



**DIGITAL
PATHOLOGY**



A S S O C I A T I O N

Designing Digital Pathology Transformation

Four Challenges, One Systems Problem

David Clark

Clinical Lead for Computational Pathology, East Midlands Pathology Network
Consultant Haematopathologist, Nottingham University Hospitals NHS Trust

DPA Companion Meeting · ECDP 2026, Graz · 17 June 2026



Declaration of conflicting interests

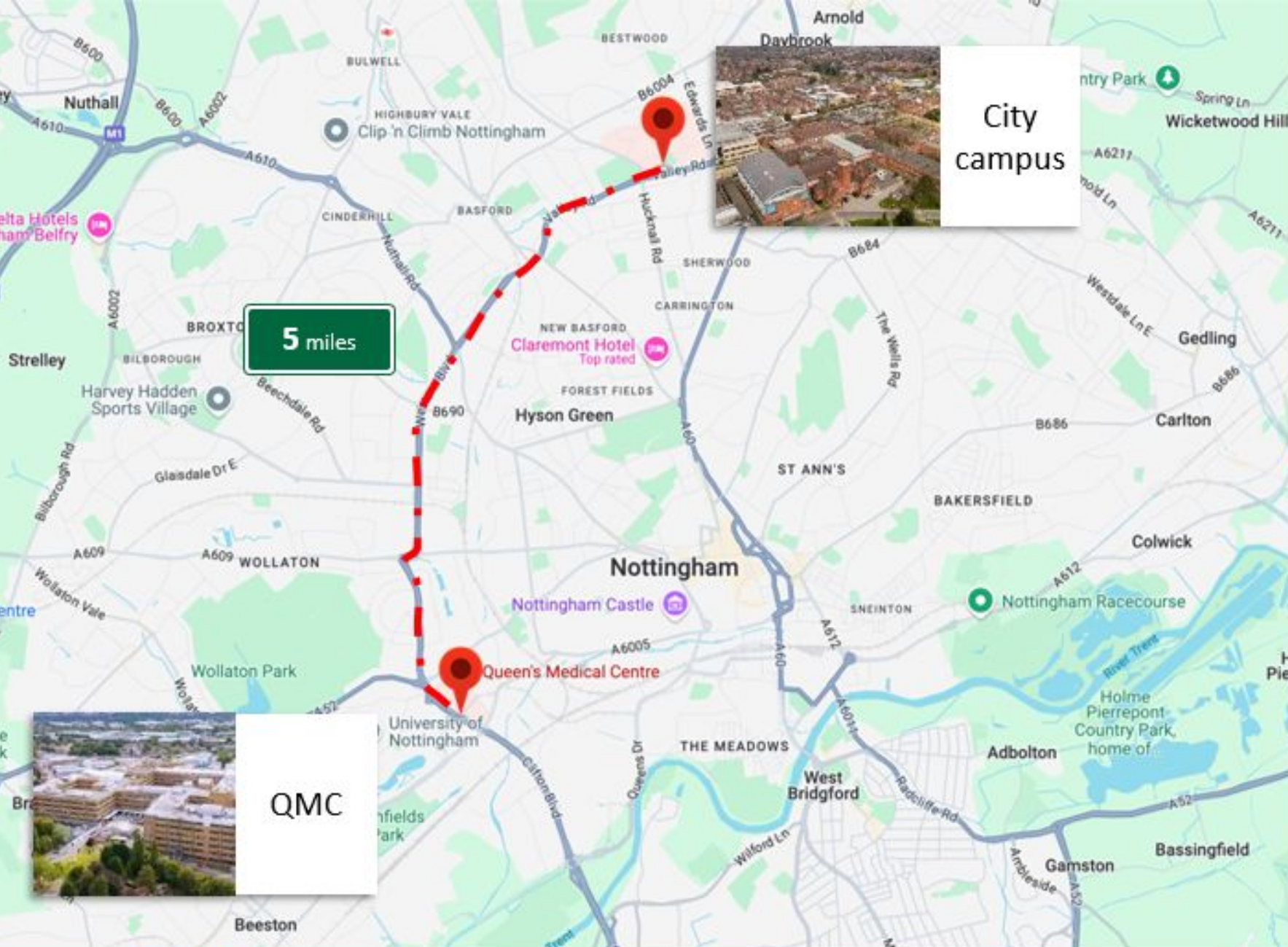
No commercial affiliation or financial links to any non-NHS organisation.

Founder of gembasuite.org, a not-for-profit website providing free Lean system improvement tools for healthcare.



Time's Arrow





Navigation options:

