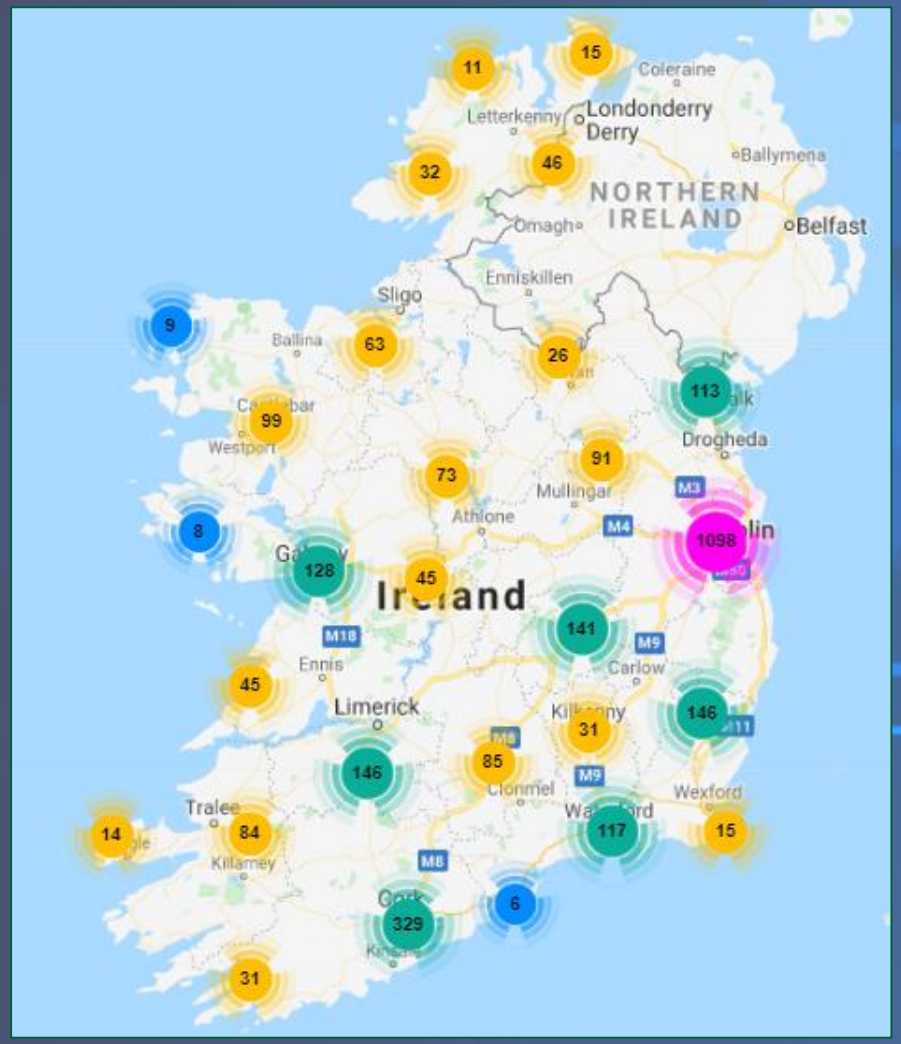
SyncroPhi

The HealthBeacon Ecosystem

24 hours

- Increased Adherence
- Real world insights
- Reduce waste / unused medication

Health Beacon Ireland Living Lab



- **> 6,250 patients** have had a HealthBeacon in Ireland
- **> 3,000 patients** have a HealthBeacon unit today
- **>240,000** Injections have been tracked

Mobile X-Ray for Nursing Homes and Private Homes

- Licensed by EPA
- Digital technology, remote connectivity and reporting
- Patient-centered care
- Timely diagnosis in familiar surroundings
- Proven hospital avoidance mechanism

