West Yorkshire Association of Acute Trusts

SCAN4SAFETY
Patient. Product. Place. Process.

What Digitisation Means to the Delivery of Heath Care in Yorkshire.

How did they do that?

r.corbridge@nhs.net

@R1chardatron

Chief Digital & Information Officer

NHS Leeds Teaching Hospitals Trust

@WYAATS4S

1. CEX: define target state customer journeys in and across channels.

↑ Easiest to get wrong

3. Define gaps.

digital transformation

2. Map to existing systems, processes and data.

4. Resolve gaps. data. process & systems.

↑ Hardest to get right.

LTHT Digital Informatics Team Strategy Visualisation

To support the Trust's vision for transforming the delivery of patient care and the development of new, more integrated services across the health and care community

#LeedsDigitalWay
CONNECTS • TRANSFORMS • IMPROVES

Priority Themes

- To use Digital technology to support people to maintain their own health and wellbeing;
- To ensure a robust IT infrastructure provision that supports responsive and resilient 24/7 working across all health and care partners;
- To provide workflow and decision support technology across General Practice, Neighbourhood Teams, Hospitals and Social Care;
- To ensure a change management approach that embeds the use of any new technology into everyday working practices.

High Level Objectives

- Deliver the Trust's strategy to transform service delivery and improve efficiency with increasing reliance on electronic records;
- Implement the Leeds Plan and West Yorkshire and Harrogate STP & LHCRE aims of developing more integrated services and supporting Local Digital Roadmap;
- Promote the NHSE Five Year Forward View and its dependency on IT as a key enabler;
- Progress towards the Government's 2020 target for paperless hospitals;
- Prioritise the need to improve the security and resilience of the Trust's IT facilities;
- Prioritise the need to replace obsolete infrastructure and extend the underpinning IT facilities across all of the Trust's sites to facilitate the delivery of these objectives.

"The biggest risk is not doing digital transformation. So please hear this one message very clearly – I am not looking for people to blame; I am looking for people to lead. We will together drive this change."
Secretary of State for Health Sept 2018

Current state

Current state information architecture

Threats

- Benefits are not delivered as planned (particularly cost savings)
- Clinicians and care providers are not engaged or satisfied
- The IT infrastructure implemented is inadequate and cannot support the Transformation Programmes with further risk of technological failures
- Supporting 351 different systems across the whole of the Trust.
- Skills shortage - Not being able to recruit to posts
- The evolution of Cyber Attacks
- Unintentional/Malicious Breaches of Information
- Environmental limitations due the physical construction of the Trust's estate

How we get to 2023

Staff Engagement

Drivers > Enabling Functions

Patient Services: Digital Demand

- Clinical Requirements
- User Experience
- User Centred Design
- Business Analysis
- Development
- Agile Principles
- Automated Testing
- User Acceptance
- Implementation
- PMO Controls
- Digital Governance
- DevOps / Infrastructure
- Maintenance
- Monitoring Tools
- Service Support
- Open Data Platform
- Reporting
- Insight

Digital Transformation

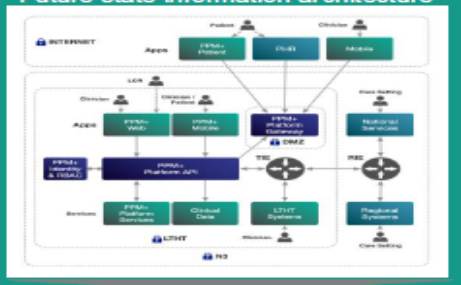
Influences

- National Bodies
- LTHT Executive
- LTHT Clinical Workforce
- Systems availability
- Technology
- Politics

2023 Vision

The Leeds Digital Way will enable everyone to provide safe and integrated patient centred care in Leeds and beyond. We will deliver this using innovative technology, information and insight that transforms patient journeys and makes us all part of a successful team.

Future state information architecture



Opportunities

- To exploit interoperability, cloud technology, AI, chat-bots, FHIR, Structured data and other emerging technologies to revolutionise the delivery of patient care.
- To exploit the visibility and reputation of Leeds as a Healthcare Exemplar to open the doors to greater opportunities.
- Through greater staff engagement and feedback, improve the Digital support provided to users.
- To create a user centred process to ensure that what is delivered is focussed on patient care and needs.

What it will achieve for LTHT

- Patients are at the heart of everything we do.
- A Digital infrastructure that supports patient services now and can support new patient services for the future.
- Digital systems developed and delivered based on Clinical needs and priorities
- Digital technology that supports clinical services at the point of care (eg Mobile)
- First-class 24/7 Support to ensure continuity of patient care services using digital technology
- Flexible and reactive to the changing governance and legislative environment
- Improved resilience in Digital infrastructure which reduces the risk of critical failures
- Integration possible with all healthcare providers in conjunction with any regional and national bodies
- Data turned into information to empower service improvement and research
- Digital is Useful, Usable and therefore Used
- Visible improvement in patient outcomes

Where we are today – End 2018

DIT Strategy

DIT Strategy

Key Weaknesses

A DIT strategy has been in development for 1 year and is under review in response to evolving objectives and practices.

People

Org Structure	Skills	People Development

Key Weaknesses

Some roles can lack clarity and staff are not always utilised to their full potential. There are opportunities for development but there is not a cohesive strategy for developing a highly skilled and motivated workforce. There is a lack of resource planning, with unclear capacity in some teams and obvious pressure in others without plans to address. Whilst there has been some improvement in morale in the last year, there are still significant challenges to having a joined up, focussed workforce working strategically together towards aligned goals.

Process

Supplier Management	Communications	Project Management	Service Management	Information Governance

Key Weaknesses

The significant work to establish standards and processes for Project and Service Management now needs to be implemented more consistently across all activity. Project delivery can be impeded due to Project Boards not consistently having the authority to set prioritisation, alongside the existence of multiple project management frameworks. Project performance reporting needs to be streamlined further. Lessons learnt from all activities need to be applied across all work in the Portfolio.

Services

Innovation	Design	SLAs	Analysis / Reporting

Key Weaknesses

The systems are not able to respond quickly enough to the rate of change in the business organisation. Current service management structures processes are immature resulting in DIT not being able to support innovation across the wider organisation as effectively as desired. SLAs are in place but are not policed monitored and managed as rigorously as required. Timely access to accurate and reliable information and analysis is prevented due to the design of current systems. The data that several performance management and workflow systems contain is of significant value but is often locked into the system and is not linked across the enterprise data system, meaning heavy reliance on spreadsheets and manual cut/paste activity.

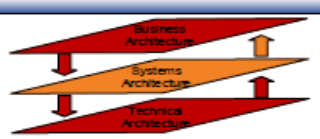
Infrastructure

Systems	Data Management	Data Assets	Applications

Key Weaknesses

Application of consistent data management principles is in infancy. A framework is necessary to ensure systems are developed using consistent underlying technologies to ensure they are interoperable to reduce user burden. Data assets are recognised by the organisation however they need to be manipulated to ensure the largest 'return' can be gained. Infrastructure requirements are being defined as part of an DIT Wardley Mapping initiative to inform the appropriate Business Case and Funding routes to implement.

Enterprise Architecture



Business Architecture	Systems Architecture	Technical Architecture

Key Weaknesses

There are presently no common enterprise-wide information models and there has been little ownership of technical architecture and planning across the organisation. The capacity and capability of its underpinning IT infrastructure, much of which is ageing, inadequate and inefficient. This risk that the Trust bears with its inadequate IT infrastructure is therefore one of the key items on its corporate risk register.

Where we could be in 2023

DIT Strategy

DIT Strategy

Key Opportunity

A living DIT Strategy to shape and deliver DIT's strategic objectives and linked to STP & LDR.

People

Org Structure	Skills	People Development

Key Opportunity

To be an optimised organisation providing sector-leading IT services and support to agreed SLAs. Providing leadership across the STP and LDR, feeding back into national policy setting environments. Staff to have clear roles and opportunities to develop and enhance their skills.

Process

Supplier Management	Communications	Project Management	Service Management	Information Governance

Key Opportunity

To have established best practice change and project management processes that are sustainable, communicated and embedded into the DIT. To turn data into information and ensure information is available to the right people at the right time. Implement an analytics layer to be used for querying data and presenting information in human readable form. A strategy of 'do once and share for all' data analysis. To have in place a secure and governed information framework, benchmarked against national and international partners.

Services

Innovation	Design	SLAs	Analysis / Reporting

Key Opportunity

To have in place a set of actively managed services that are used consistently and extensively by LTHT, which deliver high levels of customer satisfaction and directly facilitate improvements in patient services delivery. A functioning Design Authority in place for technical design and development. A well developed innovation culture, to improve service/product innovation and ensure the organisation benefits from innovative technological advancements.

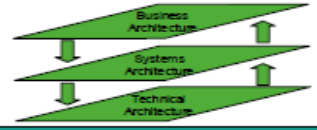
Infrastructure

Systems	Information Management	Information Assets	Applications

Key Opportunity

To have in place a fit for purpose infrastructure that provides resilience, performance and efficiency. To have the infrastructure supported to a high degree of quality and to have all business specific elements (peripheral to core systems) supported.

Enterprise Architecture



Business Architecture	Systems Architecture	Technical Architecture

Key Opportunity

To have in place a clear and managed view of the Enterprise Architecture, allowing the DIT to plan ahead and coordinate efficiently its systems and investments. Systems are more attuned and meet end user requirements but without unmanaged, duplicated customisation. DIT is engaged and helps to shape and deliver the strategic aims of the LTHT. Design Authority in place, successfully overseeing both data and technical architecture.

