# The Human Cost of Knowledge Debt

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At least one large UK university is currently replacing student-facing systems that have remained untouched for nigh on 30 years. The CIO, a role seldom heard of 30 years ago faces a massive challenge to get it right, balancing business as usual demands against the need to progress the replacement.

In my next column I hope to go into much more juicy detail of that CIO's journey. But for (IT)now, it's made me think about the human cost of technical debt: the pressures felt by the CIO and their team facing a mountain of technical debt.

## Change: it isn't you, it's me

By the time you've finished reading this, the 100 million or so lines of code in the Windows, Apple and Google operating systems are likely to have changed again — a bug will have been fixed, a new feature will have been added. And these changes will ripple throughout the software supply chain…

- … all the way from your software developers spending yet another week updating their app

- … to your internal customers who have to cope with seemingly constant updates

- … to those external organisational and business customers that rely on you for their customer and client interaction, where a bad change can damage the bottom line.

Responding to change in the software supply chain increases an organisation's risks of digital disaster. But repeatedly failing to respond accumulates technical debt, which can't be ignored.

Technical debt is well known to have systemic organisational effects and has been studied extensively. The Q4 2020 McKinsey survey on technical debt, for instance, discovered that nine in ten companies currently underspend on paying down their technical debt. The result? Six in ten saw technical debt increase (`https://bit.ly/McKinseyTechDebt`).

So, although the remedies for technical debt are common sense — McKinsey suggests to acknowledge it; treat it as a business problem not a technical problem; dedicate resources to it; chip away at it over time — the resourcing message for technical debt isn't getting through to the board. The reason maybe another systemic effect of change: something I'm calling knowledge debt.

# Knowledge debt

Organisations rely on systems for comms, speed and innovation, but the content of the comms, the need for speed and the source of innovation all derive from humans. Not only does change affect technical systems, it affects the user's ability to use those systems effectively. It's sometimes difficult to keep up with the leading edge.

Knowledge debt is the drag on an organisation due to being behind the leading edge; it's the accumulation of missed training that is needed to cope with technical change.

Knowledge debt exists at all levels throughout an organisation from the coal face to the board. Knowledge debt hamstrings an organisation's ability to change with the times. It's felt through technological hesitancy, poor decision making, a lack of agility and by a lack of understanding of the effects of technological change. It affects IT projects, their roll out and their reception within an organisation and by its customers.

Unlike technical debt, which is clearly measurable through a system's version numbers, in architectural mismatches and in the additional complexity of development, knowledge debt does not appear to have simple proxies as it affects people, including senior leaders, who may be reluctant to admit their personal knowledge debt in an aggressive organisational culture.

# Knowledge debt remedies

This makes the remedy more difficult. But two things could make it better: the first is a 'no-shame' culture in which acknowledging a knowledge debt doesn't deflate an ego.

The other part of the remedy is to create a culture of lifelong training. Lifelong training extends lifelong learning into the workplace, with each individual being given the resources needed to equip themselves with the skills to pay down their personal knowledge debt. These skills should include specific technical training of course, but should also include critical thinking, problem solving and reflection, especially at more senior levels.

Knowledge debt is an under-acknowledged cost of doing business for organisations whose future depends on digital. No-shame culture combined with lifelong training could be the way of restoring adaptability back into the workforce so that change confidence is the norm.