- Best
- 16 min
- 31 min
- 1h 29m
- 29 min

City campus, Main Entrance - South, Hucknall

Queen's Medical Centre



Nottingham
University Hospitals



NOTTINGHAM UNIVERSITY HOSPITALS · CELLULAR PATHOLOGY

68,000

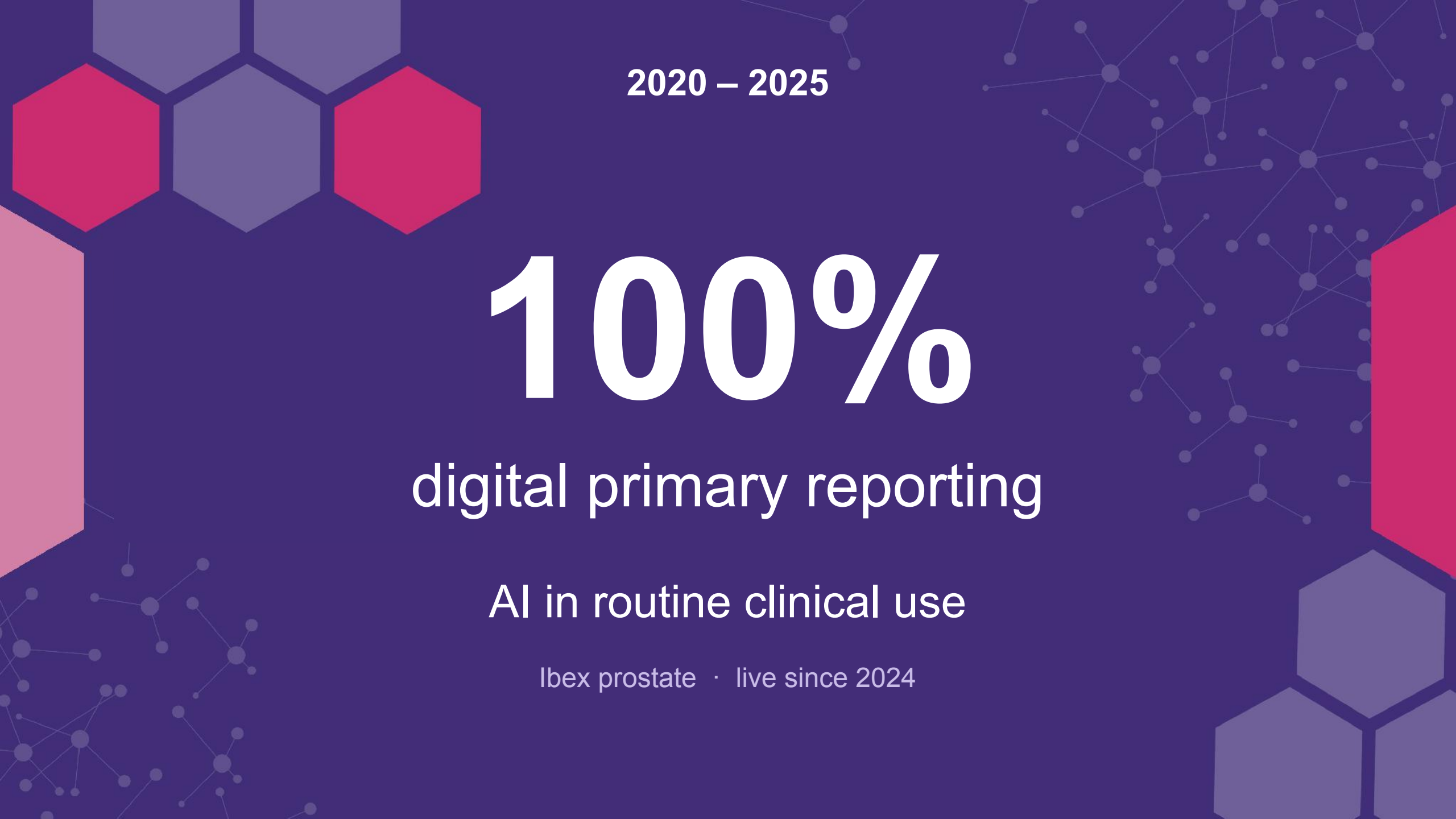
cases a year

365,000

slides a year

35 consultants · 8 subspecialty teams · regional referral centre



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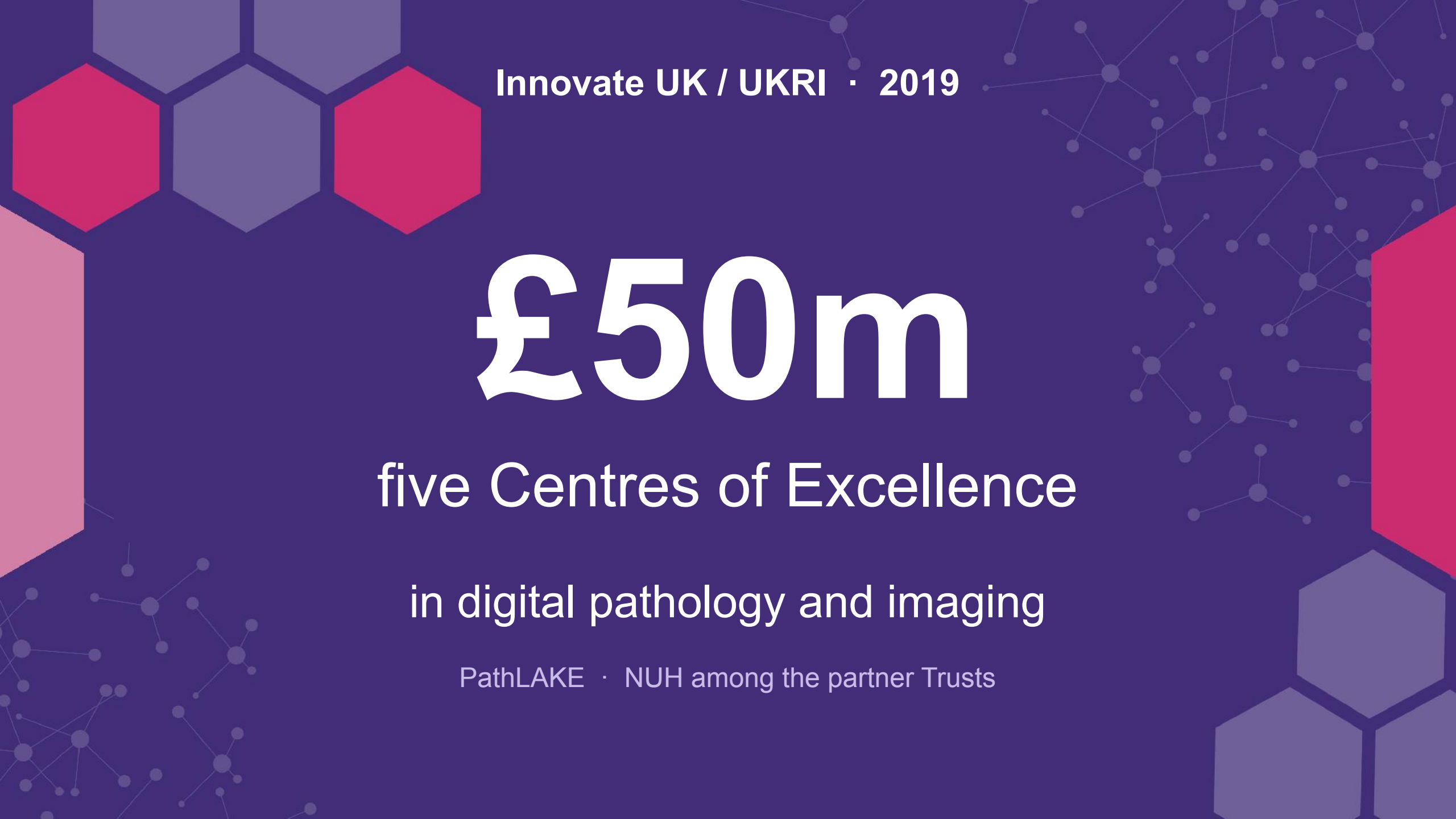
2020 – 2025