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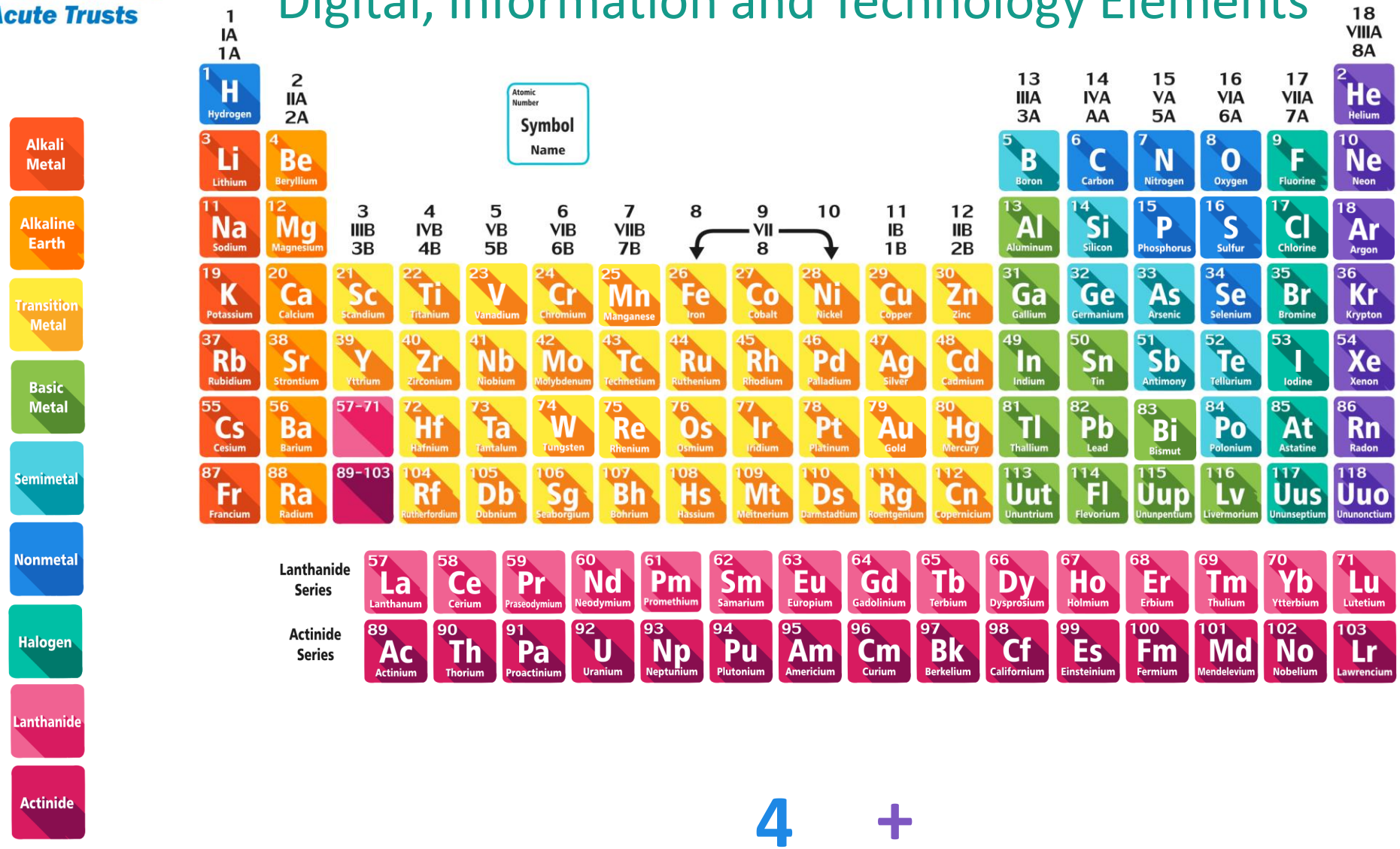
Digital, Information and Technology Elements



4 +

Electr[illegible] for LTHT

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Digital, Information and Technology Elements

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Data + Analysis + Output + Hardware = Digital Information Technology

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Digital, Information and Technology Elements

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$$\left(\frac{(\text{Data}^{\text{Cl}} + \text{P} \; \text{Pm} +_{x} \text{S} \; 4 \; \text{S}) + \text{Hardware}^{\text{W}}}{\sqrt{\text{Analysis}^{(\text{Mn} \; \text{Lr} \; x \; \text{Ar} \; \text{I})} \; x \; \text{Output}^{(\text{Au} \; \text{Re} \; x \; \text{V} \; \text{Re})}}}\right)^{\text{Bi}} = \text{Digital Innovation Transformation}$$

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An Algorithm for Quality

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$$Q = A \times \frac{(O + S)}{W}$$

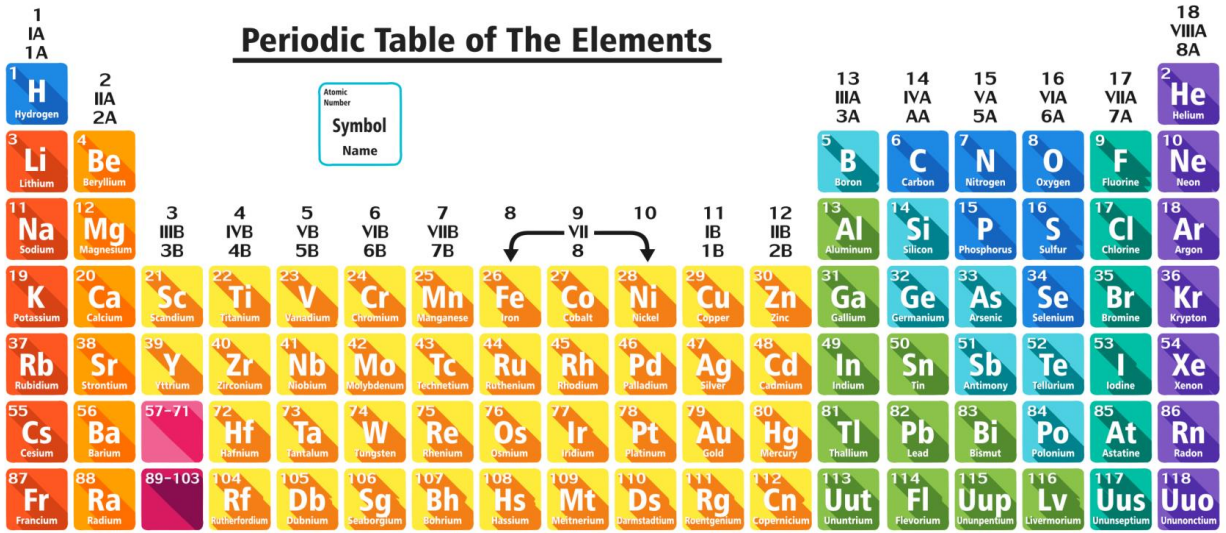
Q = Quality

A = Appropriateness

O = Outcomes

S = Service

W = Waste



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Rapidly Rising Numbers

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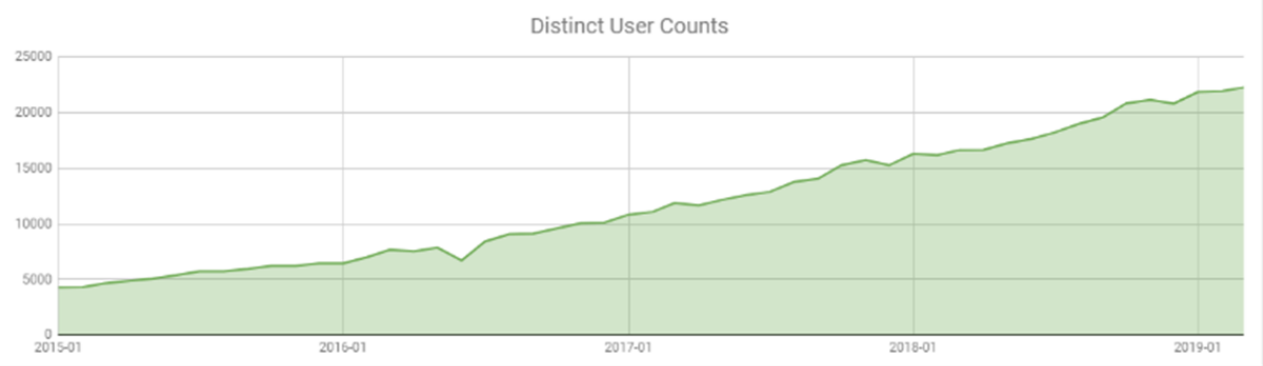

