

Structural Failure in National Health IT: A Systems-Dynamics Case Study of Digital Health and Care Wales

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Author affiliation and declaration. Independent researcher; formerly Chief DevOps Officer, subsequently retitled Chief Product and Technology Officer, Digital Health and Care Wales (2024–2025). This positionality is a source of both insight and potential bias; the paper therefore restricts its evidence base to the public record — board and committee minutes, auditor reports, parliamentary proceedings and freedom-of-information disclosures — and states the conditions under which its central claims would be falsified. Correspondence: rafal@ctozen.com. The full analysis, with sources for every figure, is published open-access as the *Digital Blueprint for NHS Wales* at <https://bluenhs.org/> (CC BY 4.0).

Version note. v1.1 (August 2026) updates the evidence apparatus: the documentary record underpinning the analysis is now published as a numbered, archived source register — *The State of DHCW* (86 numbered references, 48 archived public-sector documents) at <https://bluenhs.org/state-of-dhcw/> — and the paper’s evidence citations point to it. Two schematic figures added. Findings, model and conclusions are unchanged from v1.0.

Abstract

National health IT bodies fail often and expensively, and the dominant explanations — poor project management, underfunding, “cultural issues” — do not explain why repeated corrective interventions leave failure patterns intact. This paper applies systems dynamics (Forrester; Meadows) to a contemporary case: Digital Health and Care Wales (DHCW), the national digital body of NHS Wales, escalated in 2026 to Level 4 “targeted intervention” after approximately £600M of cumulative public funding produced £0.5M of quantified delivered value — its Finance Director’s own figure. From five years of public record the analysis identifies eleven reinforcing feedback loops in two clusters: five that produce delivery failure, and six that protect that failure from every corrective mechanism the system contains. All seven of Meadows’ system-trap archetypes are found to be simultaneously active. Two findings generalise. First, *day-one completeness*: every governance-deficit pattern visible at escalation was already operational at the organisation’s first board meeting, having been imported wholesale from a discredited predecessor — failure was inherited configuration, not degradation. Second, *funder co-authorship*: the oversight body materially produced the conditions it later escalated against, which explains why oversight fired without correcting. The paper derives a structural reform model — a small standards-and-interoperability body with delivery federated to service providers, on the Danish and Estonian pattern — and states testable predictions for the reform programme the Welsh Government announced in mid-2026.

Keywords: health informatics; systems dynamics; governance; NHS Wales; digital transformation; organisational failure; system traps

1. Introduction

Large public-sector health IT programmes fail at rates that have barely improved in two decades. England’s National Programme for IT was written off at roughly £10 billion; comparable failures recur across jurisdictions. The literature typically explains each failure ideographically — a procurement misjudged, a rollout rushed, a culture “not ready”. What such explanations cannot account for is *invariance*: why an organisation subjected to years of escalating oversight, leadership attention and additional funding reproduces the same failure signature year after year.

Systems dynamics offers a different explanatory target. Where conventional review asks *what went wrong*, systems dynamics asks *what structure keeps regenerating the going-wrong* — modelling organisations as stocks, flows, feedback loops and delays, and diagnosing recurring pathologies through Meadows’ catalogue of system traps. This paper applies that method to a case with unusually rich public documentation: Digital Health and Care Wales.

The case is useful for three reasons. First, scale and clarity: a single national body with a statutory monopoly on digital delivery for a 3.16-million-person health system, whose delivery record is stark. Second, documentation: five years of board and committee minutes (including verbatim transcripts and their published redactions), auditor assessments, and parliamentary scrutiny of both the body and its predecessor. Third, timing: the Welsh Government announced in mid-2026 an independent review of NHS performance, a review of its escalation framework, and a ten-year digitisation programme — so the analysis yields predictions that will be tested in public, on a known timeline.