100%

digital primary reporting

AI in routine clinical use

Ibex prostate · live since 2024

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Innovate UK / UKRI · 2019

£50m

five Centres of Excellence

in digital pathology and imaging

PathLAKE · NUH among the partner Trusts

The Iron Law of Megaprojects

1 in 200

large programmes deliver in full

on time · on budget · on benefits

Flyvbjerg & Gardner, How Big Things Get Done, 2023 · 16,000+ projects

Survivorship bias

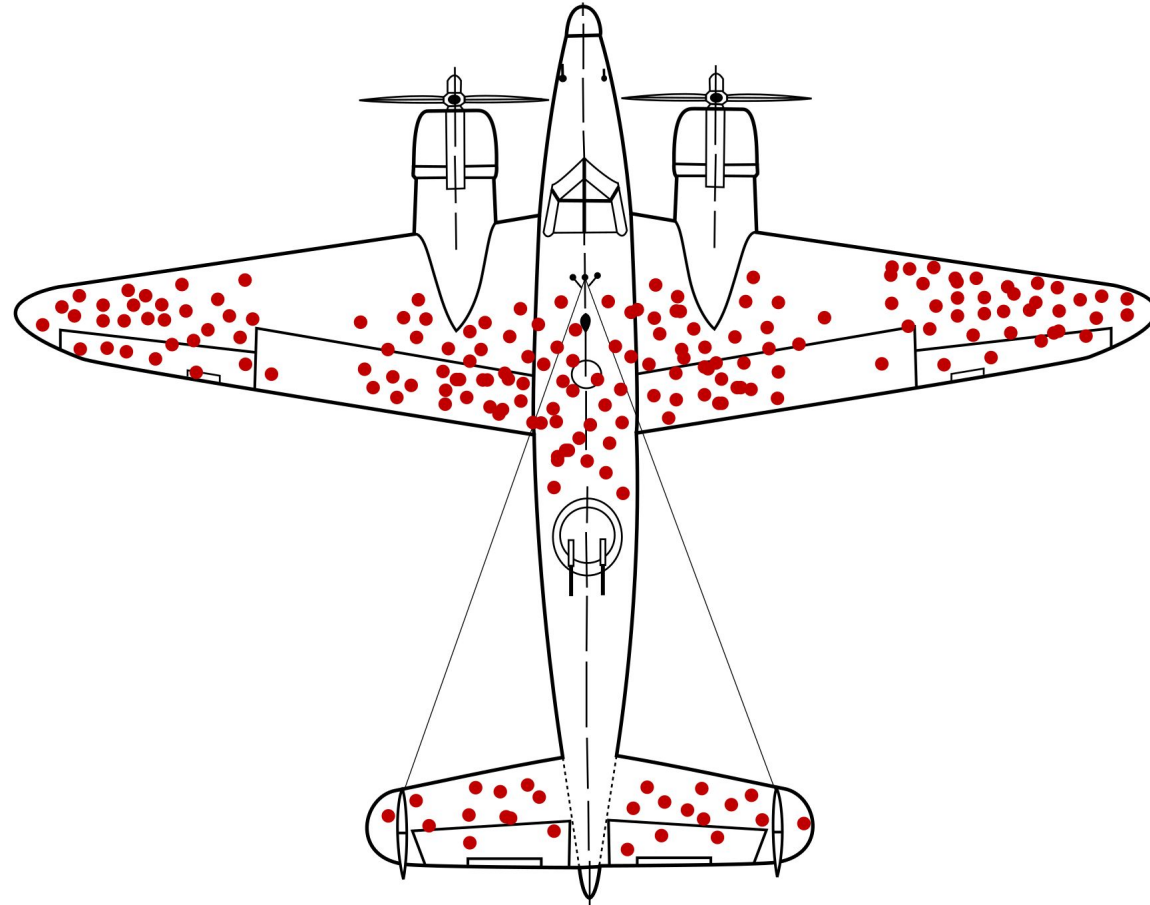
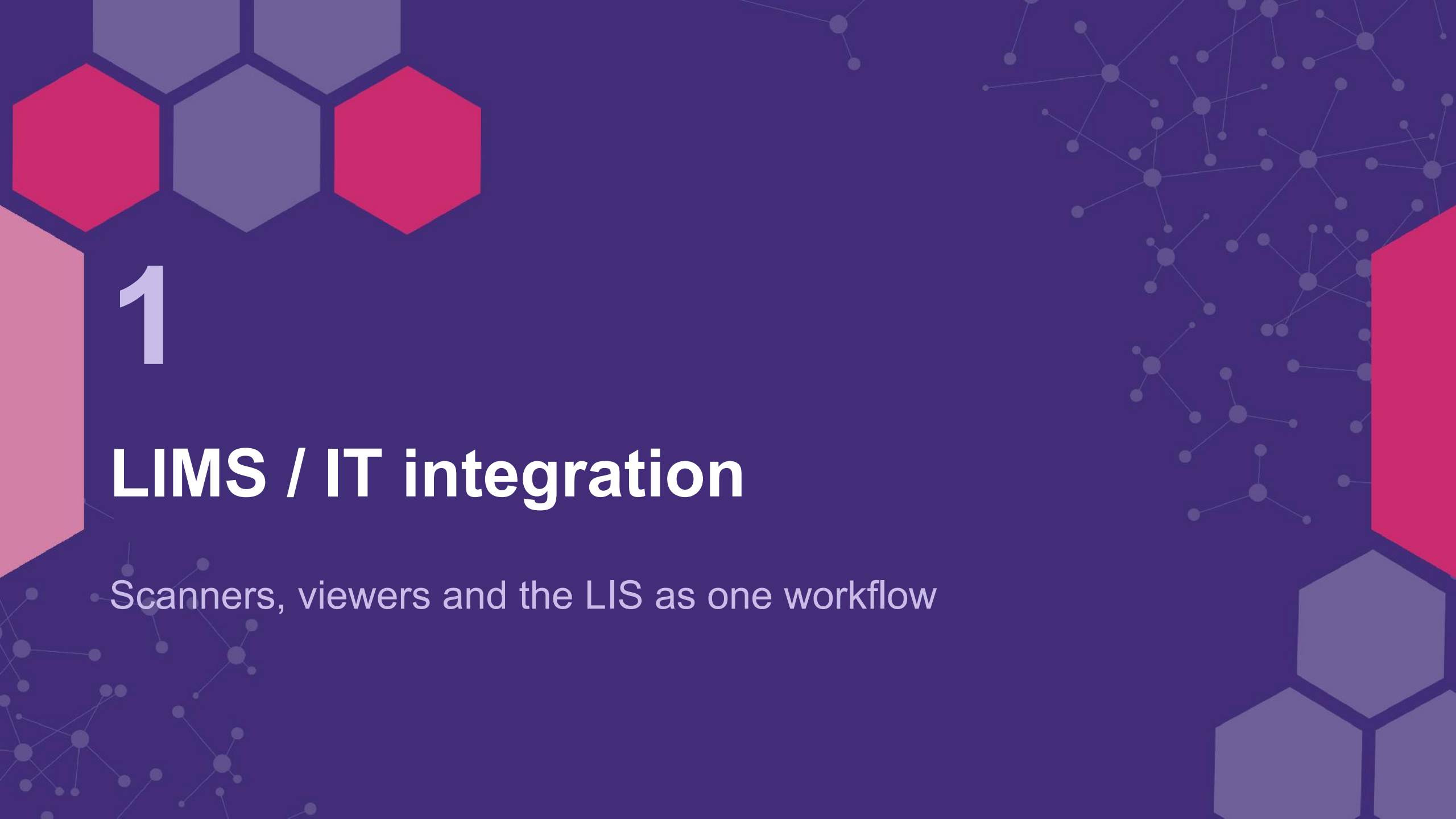