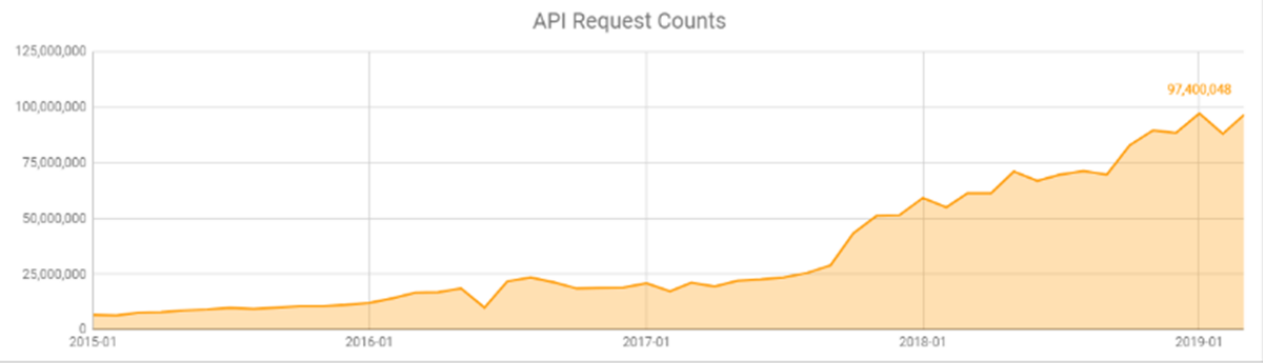

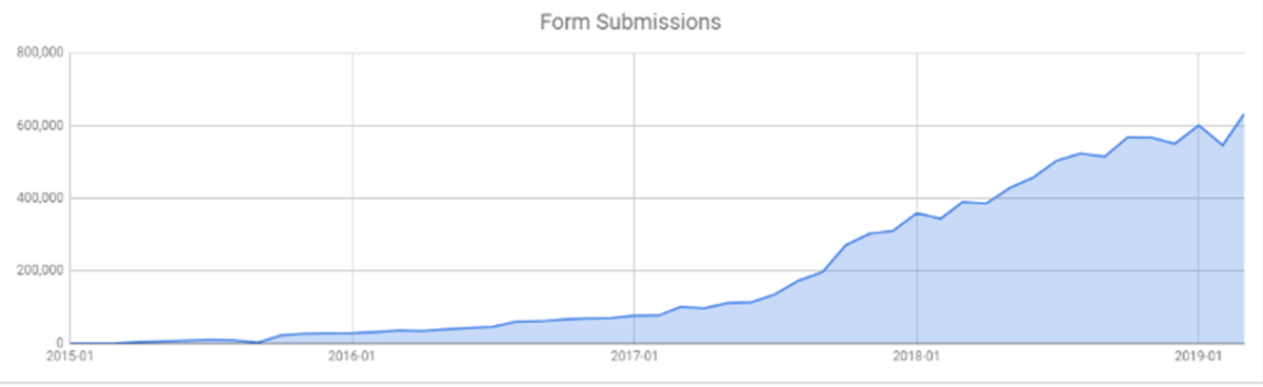

CONNECTS: Ensure all clinical teams across the region can access key information, 18k people in LTHT and over 25k people across the system.

TRANSFORMS: Through integration and connectivity; over 95m API connections a months transforms patient experience.

IMPROVES: 100,000 data items per person, over ½ a million forms a month.

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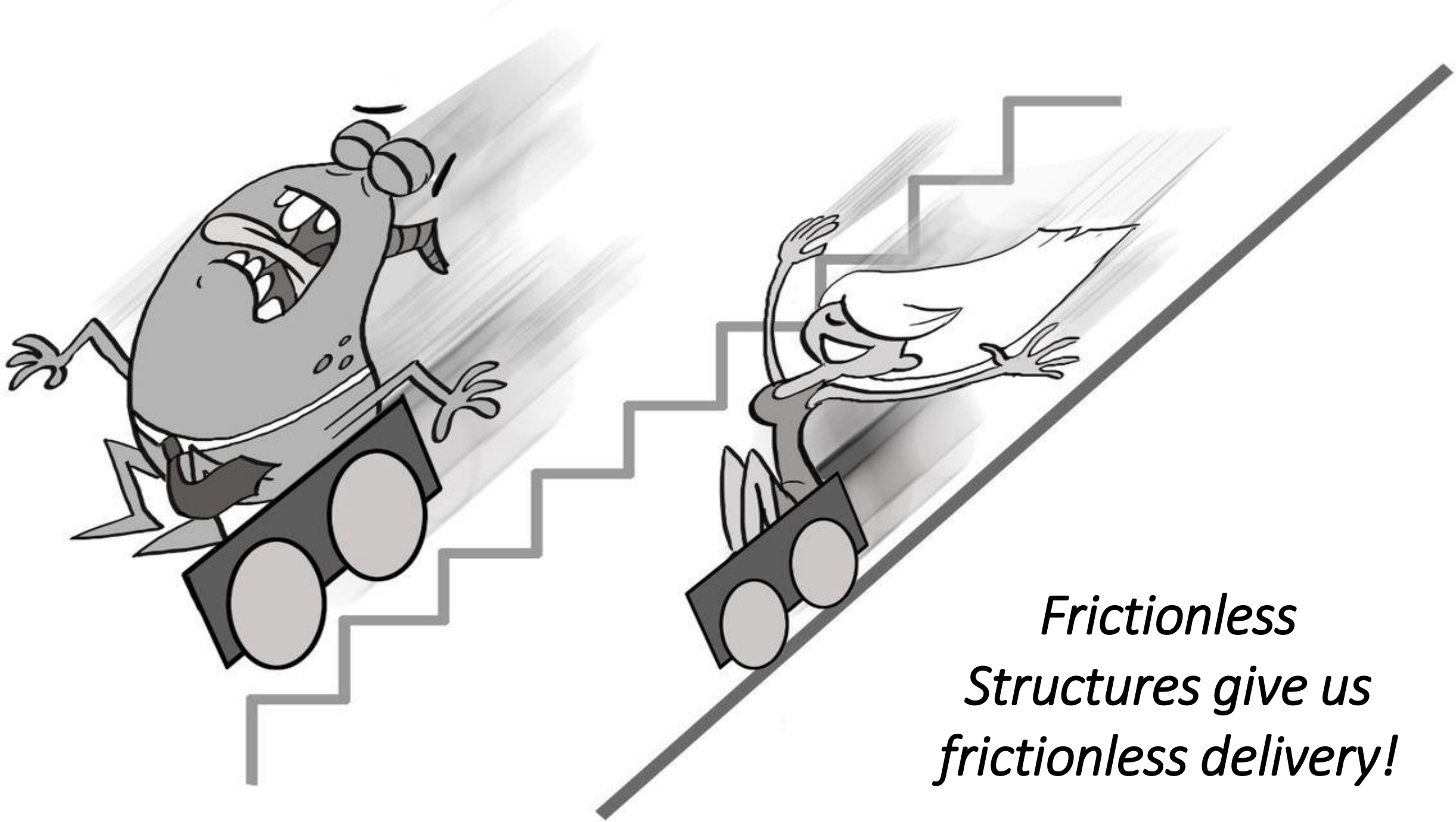
What if our culture could be our advantage for digital?


BBC TWO
CAP
MAZZELLA
16TON



Frictionless
Structures give us
frictionless delivery!

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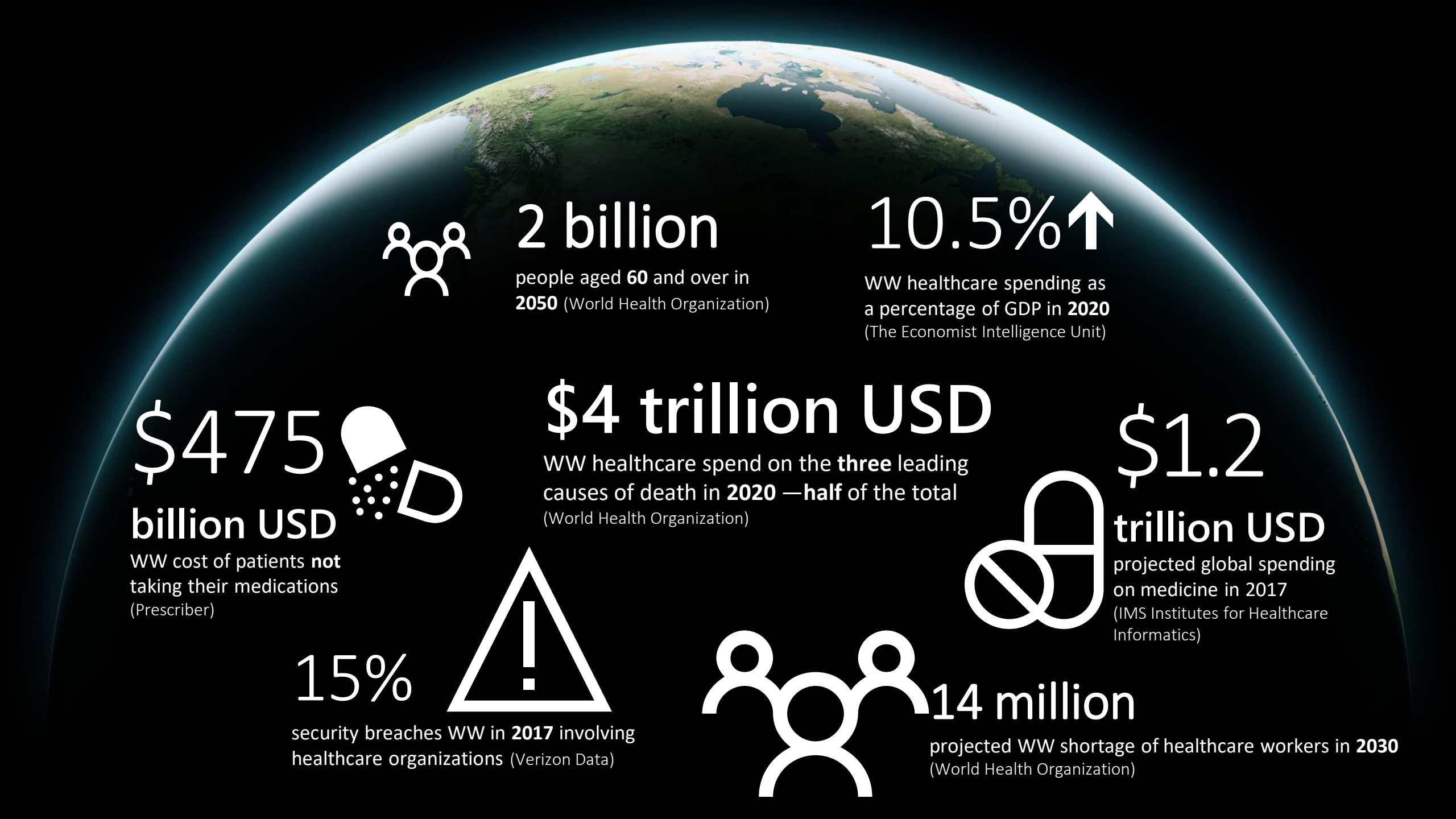
Lily Pad numbers