2. Background

DHCW was established on 1 April 2021 as a Special Health Authority, replacing the NHS Wales Informatics Service (NWIS). NWIS had been found by the Senedd’s Public Accounts Committee in 2018 to exhibit “a culture of self-censorship and denial”; the reconstitution transferred the workforce, the leadership cohort and the operating model to the new body. DHCW operates under a policy framing known as “once for Wales”: a single national body builds and runs digital systems for all seven health boards.

The delivery record over the subsequent five years, from the public record: cumulative Welsh Government funding of approximately £600M; quantified delivered value of £0.5M (stated by the organisation’s Finance Director at a public accountability meeting); none of nine major programmes delivered on time; headcount growth from 675 to approximately 1,263 (+80%) with declining delivery; staff-survey burnout rising from 65% to 68.9% year-on-year, with both figures absent from published minutes; working days lost to sickness up 82% over three years against 30% headcount growth. The Welsh Government placed DHCW under Level 3 “enhanced

monitoring” in March 2025 and escalated it to Level 4 “targeted intervention” in 2026 — even as the organisation reported 45 of 47 escalation milestones delivered.

3. Method

The analysis proceeds in four steps. (1) *Boundary definition*: the system under analysis comprises DHCW’s leadership conduct, information flows, and accountability mechanisms, with the Welsh Government-as-funder, the predecessor’s staffing pipeline, and parliamentary oversight placed explicitly on the boundary. (2) *Stock identification*: eighteen stocks are tracked, from visible (headcount, budget) to structurally suppressed (delivery capability, health-board trust, fidelity of the published record). (3) *Loop derivation*: reinforcing feedback loops are derived from documented event sequences and classified by the stock they deplete. (4) *Trap classification*: loop interactions are tested against Meadows’ seven archetypes.

Evidence rules: all claims derive from public documents — board and committee minutes and transcripts, Audit Wales reports, Senedd proceedings, Welsh Government correspondence, FOI disclosures — compiled as a numbered documentary record, *The State of DHCW* (86 numbered references, 48 archived public-sector documents), at <https://bluenhs.org/state-of-dhcw/sources/>, with headline figures cited per-claim at <https://bluenhs.org/facts/>. Claims about named individuals are quoted, not asserted. The framework is falsifiable in the sense specified at <https://bluenhs.org/methodology/>: it predicts, for example, that single-loop corrections (leadership replacement alone, transparency mandates alone) will be absorbed without behavioural change, and specifies observable markers for absorption.

The author’s former role inside the organisation is declared above. It informed *where to look* in the public record; the record itself carries the evidentiary weight.

4. Findings

4.1 Eleven loops, two clusters

Five reinforcing loops (Cluster A) explain delivery failure and would challenge any national health IT body: a hiring trap (Brooks’s law at organisational scale — headcount +80%, delivery declining); a credibility death spiral with health-board customers; a funding-uncertainty trap driven by annual cycles; a rebranding escape in which failing programmes are renamed rather than finished (the £42M+ community-care system relaunched as “Connecting Care”); and a vendor-dependency spiral across a £1.25B contract portfolio.

Six further loops (Cluster B) explain why no correction lands. They constitute a self-preservation engine: a manufactured narrative (systematic sanitisation of published minutes — 107 documented instances, with executive warnings such as a “never event” characterisation of a repeated infrastructure failure erased); a competence void at executive level; loyalty-based selection through a documented patronage pipeline; whistleblower suppression; an information fortress (zero published whistleblowing, disciplinary or leaver statistics); and captured

governance (a committee generating zero corrective actions across eighteen consecutive months; nine-figure procurement passed without scrutiny).

The clusters interact: every corrective signal — clinician complaint, auditor finding, parliamentary question — must pass through Cluster B before it can reach Cluster A, and none does so intact.