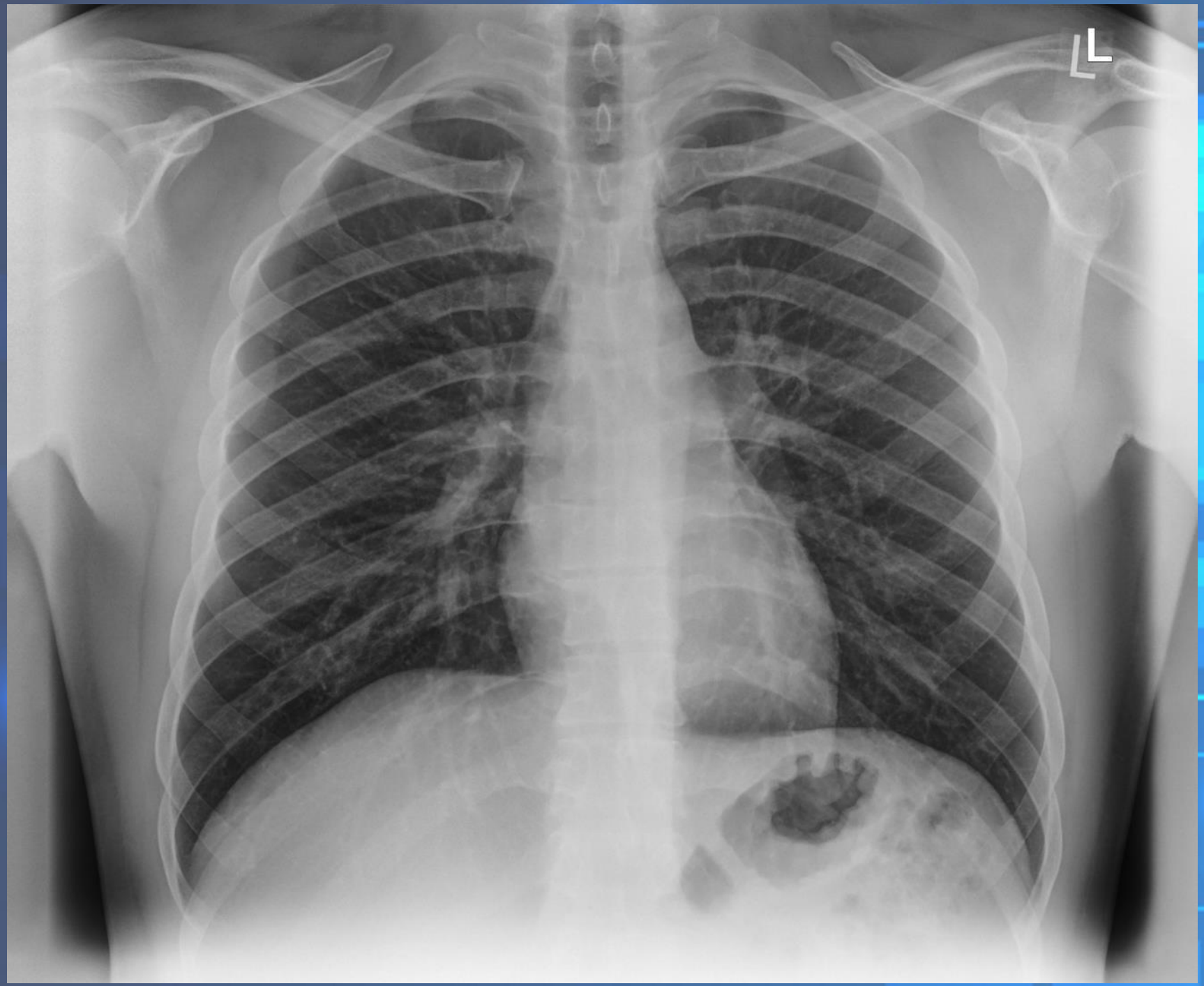
MOBILE MEDICAL DIAGNOSTICS

MOVING EQUIPMENT NOT PATIENTS

Quality Service

- Consultant Radiologists IMC registered and Dublin based
- Reports available within 1-4 hours of image capture
- Radiographers highly experienced and CORU registered