Days

@WYAATS4S


2 billion
people aged 60 and over in 2050 (World Health Organization)
10.5%
WW healthcare spending as a percentage of GDP in 2020 (The Economist Intelligence Unit)
$475 billion USD
WW cost of patients not taking their medications (Prescriber)
$4 trillion USD
WW healthcare spend on the three leading causes of death in 2020 —half of the total (World Health Organization)
$1.2 trillion USD
projected global spending on medicine in 2017 (IMS Institutes for Healthcare Informatics)
15%
security breaches WW in 2017 involving healthcare organizations (Verizon Data)
14 million
projected WW shortage of healthcare workers in 2030 (World Health Organization)

Digital Revolution

The earth is 4.6 Billion years old

Scale that to 46 years

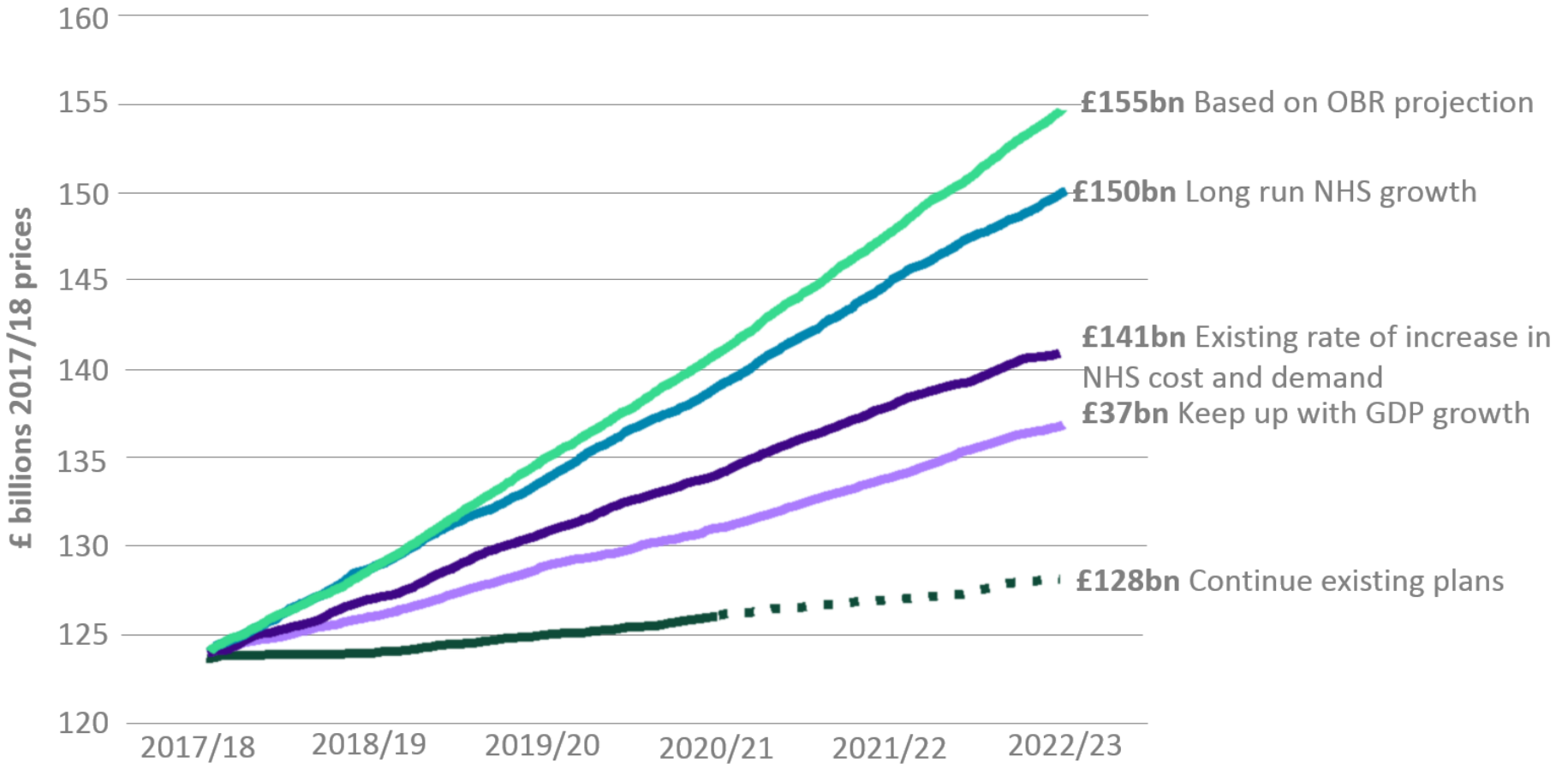
Humans have been here for 4 hours
Our first industrial revolution began only a minute a go!

The third revolution began when I turned onto this slide…

Digital healthcare is happening…

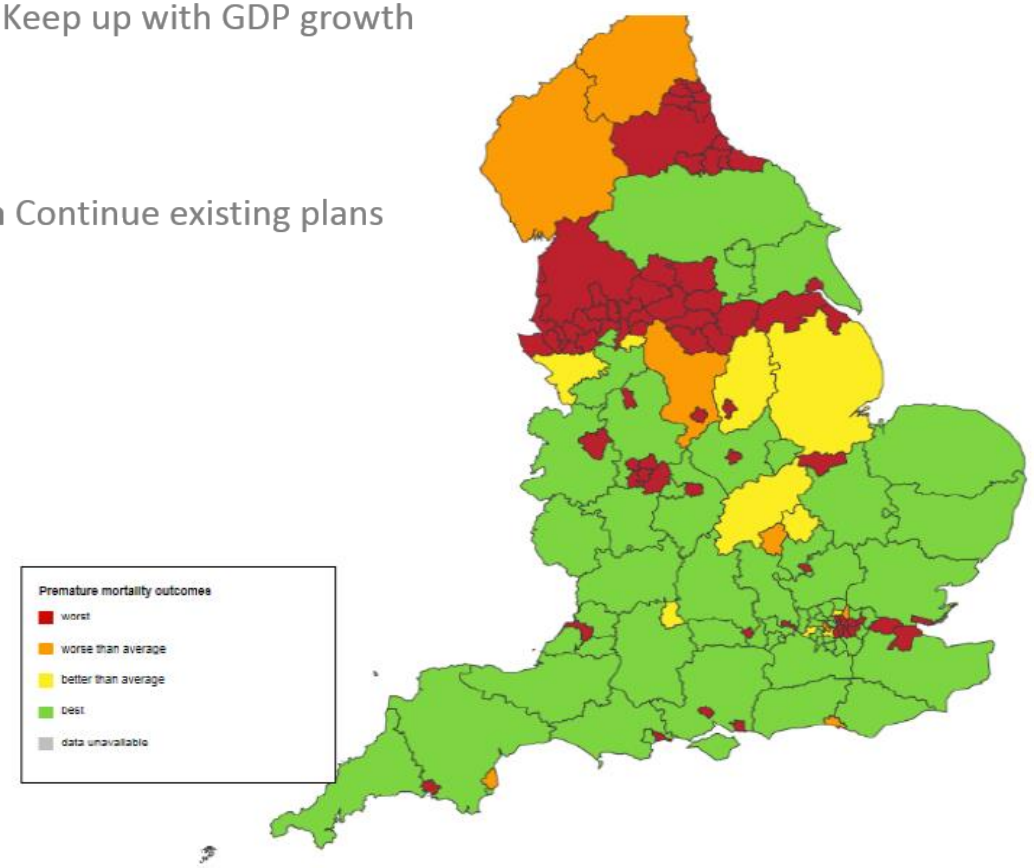
NOW!

The NHS Need Defined



Derek Wanless (2002)
'…rise from around 1.5% of total NHS spending to over 3%'

Average digital spend – 15.6% of budget in 'other' businesses.



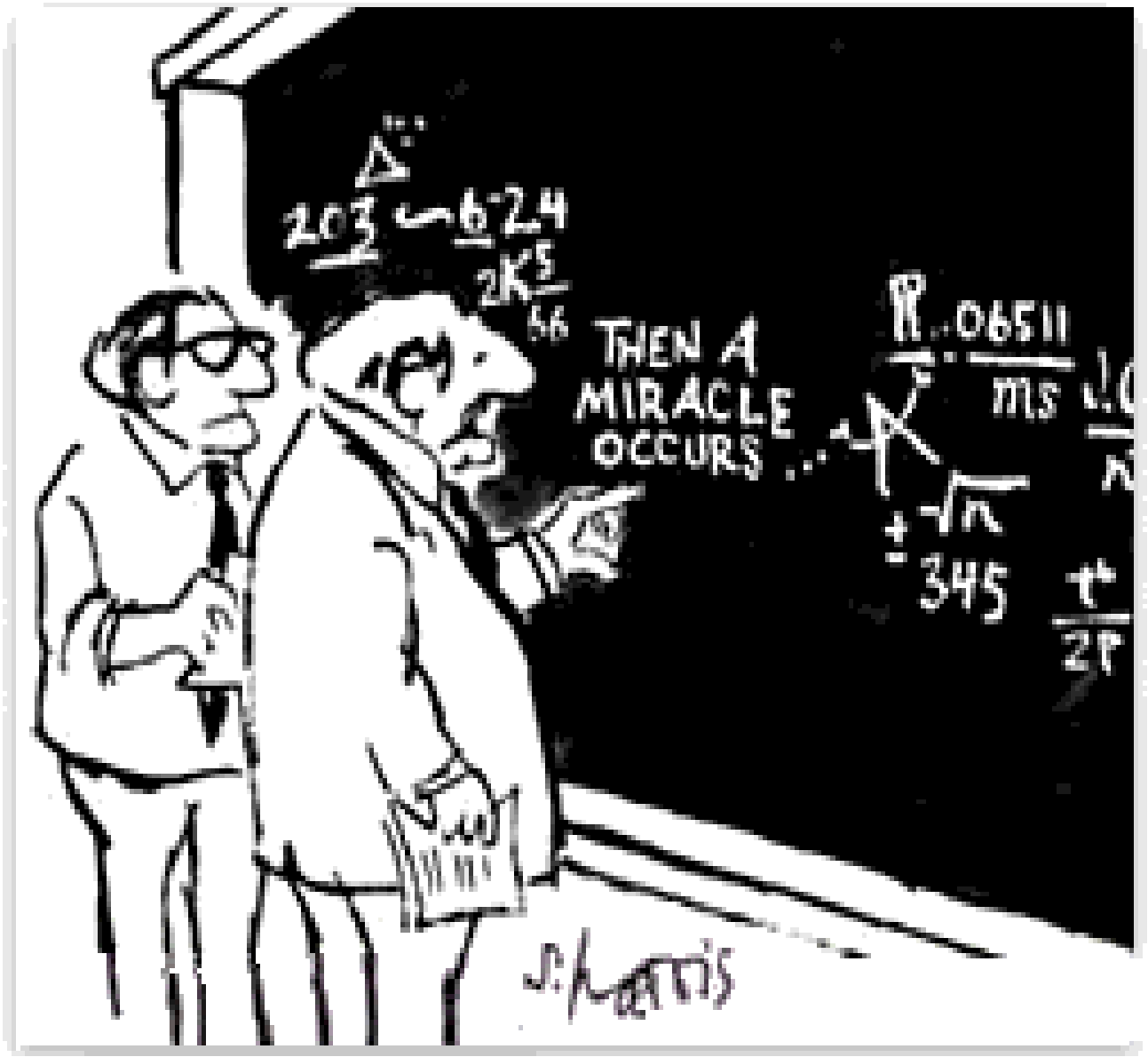
Statistics form NHS England & the Office of Budget Responsibility