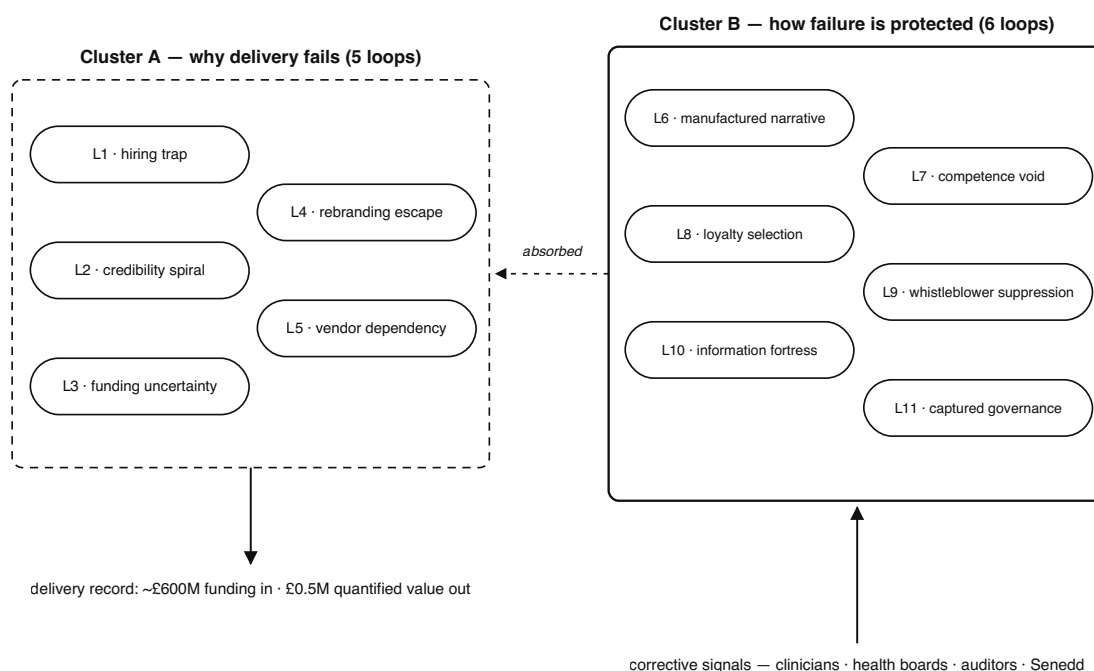


Figure 1. The two-cluster loop architecture. Cluster A’s five reinforcing loops produce delivery failure; Cluster B’s six loops form the self-preservation engine through which every corrective signal must pass. Signals arrive intact at Cluster B and reach Cluster A attenuated or not at all.

4.2 All seven traps active

Testing loop interactions against Meadows’ archetypes finds all seven simultaneously active — shifting the burden, drift to low performance, seeking the wrong goal, policy resistance, tragedy of the commons, success to the successful, and escalation. The paper knows of no documented precedent for simultaneous activation of the full catalogue in a single organisation; the finding’s significance is not the count but the coordination it implies, which leads to the two structural results.

4.3 Day-one completeness

The governance deficits observed at Level 3 escalation (2025) are all traceable in the record to the organisation’s first board meetings (2021): approvals without scrutiny, curation of minutes, non-declaration of interests, unactioned risk flags. The failure architecture did not develop; it was inherited — imported with the predecessor’s leadership and culture under a new statutory name. This inverts the standard reform assumption that new organisations degrade from a healthy starting state, and implies that reconstitution-by-rebrand is a null intervention.

4.4 Funder co-authorship

The oversight body co-produced the failure conditions it escalated against: annual funding cycles with confirmations arriving months into the financial year; capital refusals while delivery milestones were retained; programme compression (a four-year laboratory-system programme compressed to two); recruitment freezes imposed by remit letter concurrent with delivery acceleration; and documented pressure to soften red delivery ratings. Escalation frameworks that examine only the overseen body while the funder's contribution remains out of scope will fire without correcting — which is precisely the observed behaviour (four years at Level 1 while the conditions formed; escalation without improvement thereafter).