MOBILE MEDICAL DIAGNOSTICS
MOVING EQUIPMENT NOT PATIENTS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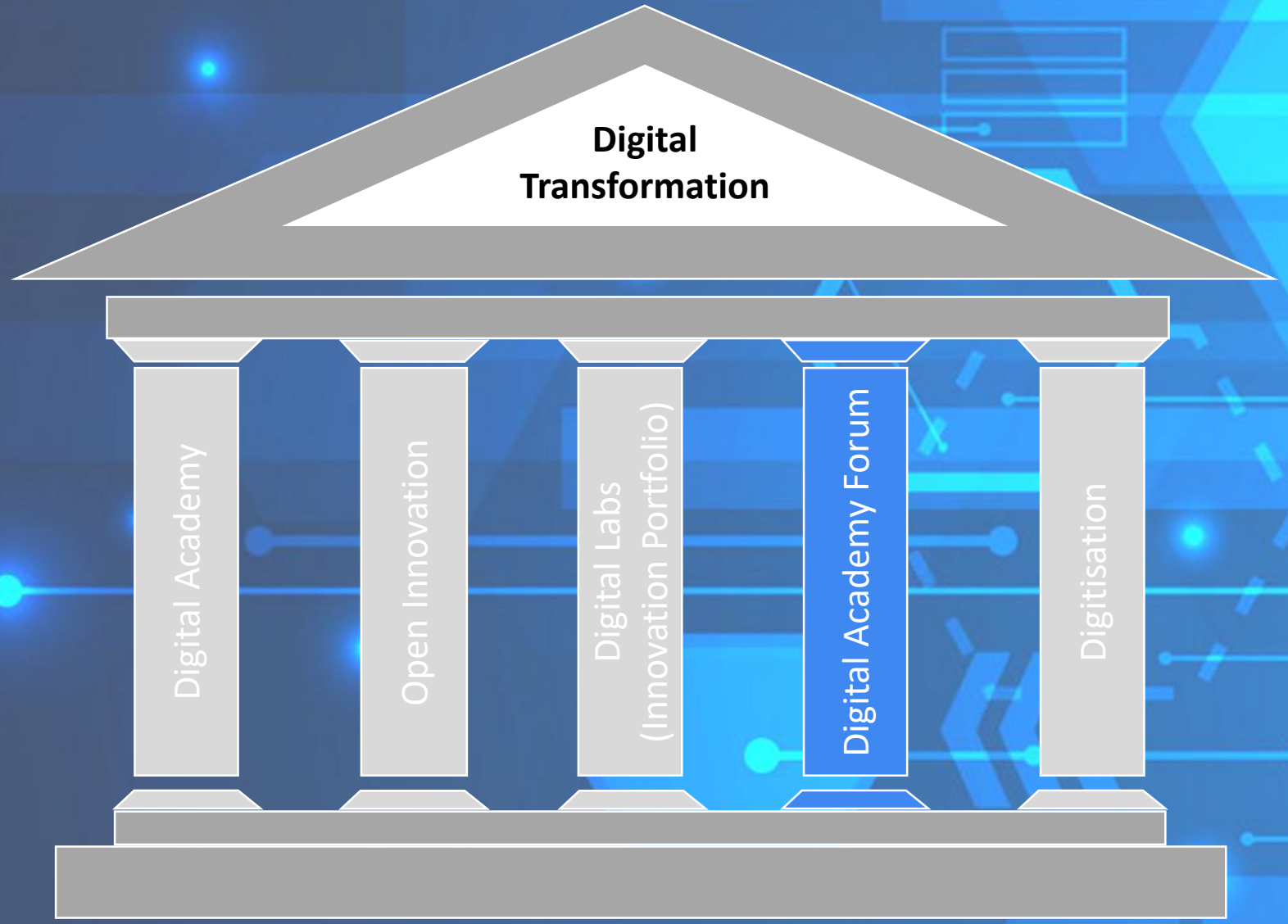
MMD Living Lab Trial 10 months

- Average patient age 86
- Many have Dementia
- 93.2% would have required ambulance transfer
- 6.8% would have required taxi transport
- 14.89% subsequently required hospital transfer