The NHS ‘answer’ to the need.

NHS Digital

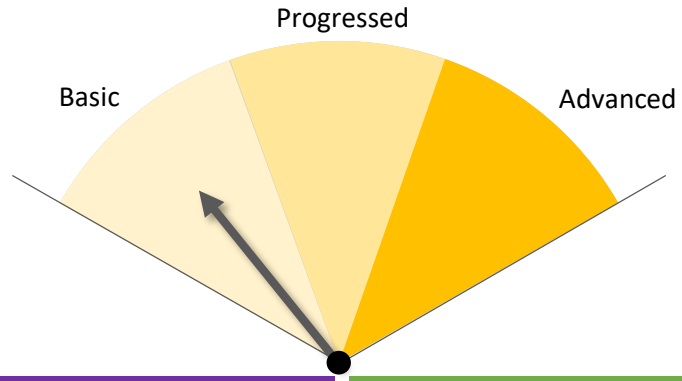
NHS Improvement

NHS England



"I THINK YOU SHOULD BE MORE EXPLICIT HERE IN STEP TWO."

Quadruple Aim



	Medical home Precision medicine Patient wearables	Virtual care Digital outreach Mixed reality	Population management Artificial intelligence Conversational computing	Care coordination Remote monitoring Genomics
	Patient infotainment Patient health records Health gaming	Clinical education Social enterprise Knowledge management	Readmission management Fraud detection/prevention Condition registries	Flexible workstyles Cross-organisational trust Predictive asset maintenance
	Kiosk check-in Meal ordering Consumer portals	Unified communications Clinical information systems Clinical mobility	Performance dashboard Patient journey-board Clinical outcomes research	Consolidate data sources Modernize infrastructure Hybrid cloud
Digital Transformation	**ENGAGE** your Patients to	**EMPOWER** your Care Teams to	**OPTIMIZE** Clinical & Operational Effectiveness to	**TRANSFORM** the Care Continuum to
Quadruple Aim[2] / Triple Aim[1]	Improve the patient experience	Improve clinician experience and productivity	Improve the population health	Lower the per capita cost of care
Trusted Technology	ENTERPRISE WIDE SUBSTITUTION	AUGMENTAION & MOBILISATION	ANALYTIC & MODIFICATION	TRANSFORMATION & REDFINITION

1 Berwick, D. "The Triple Aim" Care, Health, Cost". Health Aff, May 2008 vol. 27 no. 3 759-769

2 Bodenheimer, T. & Sinsky, C. "From Triple to Quadruple Aim: Care of the patient requires care of the provider" Ann Fam Med Nov/Dec 2014, vol. 12 no. 6 673-576

Substitution

Tech acts as a direct tool, substitute, with no functional change.

cup of coffee

Augmentation

Tech acts as a direct tool, substitute, with functional improvement.

latte

Modification

Tech allows for significant task redesign.

caramel macchiato

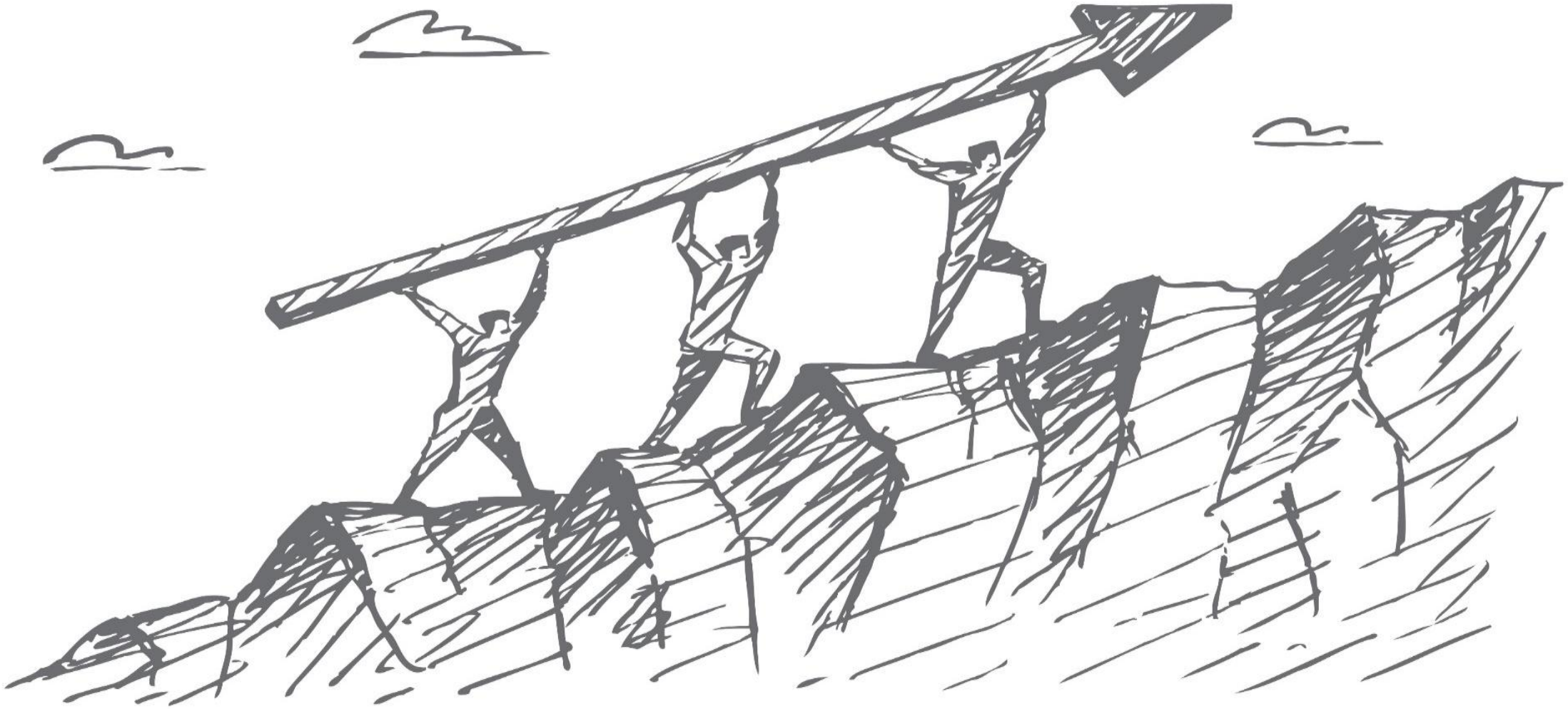
Redefinition

Tech allows for the creation of new tasks, previously inconceivable.

pumpkin spice

We are witnessing the collapse of expertise and rise of collaborative sensemaking!

