What makes the technology and its adoption work?

Technology should be intuitive.
Trust should be designed.
Value should be realised.

Looking across industries

One of the things I like to do when thinking about technology is look across industries.

Different industries have adopted technology at different times, under different conditions and with very different consequences. I'm particularly interested in the implementations that worked, and what the organisation did around the technology to get the value from it.

I've been reading a case study on the automation of underground loaders at Northparkes mine in NSW.

It's an older study, which is partly why I find it useful. Mining has been working through questions about people and automation for decades that many organisations are now encountering with AI.

Northparkes achieved real outcomes.

Operators were moved from underground equipment into a surface control room, reducing their exposure to physical hazards. Production could continue through shift changes and blasting, and the researchers reported a 23% improvement in daily tonnes produced.

What interested me was what they did to get there.

Before implementing the technology, Northparkes brought together people from across the operation for three days to work through how automation would change the tasks people performed. They found pretty quickly that this wasn't just a change for the loader operators. It affected work across the underground operation.

People stayed involved

Operators stayed involved as the system was developed. They kept an issues list and a “wish list”, and there was regular communication between the people doing the work and the people designing the technology. Their feedback resulted in changes to the system.

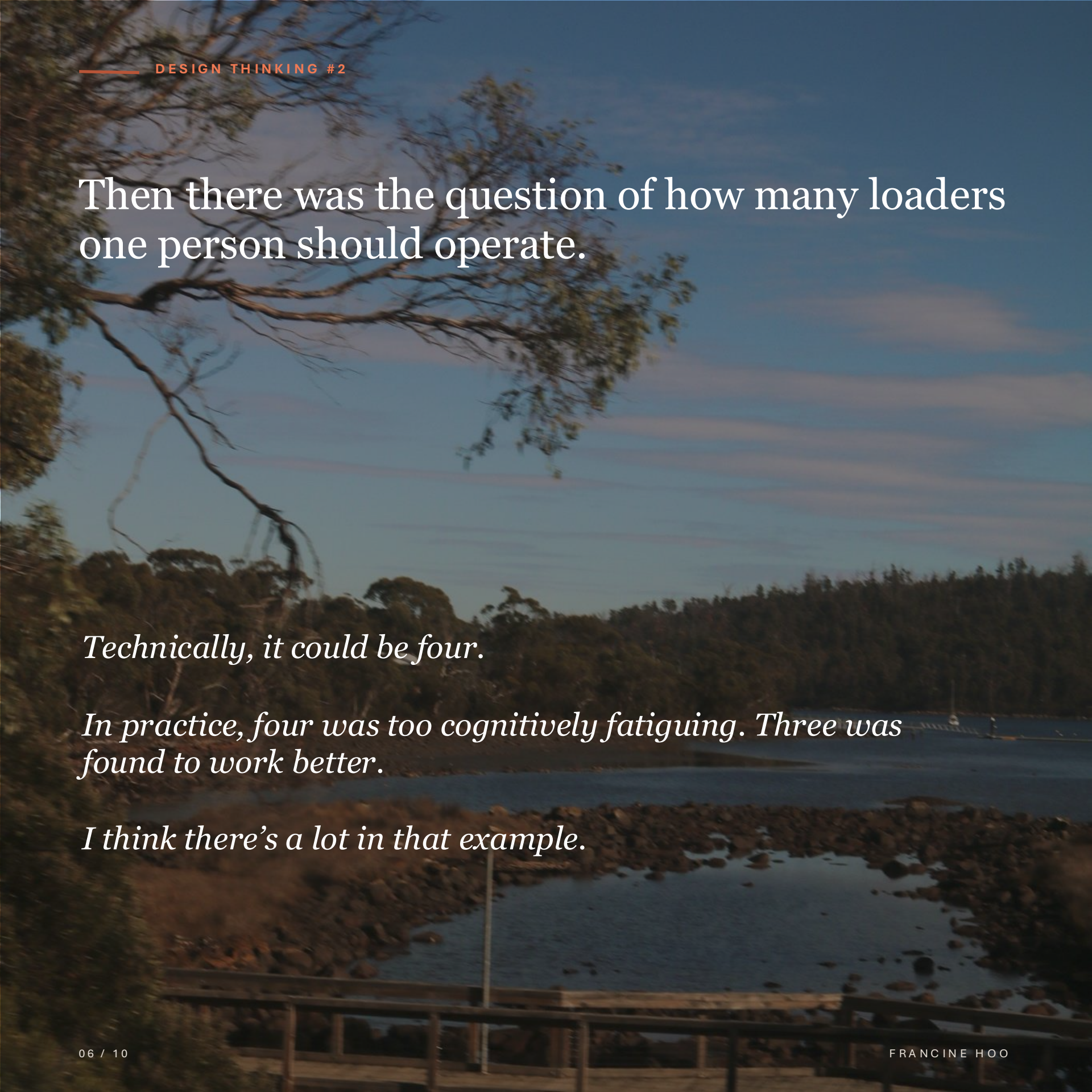
Training wasn’t something that happened at the end either. Operators used simulation, then worked alongside experienced operators before being assessed as competent.

Some of the smaller changes are probably the most interesting.

They redesigned information around the operator

Moving operators above ground meant they lost physical cues they had relied on when they were sitting in the machine. Wheel slip, for example, became difficult to detect remotely, so it was turned into a visual cue on screen.

At one point operators were also receiving a large number of fault alarms. Many had been useful to engineers during commissioning but weren't useful in day-to-day operation. People became accustomed to them and, on at least one occasion, a critical error wasn't acted on, with potentially serious consequences. The system was changed so that operators received the information they actually needed.



Then there was the question of how many loaders one person should operate.

Technically, it could be four.

In practice, four was too cognitively fatiguing. Three was found to work better.

I think there's a lot in that example.

They did not design around maximum capability

Northparkes didn’t design the work around the maximum capability of the technology. They adjusted the technology and the way the work operated as they learned what people actually needed to use it effectively.

Operators also retained room to exercise judgement. They could change drawpoint sequences and modify aspects of autonomous operation when conditions required it.

None of this sat outside the technology implementation as the “people” part of the project.

It was part of making the technology work.

And it was part of getting the value from it.

That distinction feels increasingly important with AI.

We can buy a technology, configure it and demonstrate that it performs a task. But that tells us very little about whether an organisation will get the outcome it expected from introducing it.

The work around it may need to change. People may need different information or skills. Controls may need to change. The technology itself may need to be adjusted once people start using it. And what is technically possible may not be what works best in practice.

The benefits worked together

For Northparkes, the technology needed to be intuitive for the people operating it. Those people needed enough understanding, information and authority to trust it appropriately. Getting those things right was part of how the safety and productivity benefits were realised.

They weren't three separate considerations.

They worked together.

That's the question I'm going to keep exploring as I look across industries:

What has to be true around the technology for an organisation to get value from it?

Source: Burgess-Limerick, R., Horberry, T., Steiner, L. & Cronin, J. (2017), Mining automation human-systems integration – CMOC-Northparkes case study, 13th AusIMM Underground Operators' Conference. cdc_215229_DS1.pdf

Technology creates capability.

The organisation around it determines whether that capability becomes value.

Technology should be intuitive.
Trust should be designed.
Value should be realised.

By design.