Image: McGeddon, Wikimedia Commons, CC BY-SA 4.0

The background is a solid dark purple. In the top-left corner, there is a cluster of hexagons in shades of pink and light purple. In the top-right corner, there is a complex network graph with many small nodes and connecting lines. In the bottom-right corner, there is another cluster of light purple hexagons. On the far left and right edges, there are vertical bars in shades of pink and purple.

Four challenges

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1

LIMS / IT integration

Scanners, viewers and the LIS as one workflow



2

Workflow redesign

Rebuilding the path from slide to signed report





3

Professional change

How pathologists, scientists and trainees work





4

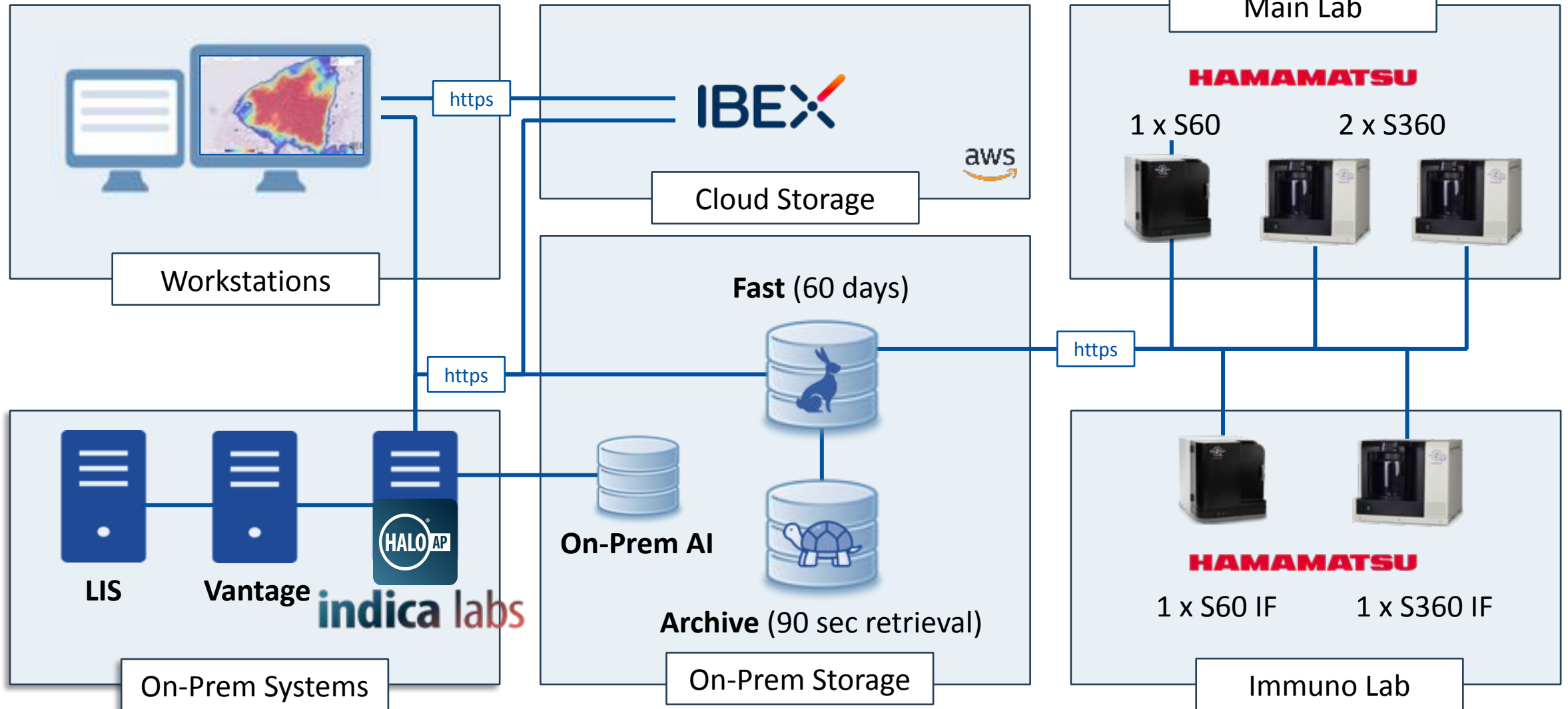
Investment sustainability

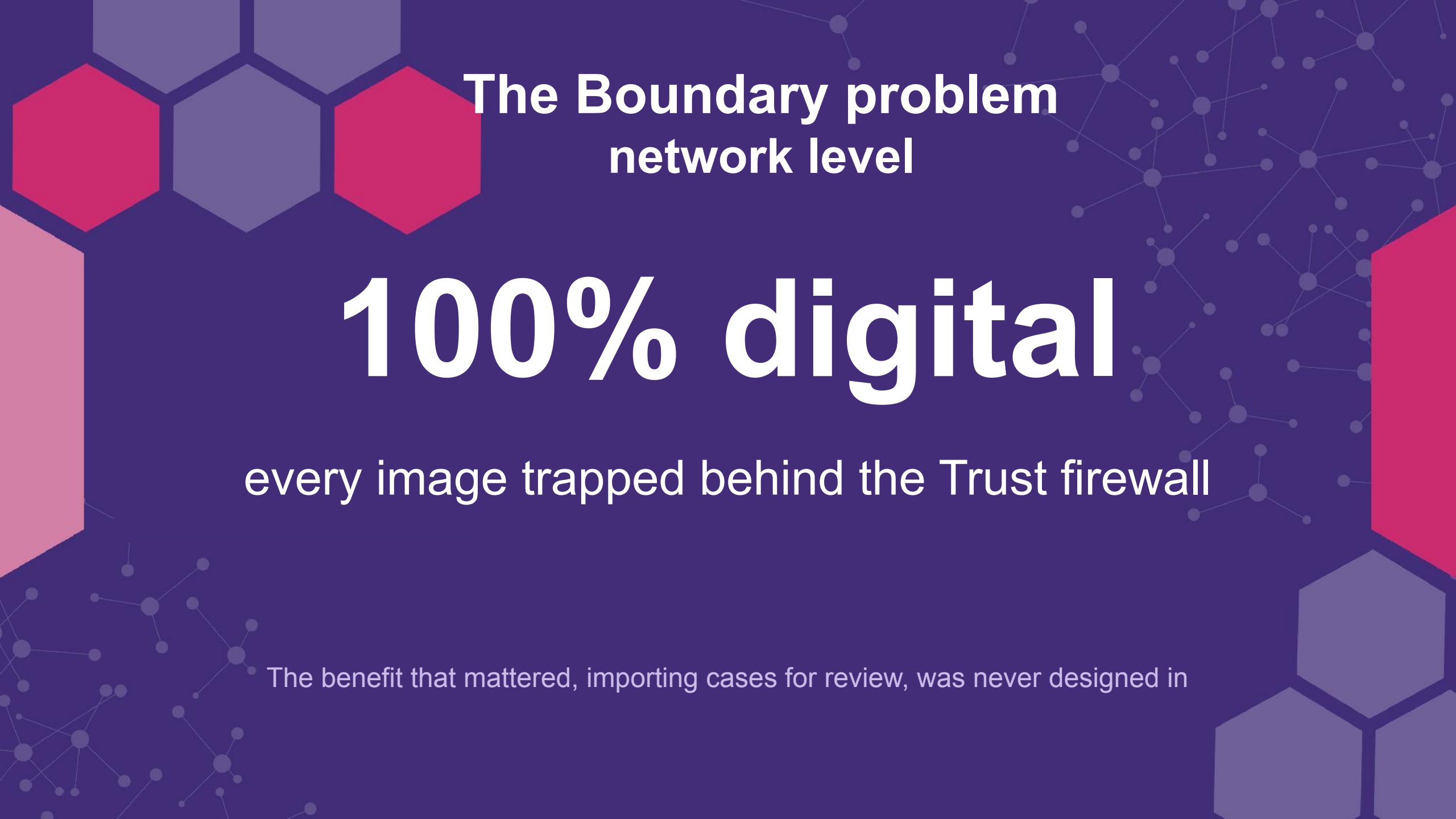
Holding the business case from pilot to routine



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- The background is a dark purple color. In the top-left corner, there is a cluster of hexagons in shades of pink and purple. In the bottom-right corner, there is another cluster of hexagons in shades of purple. A network diagram with small grey nodes and thin white lines is visible in the top-right and bottom-left corners.
