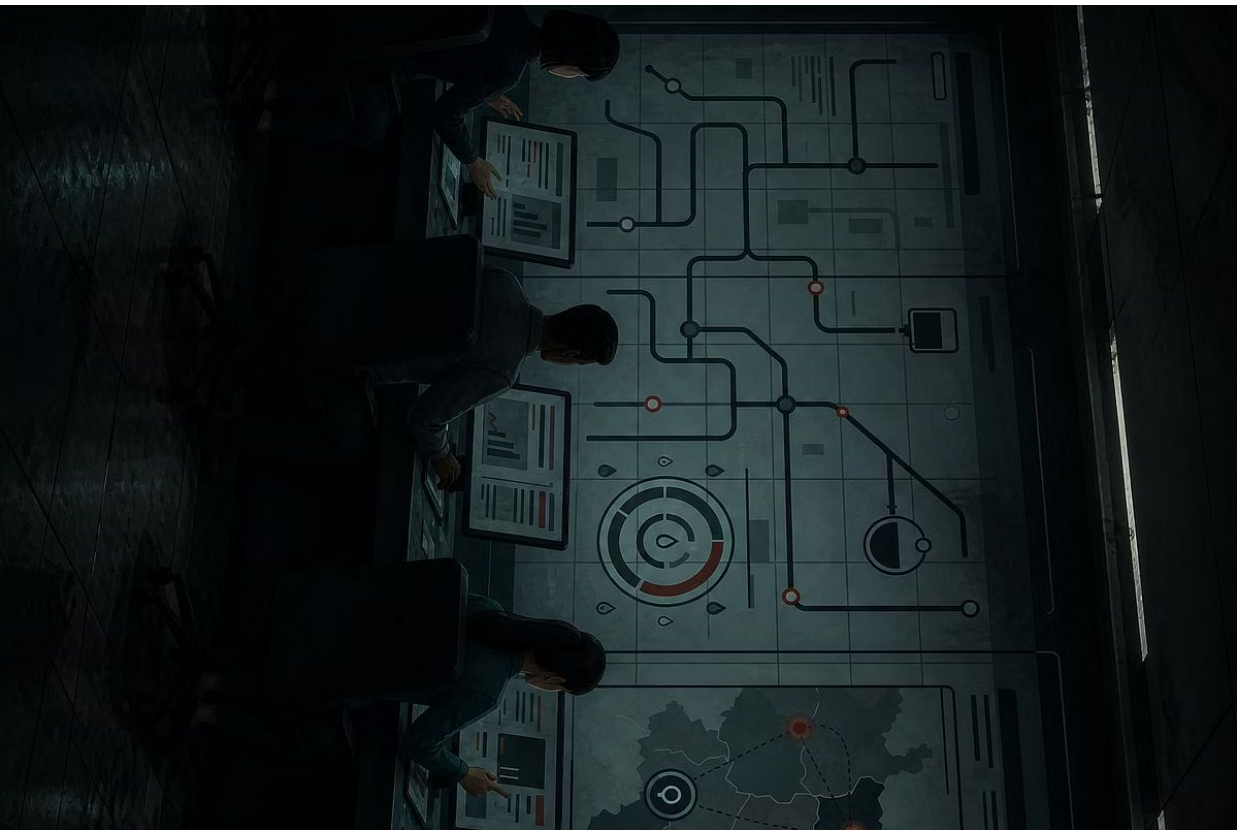


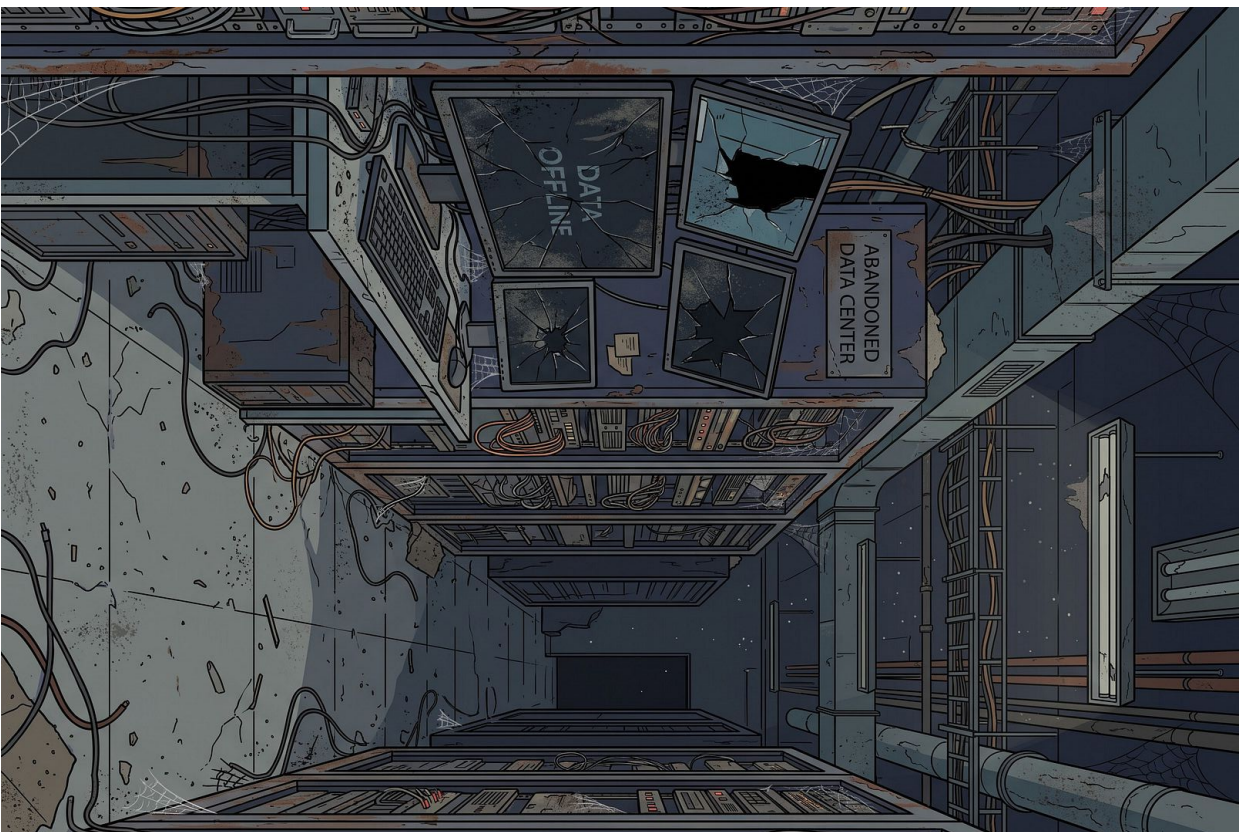


The AI-Era Operating Model

What Must Change Beyond Technology?