David Holzmer



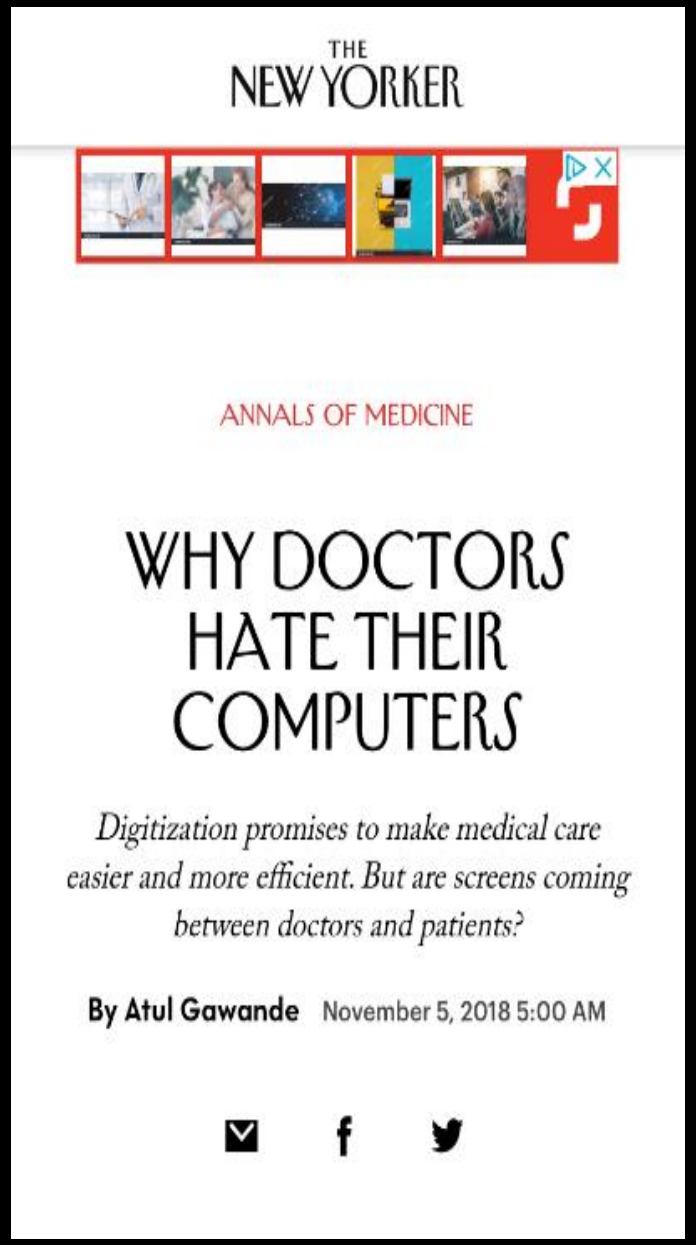

CIO
DoF
CEO
Director for Strategy


SURGERY
PSYCHIATRY
OB-GYN
FAMILY MED
CARDIOLOGY
PEDIATRICS
PATHOLOGY
NEUROLOGY
RADIOLOGY
SURGERY
PSYCHIATRY
OB-GYN
FAMILY MED
CARDIOLOGY
PEDIATRICS
PATHOLOGY
NEUROLOGY
RADIOLOGY
inkVessel.com

The most complex customer

Digitization promises to make medical care easier and more efficient; instead, doctors feel trapped behind their screens.

Illustration by Ben Wiseman



THE NEW YORKER

ANNALS OF MEDICINE

WHY DOCTORS HATE THEIR COMPUTERS

Digitization promises to make medical care easier and more efficient. But are screens coming between doctors and patients?

By Atul Gawande November 5, 2018 5:00 AM

***Human & tech trade off*:** It's about the people first. However we have to assist in the use of digital to create a joined up human system.

***Revenue & Capital*:** Plan for the future together, but with limitations of tomorrow being the only future with some assurance.

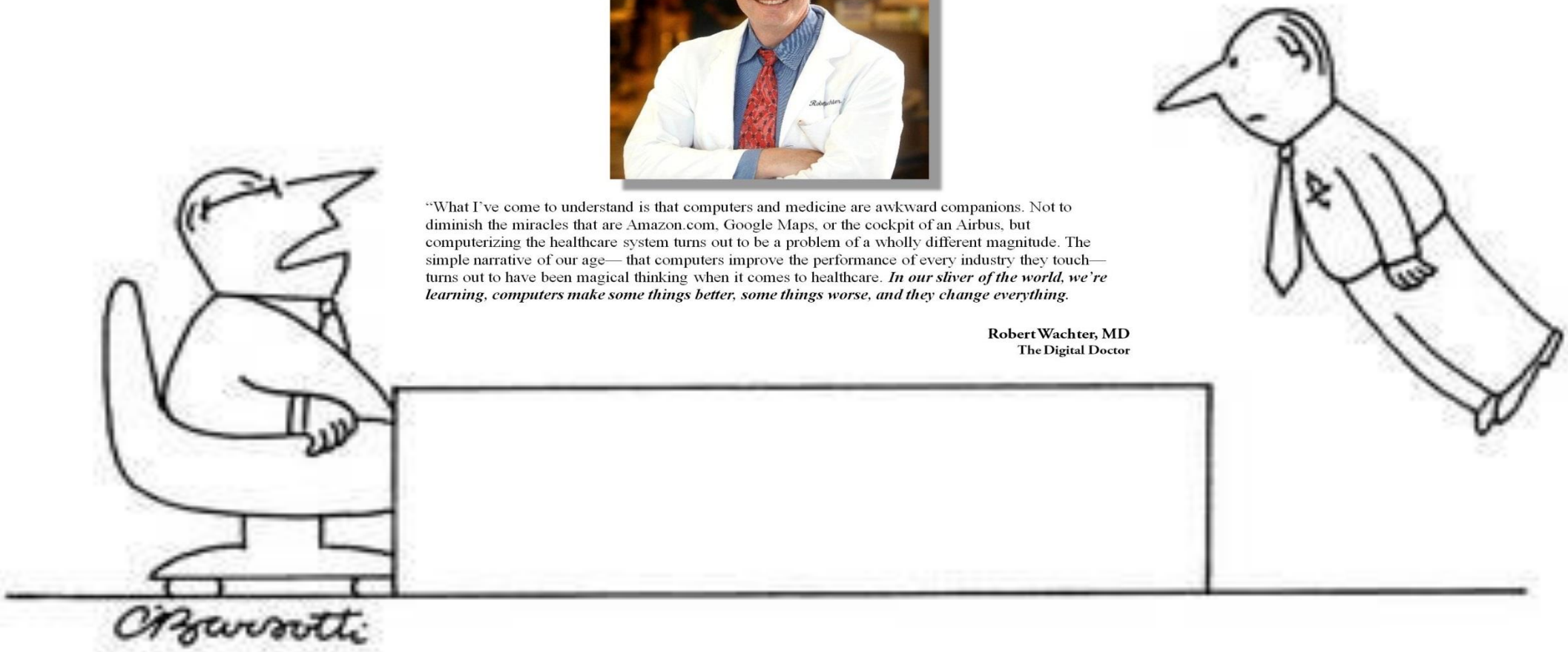
***EHR plus ONE*:** How to go beyond the attitude of 'special system need.'

***A Dr of What*:** Build respect for digital, professionals create an equal standing.

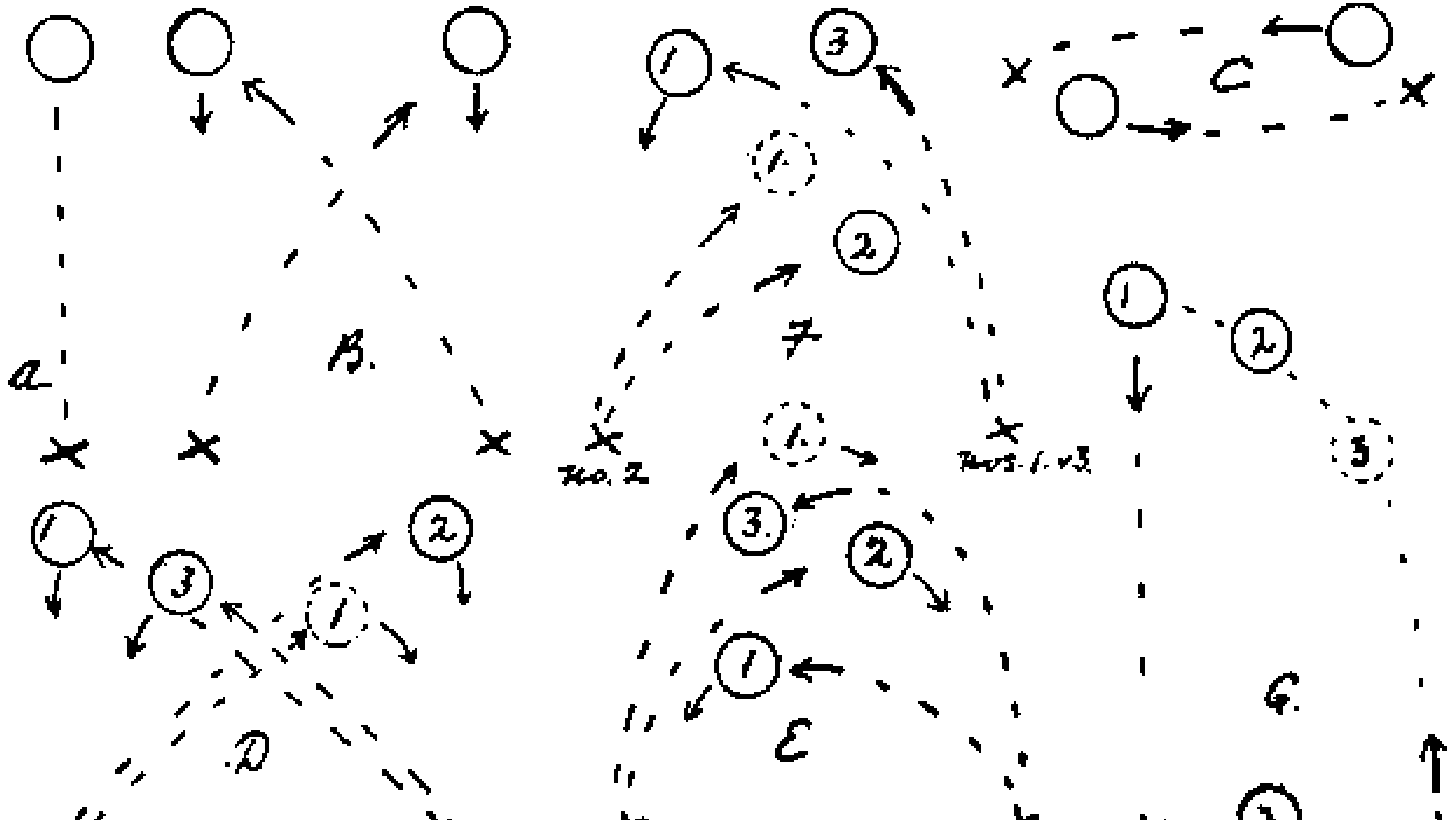
Lets make magical thinking happen!

"What I've come to understand is that computers and medicine are awkward companions. Not to diminish the miracles that are Amazon.com, Google Maps, or the cockpit of an Airbus, but computerizing the healthcare system turns out to be a problem of a wholly different magnitude. The simple narrative of our age— that computers improve the performance of every industry they touch— turns out to have been magical thinking when it comes to healthcare. ***In our sliver of the world, we're learning, computers make some things better, some things worse, and they change everything.***

Robert Wachter, MD
The Digital Doctor



"This is a business, Harris, no place for magical thinking."



a
B.
C
F
No. 2
Nos. 1 & 3
D
E
G.