- 1 LIMS / IT integration**
 - 2 Workflow redesign**
 - 3 Professional change**
 - 4 Investment sustainability**

NUH Solution Design



The background is a dark purple color. On the left side, there is a vertical strip of hexagons in shades of pink and purple. On the right side, there is a vertical strip of a pink rectangle and purple hexagons. A faint, light-colored network graph with nodes and connecting lines is visible across the background.

The Boundary problem network level

100% digital

every image trapped behind the Trust firewall

The benefit that mattered, importing cases for review, was never designed in

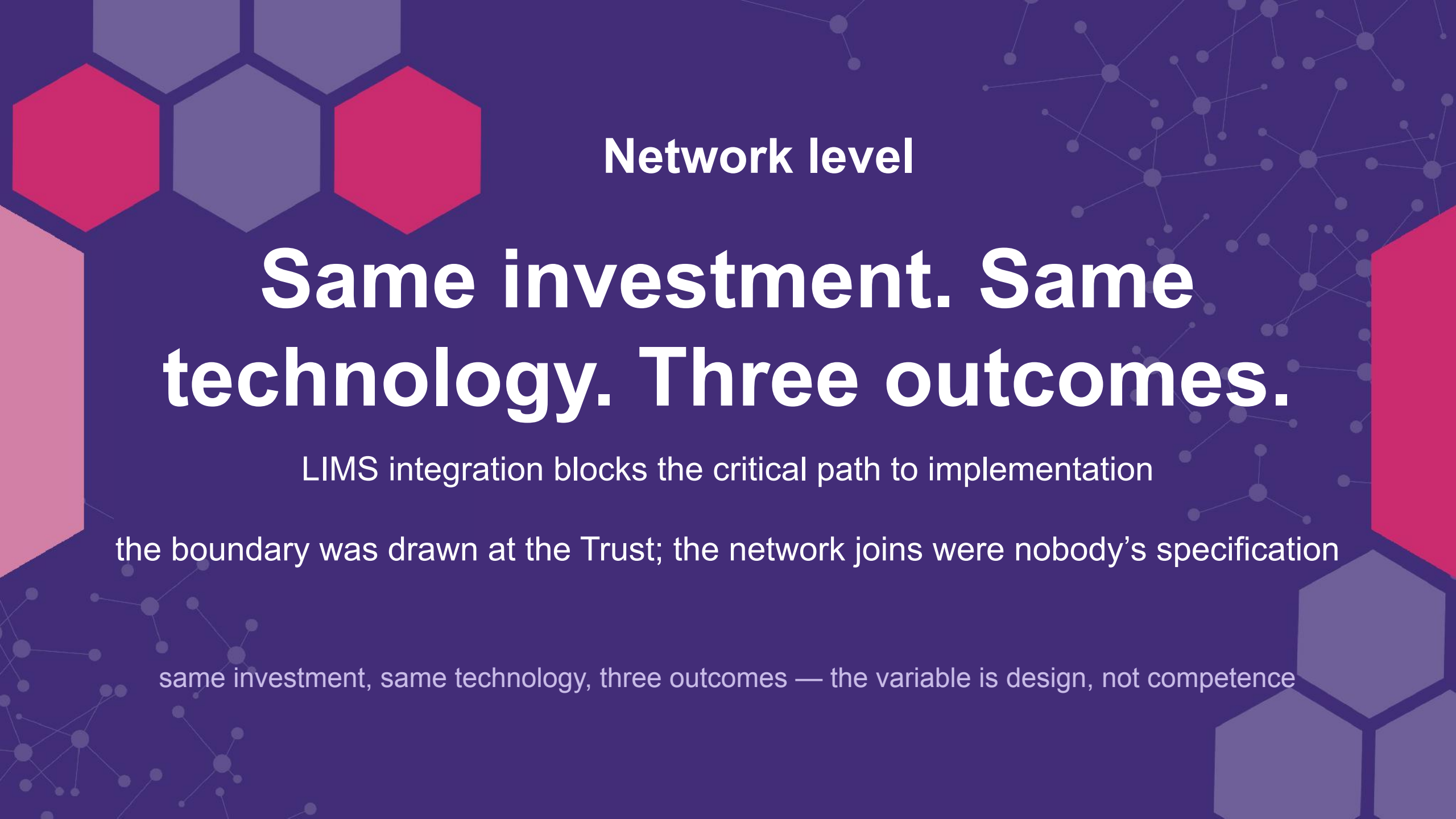
The background is a dark purple color. On the left side, there is a vertical strip of hexagons in shades of red and purple. On the right side, there is a vertical strip of a red rectangle and purple hexagons. A network diagram with small grey dots and thin white lines is scattered across the background, particularly on the right side.