Yulia Titova

Water Governance & Climate Finance Lead - GFA Consulting Group



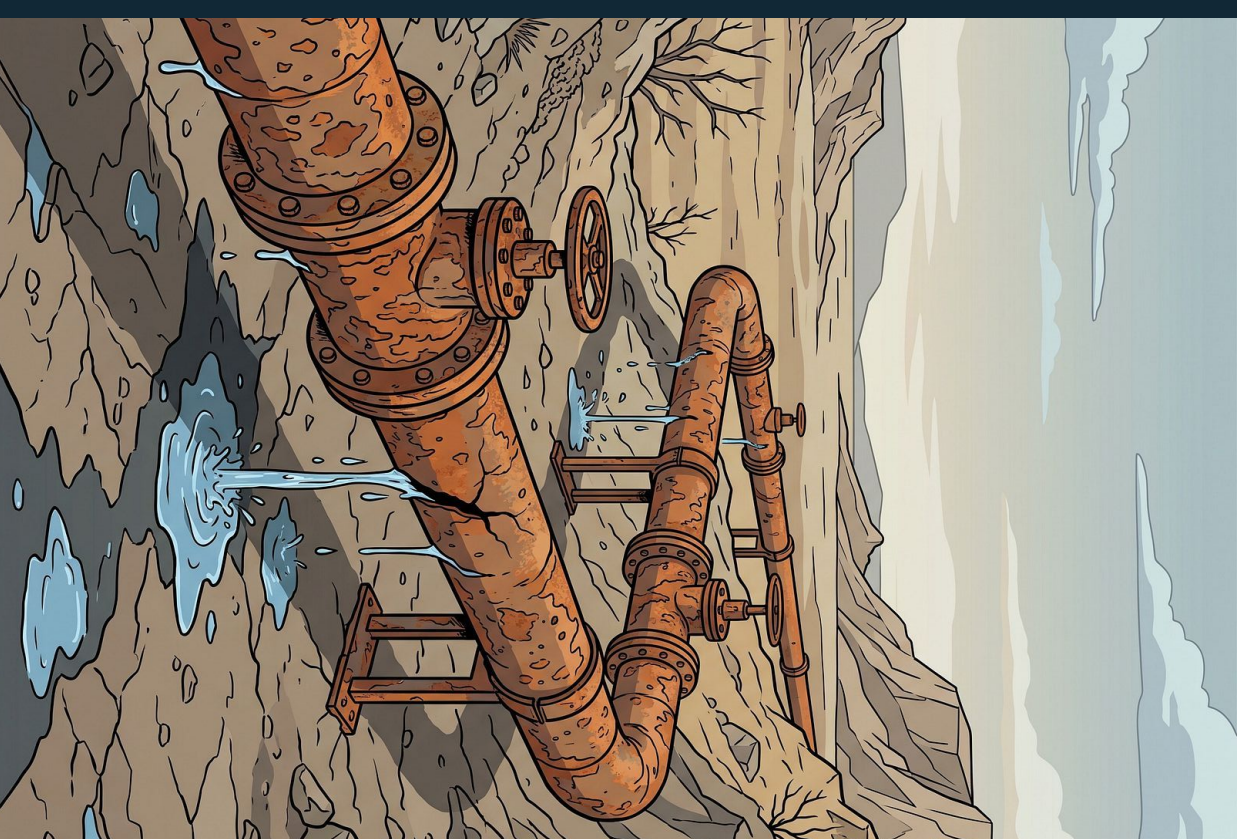
The model is the easy part.

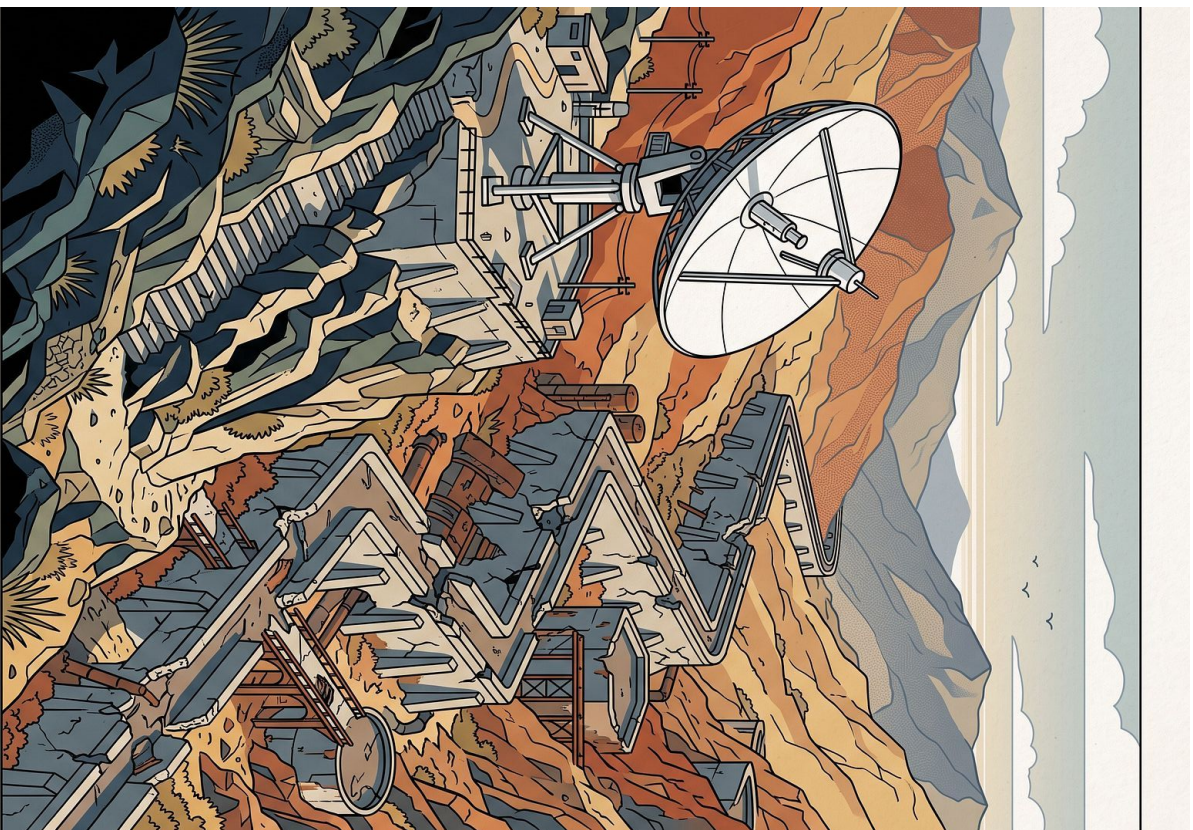
This talk is about what happens after it works.