"There is a magic in standing under a huge juggling pattern and feeling it stabilize"

Matan Presberg Chief Juggler of the USA

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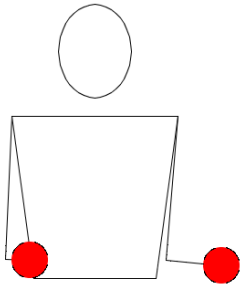
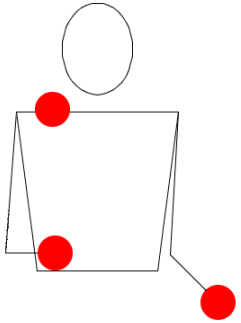
Understand our behaviours

Implementation Behaviour: *One ball up and catch*
Wake Up, Patch Up, Catch Up - Run to the fire and put it out, then run to the next fire whilst considering what the others are doing.



Systems Replacement Behaviour: *Two balls up and keep catching*
Organisations that can act as one - Leadership through recognition of expertise or length of service, grade is king!



Consumer Engagement Behaviour: *Juggling*
The eco Systems can act as one - Cohesive experience across sectors - Consumers access and control data - Unaffiliated organisations can access and gain value form others work.

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Future Proofed Organisations
Consider all three paradigms

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1-12 Months Operational Excellence

1-3 Years Search for Growth

10+ Years Understand Future Drivers

Build Mindset, Talent, Agility & Innovation Culture

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Innovation & the future

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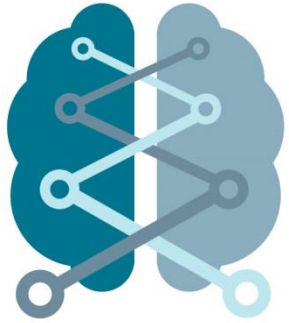
AI: Several AI projects linked to algorithm learning and live open data being able to offer live insights within the Leeds EHR and Y&H Care Record.



MACHINE LEARNING: Use of live environmental data linked to historical healthcare data allows predictions for MFFD and DNA.

AUGMENTED REALITY: Delivering digital pathology images via HoloLens to enable the sharing of quality pathology images across Leeds and to deliver an immersive pathology training experience.

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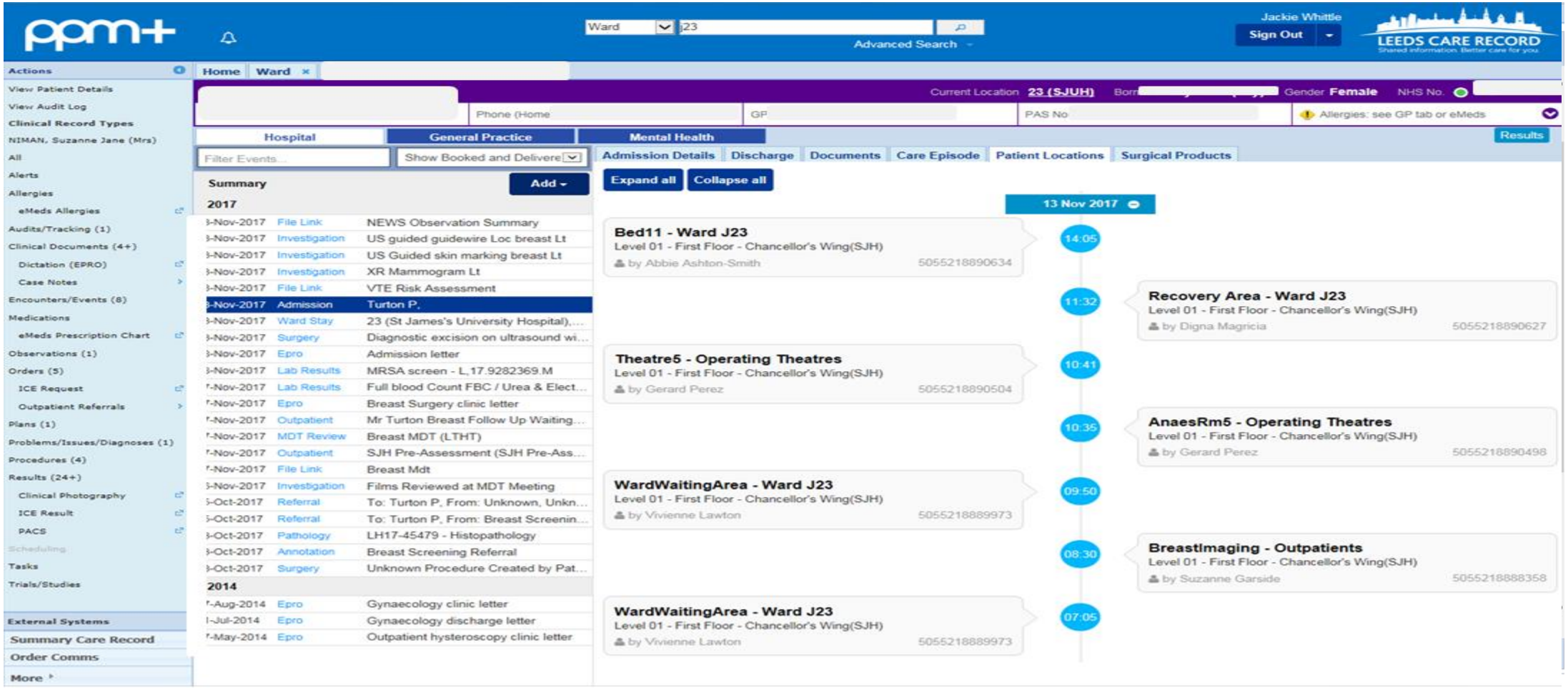
Ward level – patient tracking

Patient flow and winter ready



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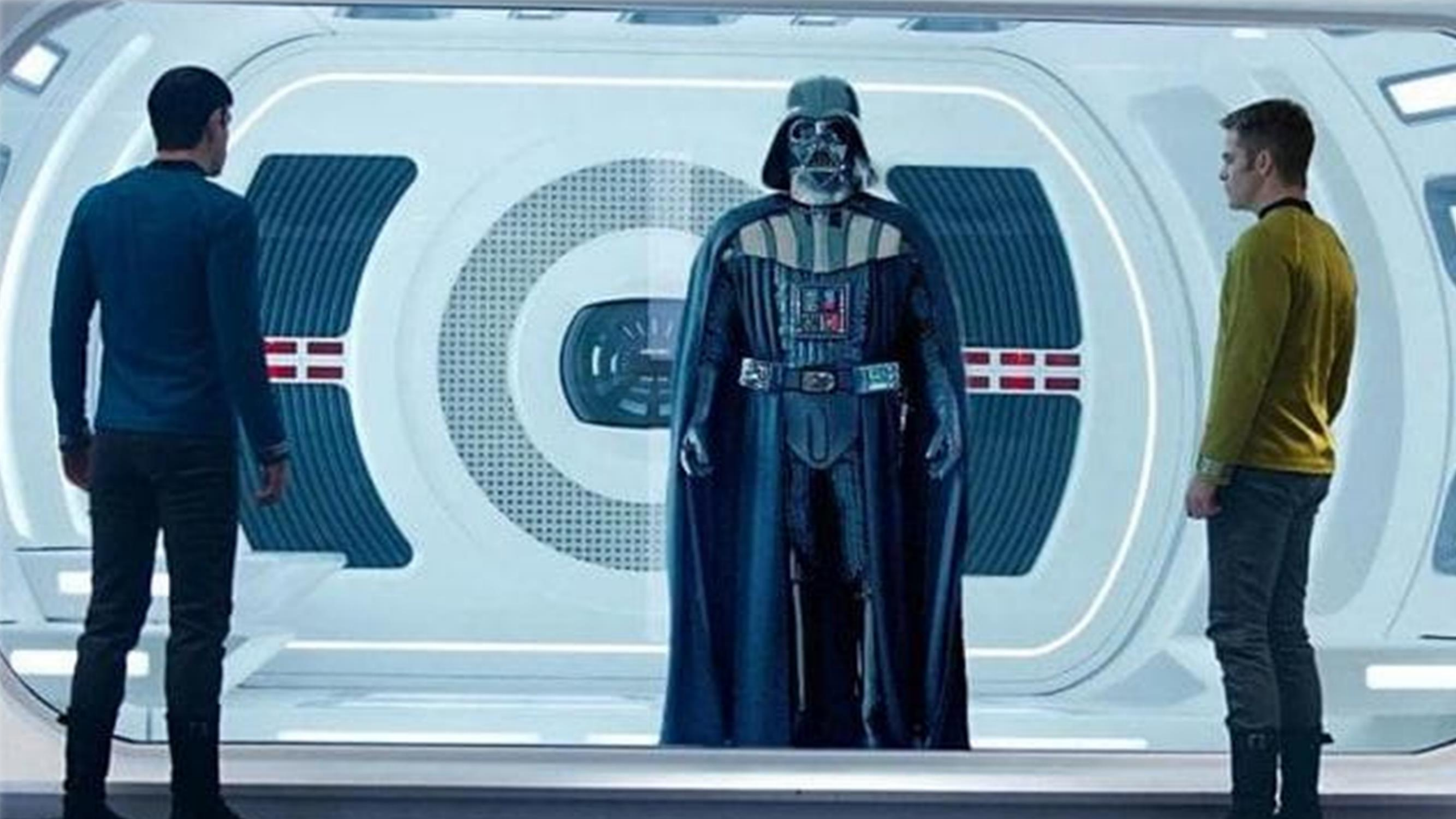
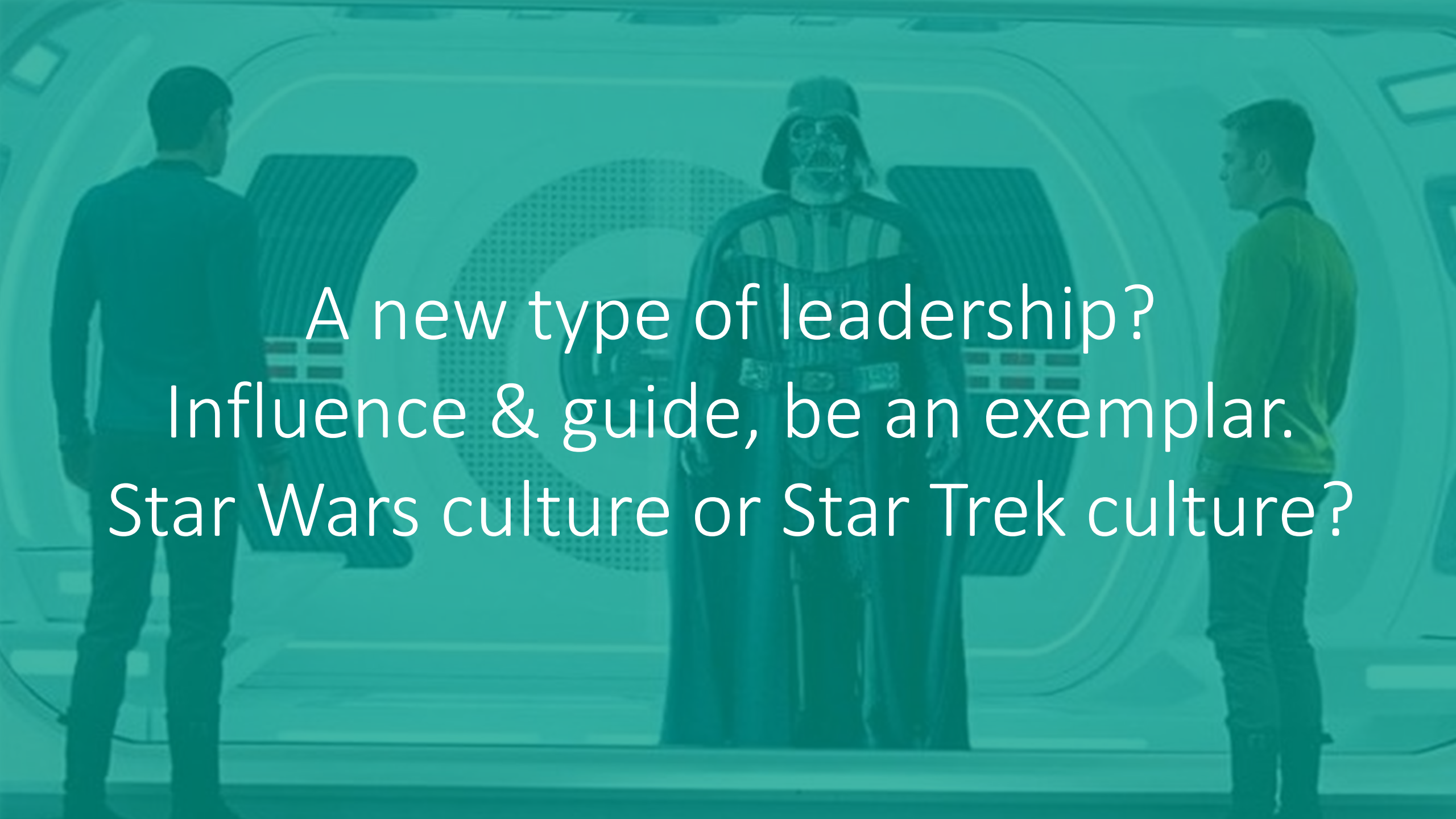
Simple & exponentially impactful solutions require
simple and exponential organisations, don’t they!