**The Boundary problem
national level**

Still on glass

fully digital departments need glass for the exam

Investment and examination pull opposite ways; nobody owns the contradiction

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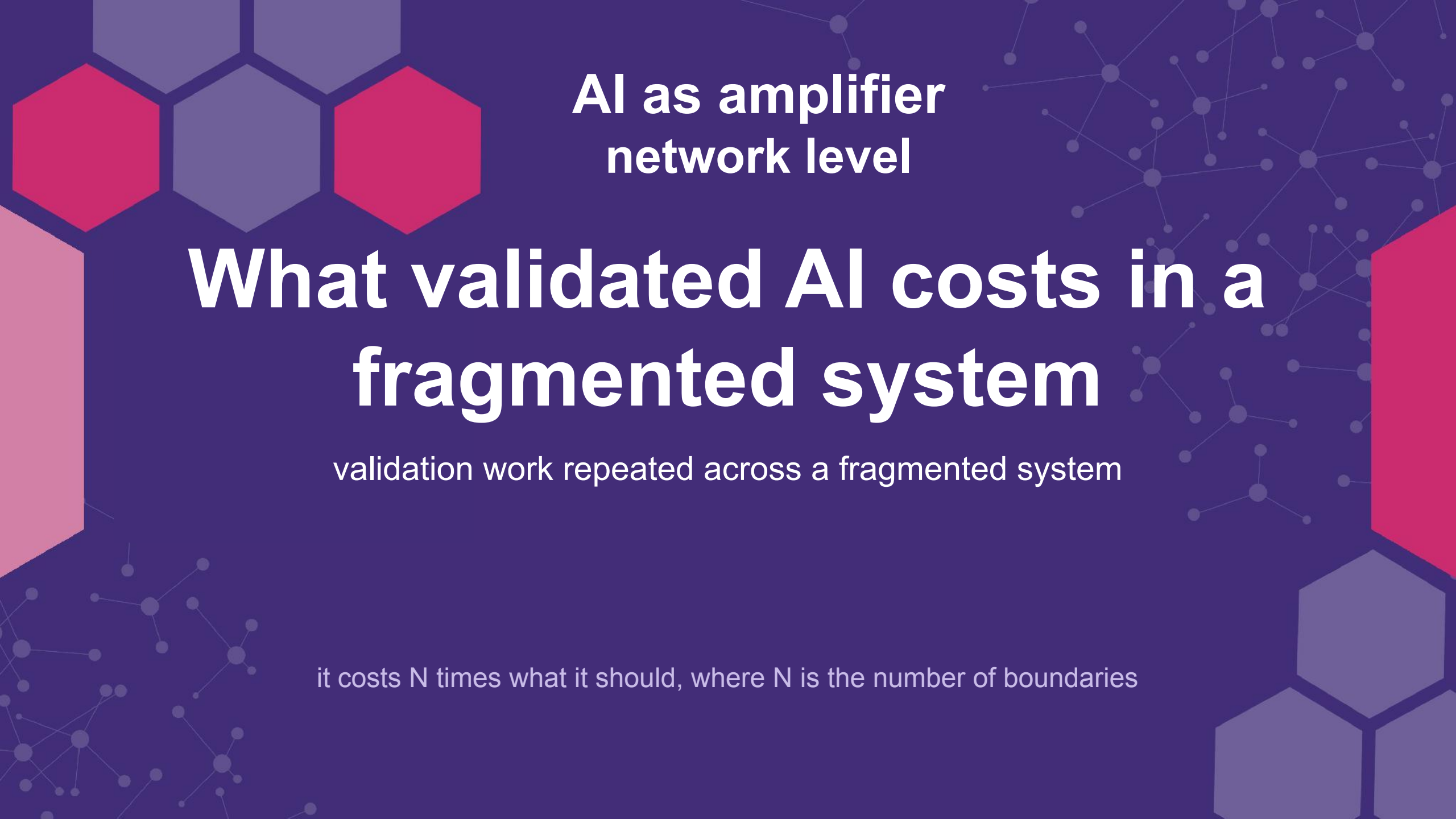
Network level

Same investment. Same technology. Three outcomes.