Leak run time = Awareness + Location + Repair

Farley & Trow, Losses in Water Distribution Networks, 2003

AI has collapsed the first term. It has shortened the second. It has barely touched the third.



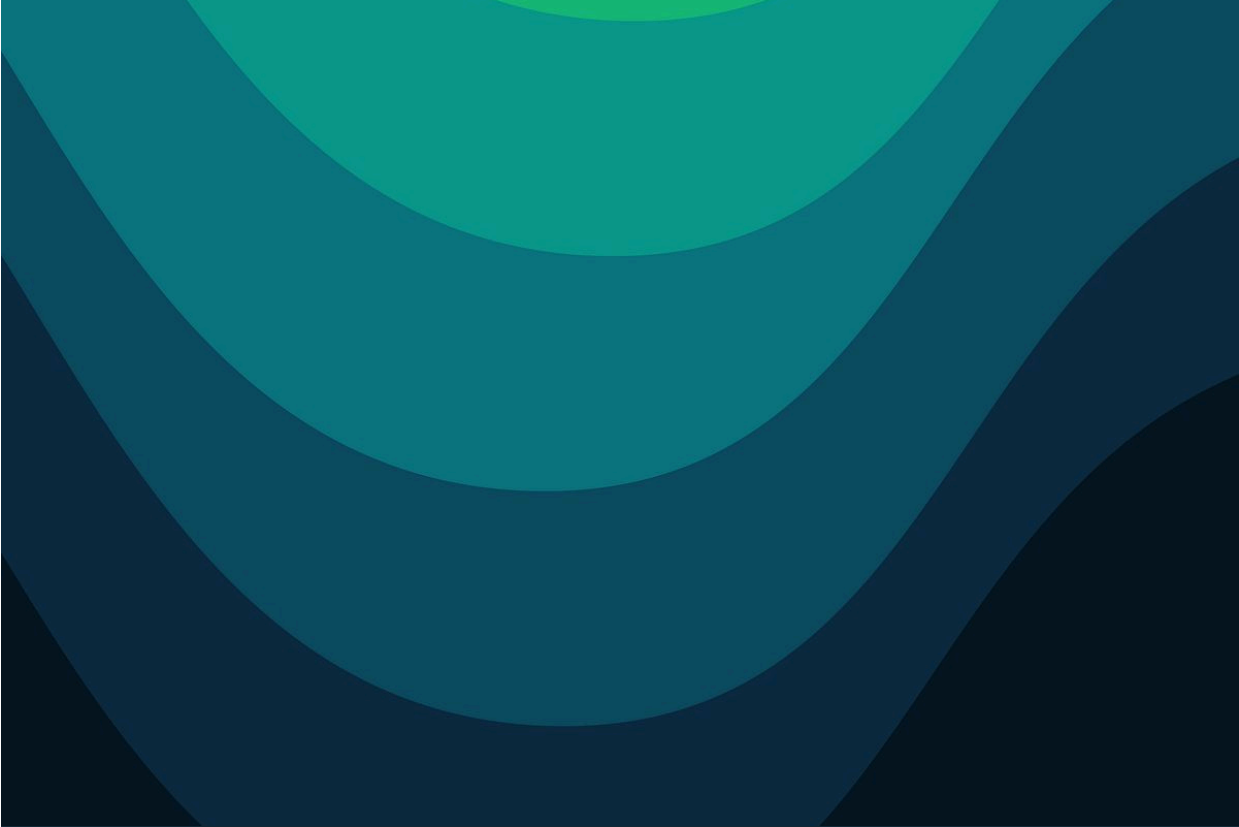


500 likely leaks found. 146 investigated.