- 85.11% **AVOIDED** transfer to ED

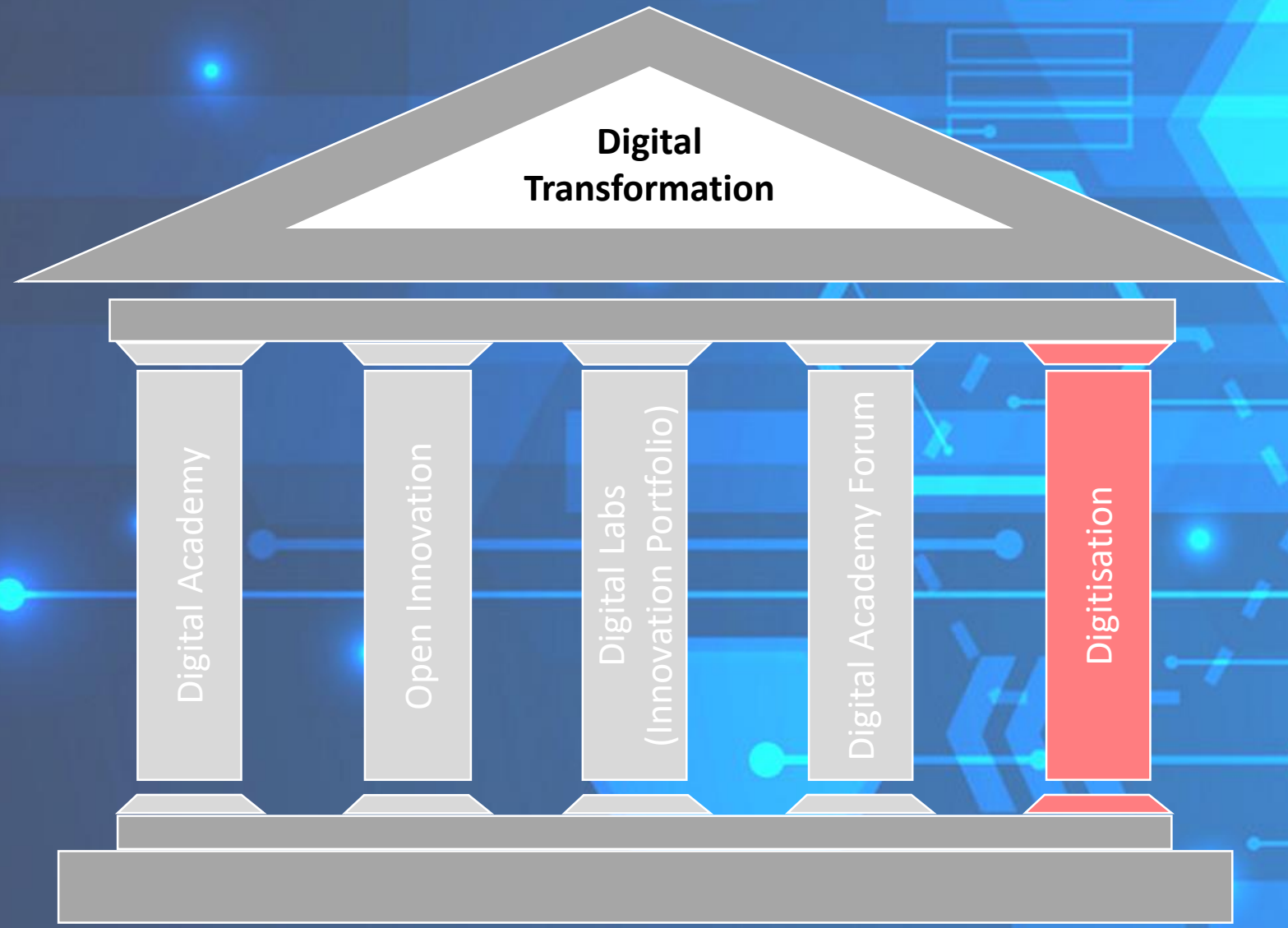
Pillar 4: Digital Academy Forum



Digital Academy Forum

Next DAF: March 11
Dr Steevens Hospital
13:30 – 17:30

Pillar 5: Digitisation



Robotics Process Automation(RPA)

- RPA is one of the fastest-growing segments of Artificial Intelligence (AI) and workplace automation.
- 2018 saw a 63% growth increase in RPA investments
- RPA's robust capabilities for boosting productivity and efficiency at a time when skilled talent is in short supply.

- RPA workshop held on 30th January 2020 (in conjunction with DPER)
- 2 pilots identified to begin learning process

HSE

Our Public Service 2020

Key Target Areas for RPA in Healthcare

Patient Access

- Scheduling
- Registration
- Insurance Verification
- Pre-Certification
- Prior Authorization
- Document Intake

Consultation & Care

- Screening
- Scribing
- Coding
- Documentation
- Scripting

Revenue Cycle

- Insurance Billing
- Patient Billing
- Cash Application
- Payment Posting
- Claims Management
- Account Follow-Up

Supply Chain

- Order Management
- Inventory Management
- Pharmacy

“The key barriers to building a 21st century health system are not technological.

They are in the institutions, processes and workflows forged long before the digital era.”

www.oecd.org/health/health-in-the-21st-century-e3b23f8e-en.htm

Thanks!

@martingcurley1

www.hsedigitaltransfrormation.ie