LIMS integration blocks the critical path to implementation

the boundary was drawn at the Trust; the network joins were nobody's specification

same investment, same technology, three outcomes — the variable is design, not competence

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**AI as amplifier
network level**

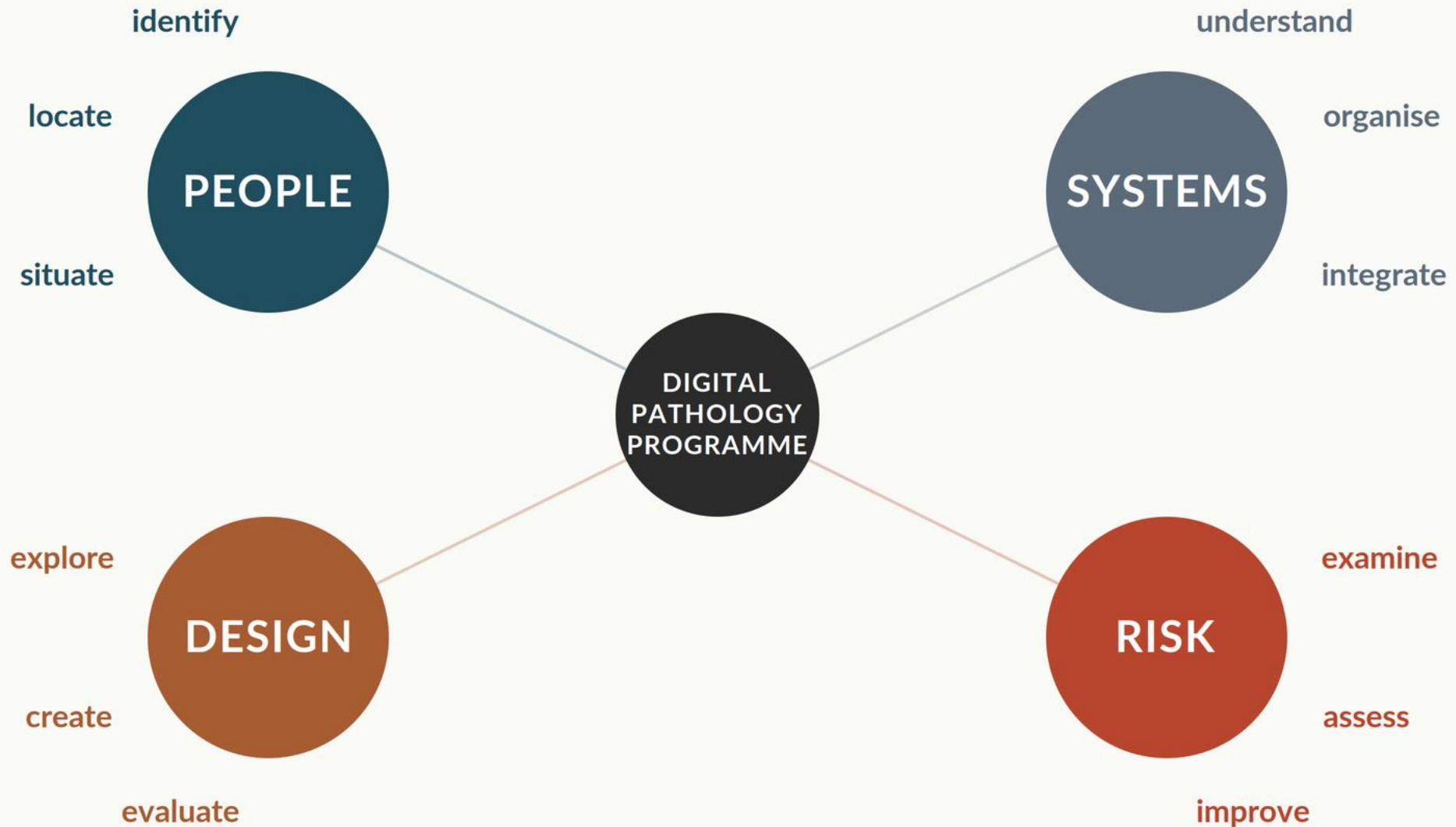
What validated AI costs in a fragmented system

validation work repeated across a fragmented system

it costs N times what it should, where N is the number of boundaries

Engineering Better Care

A systems approach: four perspectives on one redesign



Eight questions for your programme

PEOPLE

Who needs to use the output of this system, and where are they?

Whose working practice must change for the clinical benefit to be delivered, and who owns that change?

DESIGN

At what level is the system boundary drawn — and was that level carefully chosen, or assumed?

Do your success metrics include the clinical benefit you are building towards, or only the operational outputs you control?

SYSTEMS

What systems outside this programme's control must integrate with it, and who owns their roadmap?

Where does data need to flow across an institutional or governance boundary?

RISK

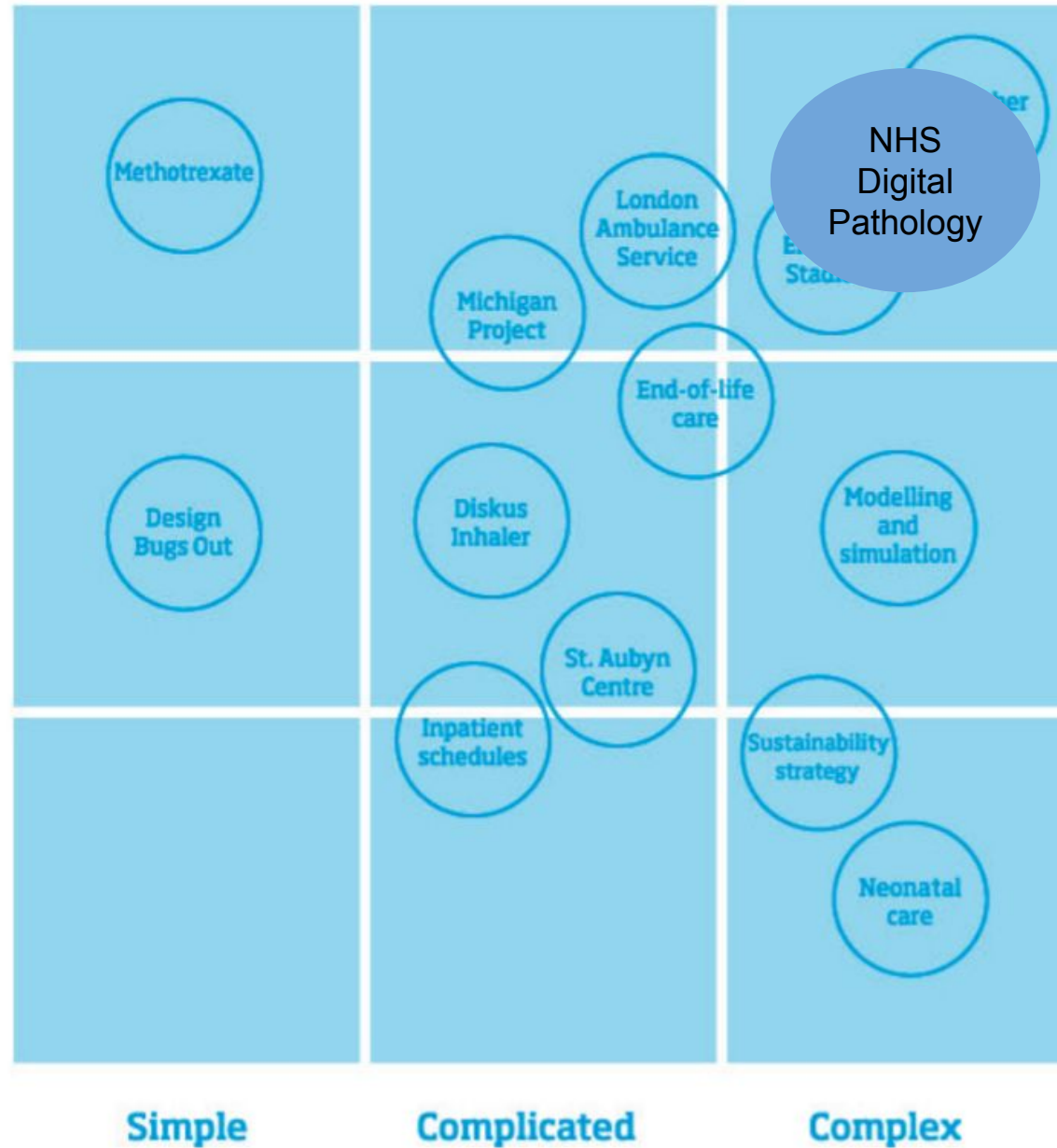
Which failure modes are already documented in comparable programmes, and have you modelled them in yours?