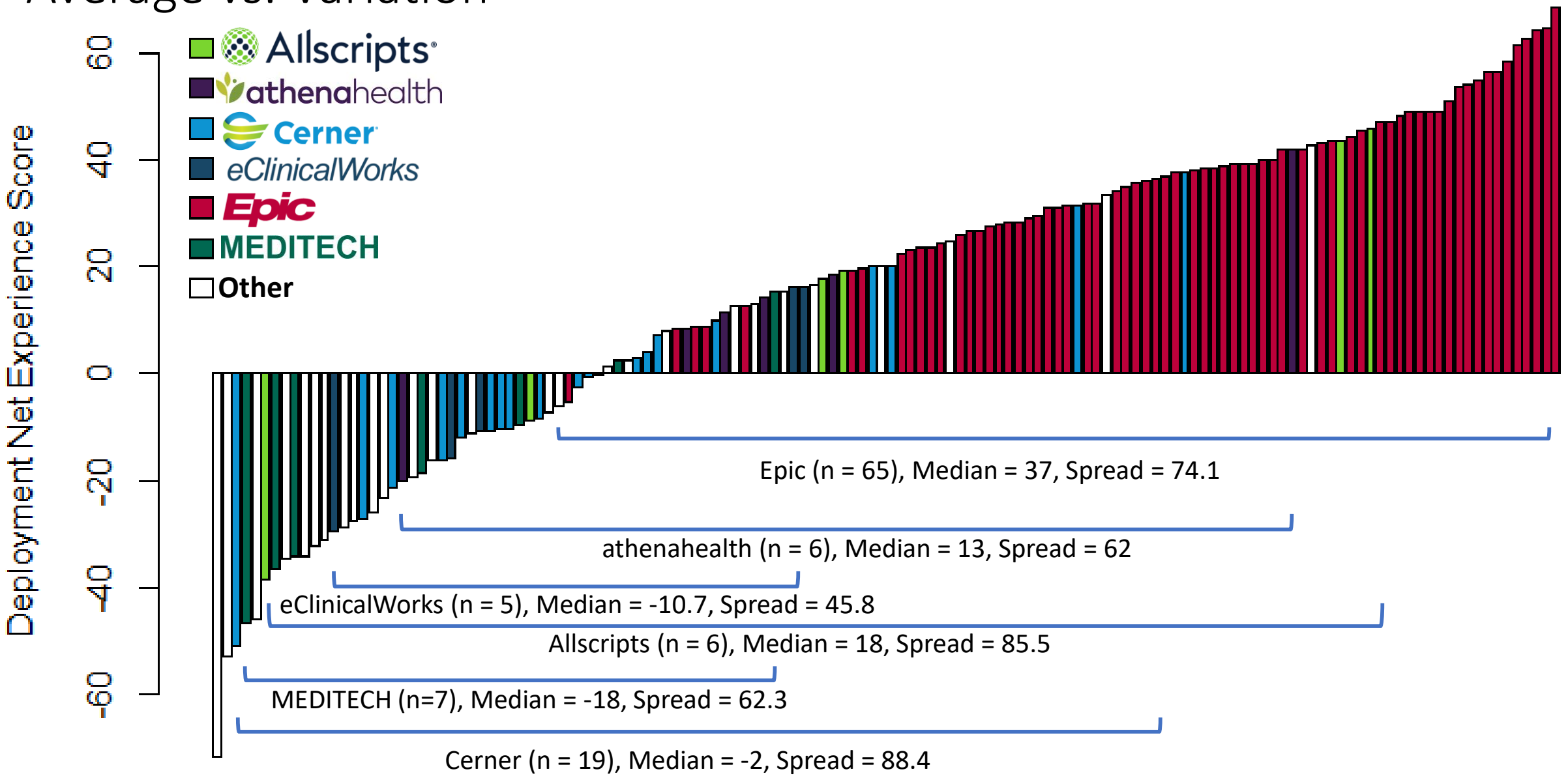

A new type of leadership?
Influence & guide, be an exemplar.
Star Wars culture or Star Trek culture?


Welcome to
Ward J42


SOME OF THE EQUIPMENT AND COMFORTS
PROVIDED FOR
THE CARDIAC CATHETER LAB SUITES
& WARD 7
WERE DONATED BY
TAKE HEART


Digital Champion
#LeedsDigitalWay

Average vs. Variation



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Clinical Perceptions

KLAS Arch Collaborative.

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All Clinicians (42,794)

All Nurses (14,447)

AHPs (4,898)

Leeds
Net EMR Experience:
41%
Collaborative
40th Percentile for Providers
49th Percentile for Nursing
55th Percentile for Ancillary Care

The Net EMR Experience score is a snapshot of your clinicians' overall satisfaction with the EMR environment(s) at your organization. The survey asks respondents to rate factors such as the EMR's efficiency, functionality, impact on care, and so on. The Net EMR Experience score is calculated by subtracting the percent of negative user feedback from the percent of positive user feedback. Net EMR Experience scores can range from -100% (all negative feedback) to +100% (all positive feedback).

The Arch Collaborative™
a KLAS initiative

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AI work is breathtaking, t
omputing is mind-blowing.

—

Santa Barbara, California, is closer to Hollywood than it is S
con Valley. Its casual, beach-front college campus just north o
Tinseltown is the unlikely center of quantum computing devel-
opment, the very future of our industry. Its proximity to Hol-
lywood is fitting, since a film script may be a better guide to
quantum physics and mechanics than a textbook. Rod Serling's
The Twilight Zone likely put it best: "You're traveling through an-
other dimension, a dimension not only of sight and sound but
of mind. A journey into a wondrous land whose boundaries are
that of imagination. That's the signpost up ahead—your next
stop, the Twilight Zone."
Defining quantum computing is no simple feat. Origin

“You’re traveling through an other dimension, a dimension not only of sight and sound but of mind. A journey into a wondrous land whose boundaries are that of imagination. That’s the signpost up ahead – your next stop…

Digital Health Care”

The Twilight Zone by Rod Serling quoted in Hit Refresh by Satya Nadella