One year, one 100-mile Californian system. Reason given: "time and labor constraints." Of those inspected: 80% were real leaks.

Cost per leak found: \$774 by satellite vs \$7,927 conventional

California Energy Commission, CEC-500-2021-036 (2021), Hazen and Sawyer / American Water



The UK's own numbers

The most instrumented year in the industry's history. The reduction rate halved.

2,869 Ml/d — down 43% since privatisation.

Annual reduction 2023-24 → 2024-25: 4.6% → 2.7%.

Four companies met their leakage commitment.

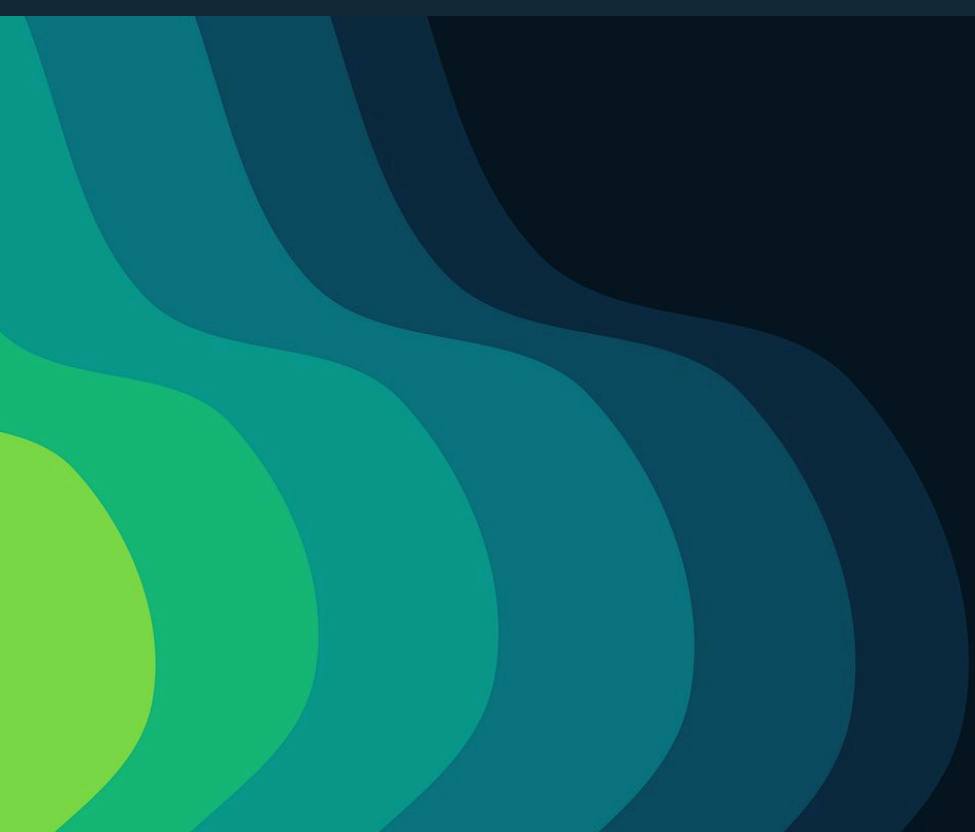
Ofwat, Water Company Performance Report 2024-25

Awareness is now measured in minutes. Repair is still measured in weeks.