What contradictions exist between this system and the wider structures it operates inside?

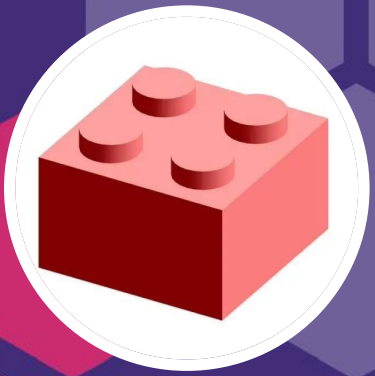
**Cross-
organisation**

Organisation

Service



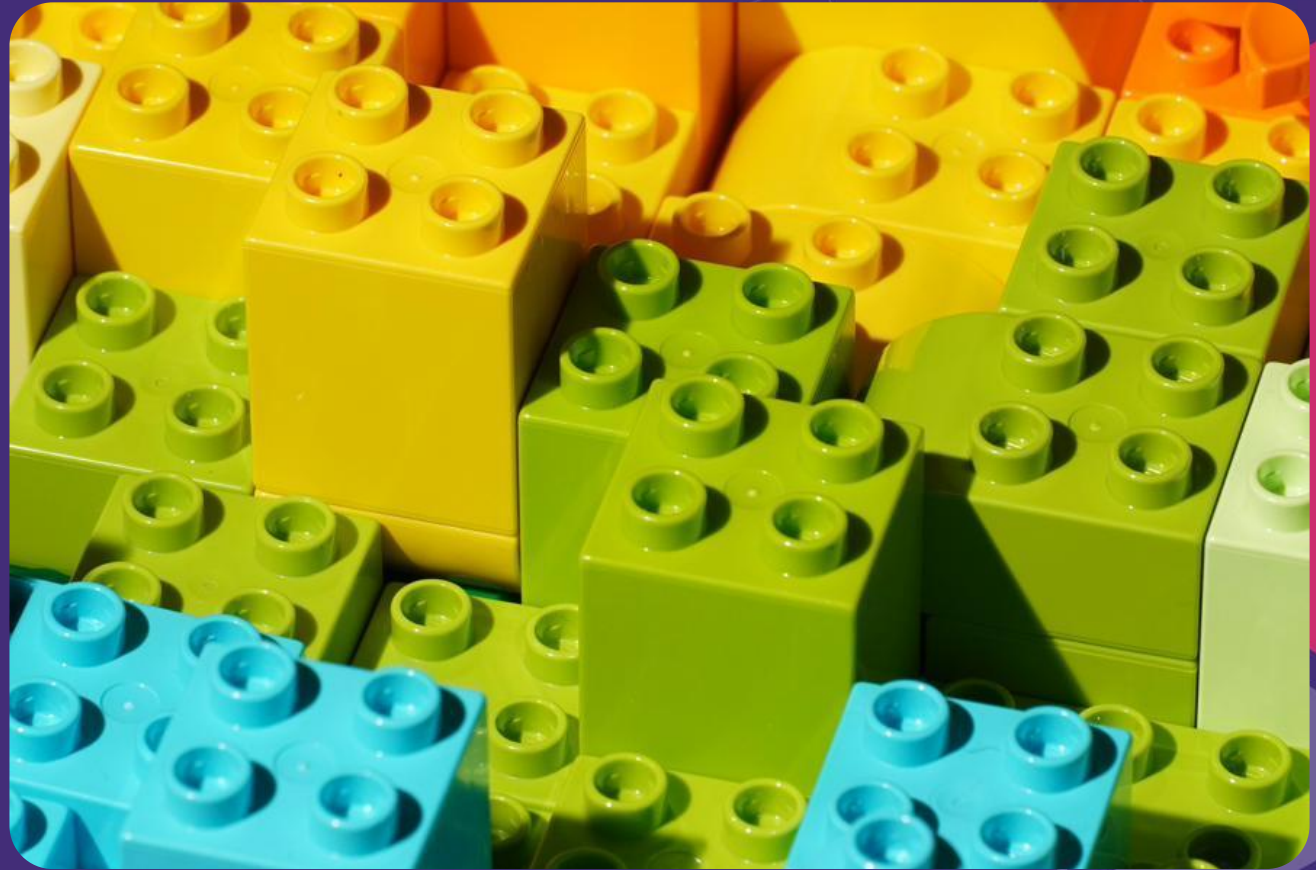
Adapted from : Engineering Better Care Royal Academy of engineering 2017



**Standardise the
connectors,
not the
components.**

“Find your Lego”

Flyvbjerg & Gardner



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The challenge is not implementing digital pathology.

The challenge is understanding and designing the system digital pathology has to operate within.

**Standardise the
connectors,
not the components.**