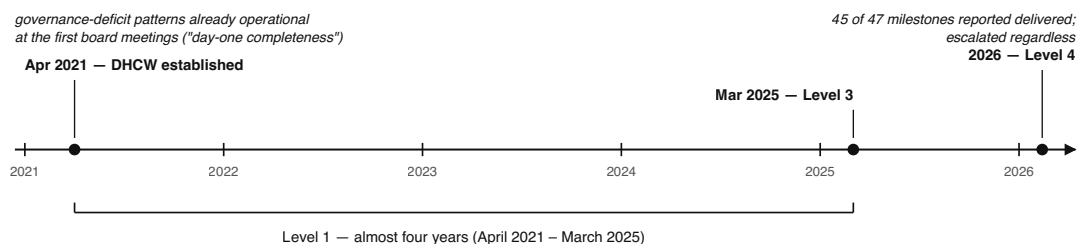


Figure 2. Escalation history, 2021–2026. The governance deficits cited at Level 3 (2025) are traceable to the organisation's first board meetings (2021); almost four years then passed at Level 1 while the conditions formed, and escalation to Level 4 followed in 2026 despite 45 of 47 milestones being reported as delivered.

5. The reform model

The findings imply that neither leadership replacement nor transparency mandates nor additional funding can succeed alone; each is absorbed by the remaining loops. The derived reform model — specified in full, with costings and transition plan, at <https://bluenhs.org/blueprint/> — has three structural moves, each with operating precedent in Denmark (MedCom) and Estonia (TEHIK):

1. **Separate standards from delivery.** A national standards-and-interoperability body of roughly 400 staff certifies and operates the connective tissue (identity, terminology, interoperability backbone, national indices) and builds no clinical applications; health boards procure applications within published, automatically-tested standards.
2. **Federate the record, not the platform.** A “single integrated patient record” is achieved as a federated query across the systems that hold the data — not as a single national platform, the NPfIT antipattern.
3. **Reform the funder in parallel.** Multi-year programme envelopes released at externally-assessed gates; a published audit trail for delivery ratings; the funder named in post-mortems alongside the delivery body.

Six sequenced interventions operationalise the model, with leadership reset as the prerequisite and funder reform running in parallel from month zero; the total transition is costed at £5–15M against a documented direct waste rate of £100–150M per year.

6. Discussion

Generalisability. The two structural findings travel beyond Wales. *Day-one completeness* predicts that reconstituting failed bodies under new names, retaining leadership and culture, reproduces the failure — a pattern with multiple candidate instances across public-sector IT. *Funder co-authorship* predicts that escalation regimes scoped only to the overseen body will correlate with long periods of undetected deterioration followed by escalation-without-improvement. Both are checkable against other national cases.

Testable predictions for 2026–29. The Welsh Government has announced an independent review of NHS performance, a review of its escalation framework, and a ten-year digitisation programme. The framework predicts: (i) if the digitisation programme adopts a single-platform reading of “integrated patient record”, it will exhibit the NPfIT failure signature within one spending review cycle; (ii) if the independent review scopes out the funder’s role, its recommendations will be absorbed as previous corrections were; (iii) if delivery remains structurally fused with standards-setting in a single body, trap activation will persist regardless of leadership changes. Public tests for the programme are maintained at <https://bluenhs.org/ten-year-digital-programme/>.

Limitations. This is a single-case analysis by a former insider, built on public documents that are themselves an output of the information system under critique (the sanitisation findings imply the public record *understates* internal dissent). Quantified value-delivered reflects the organisation’s own accounting. The loop model is qualitative; no simulation is claimed. The mitigation in each case is the same: every load-bearing claim is tied to a citable public document, and the framework states what evidence would falsify it.

7. Conclusion

DHCW’s failure is not a management story but an architecture: eleven reinforcing loops, protected by a self-preservation cluster, inside a monopoly container, co-authored by its funder, and complete on day one. The practical corollary is that only structural intervention — separating standards from delivery, federating the record, and reforming the funder in parallel — changes the outcome, and that every partial correction is not merely insufficient but *absorbed*. Wales now has the rare opportunity to test this in public: the reviews and the ten-year programme announced in 2026 will either meet the structural tests or demonstrate, once more, what absorbs them.

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