45,383 burst pipes repaired in England & Wales, 2024-25 (*Water UK*)

Report to repair: 24 hours to 30 days (*Messex Water, own published process*)

A non-emergency road permit: up to 12 weeks (*Anglian Water, own customer guidance*)



The operating model

Five parts of the third term, none of them procurable:

Decision rights

Escalation paths

Field workflow

Capability

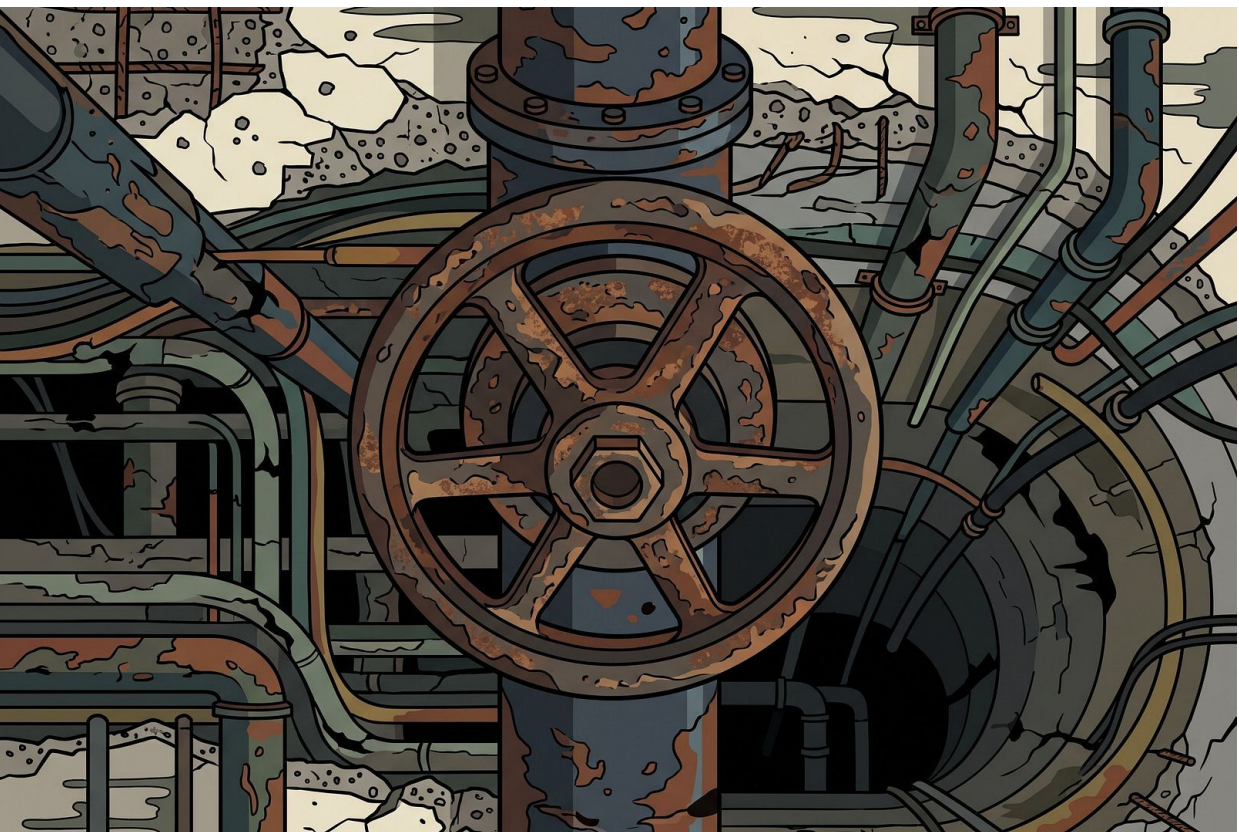
KPI governance



Anglian: ~14 litres per property per day, found and fixed.

1.1 million smart meters — and the wiring around them: a delivery alliance • a metering
operations function • a customer alert workflow.

Every alert had somewhere to go.



The DMA question

Retire the valves. Keep the water balance.

Night flow: augmented, not switched off.

Who owns the regulated number when the water balance lives in a vendor's model?



Where NRW actually fell

Phnom Penh: 72% → 6% (1993-2008) — no AI.

Autonomy, metering, staff. (*ADB / GWP / IMA*)

Singapore: ~5% NRW — a smart water grid
grown over two decades

450+ sensor stations, 6,000 km. (*PUB*)

**Porto: AI + machine learning, 347 monitoring
points**

Field teams inspected 403% of the network length in 2024. (*EC Green City
Accord*)

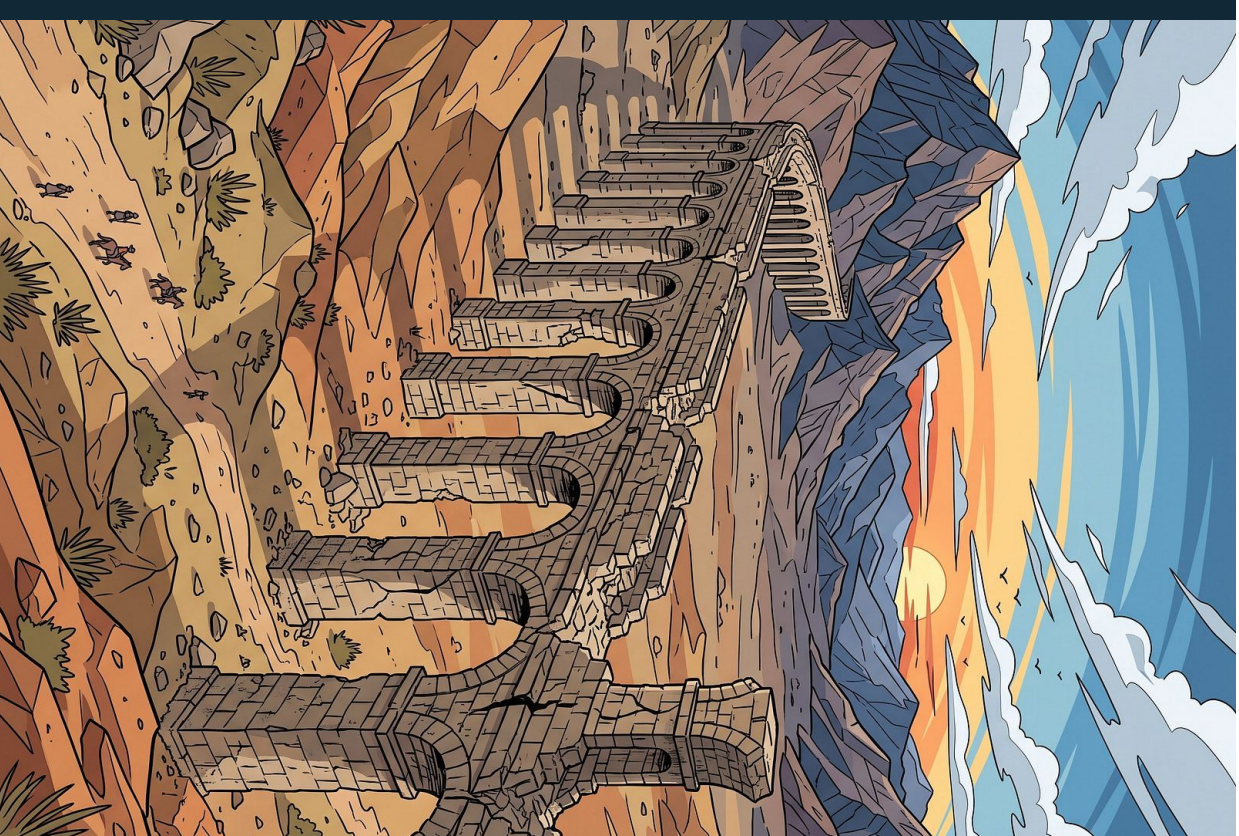
In every case, the institution moved with — or before — the technology.

The export question

These tools are trained on data-rich networks. Most of the world's lost water isn't in them. (~126 billion m³/yr)

Without the institution: dependency.

Inside one — Maynilad, Manila: NRW 38% → 31% (2025), repairs up 41%, AI targeting a third of the network. (25-yr concession, dedicated NRW division; utility-reported)





The people

8% of the UK water workforce is under 24. A fifth expect to retire within a decade.

"Automated systems... are riding on the skills of former manual operators — skills later generations cannot be expected to have." — Lisanne Bainbridge, *Ironies of Automation*, 1983



"...nothing more than to think what we are doing." — Hannah Arendt, 1958

Water became "an industrial and technical detergent" — a fluid that "has lost the ability to mirror the water of dreams." — Ivan Illich, *H₂O and the Waters of Forgetfulness*, 1985

Do we still know what the water is?