

Leaving the Inner Loop

Annie Vella

Google HCP Meetup · 18 July 2026

A Quick Introduction

Software Engineer | Technical Leader | Self-professed Nerd

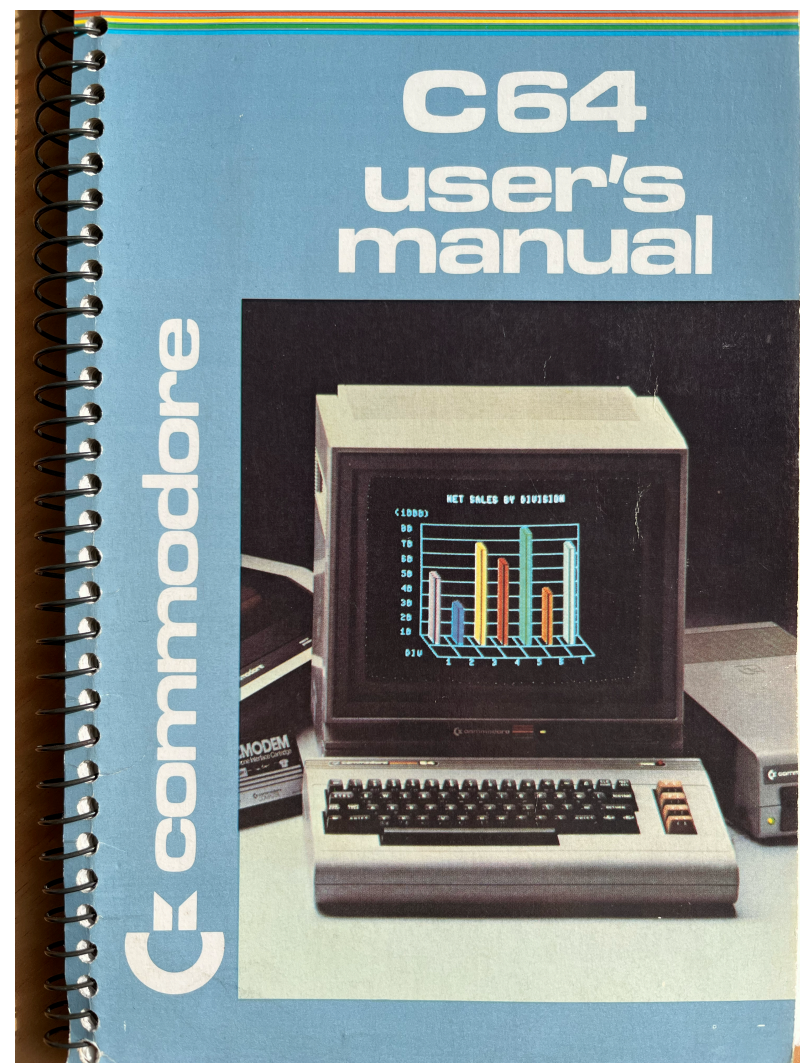
Annie Vella

Distinguished Engineer, Westpac New Zealand

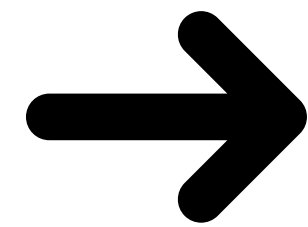
Masters of Engineering, University of Auckland



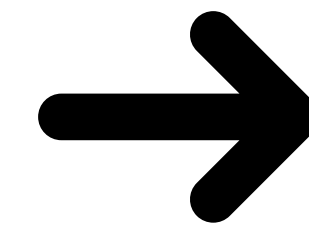
How I Got Here



Circa 1987



November 2022



February 2024

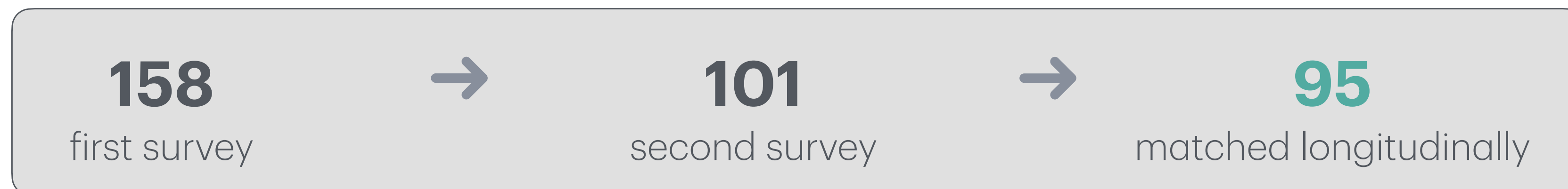
The Study

The Impact of AI Coding Assistants on Software Engineering

Master of Engineering · University of Auckland

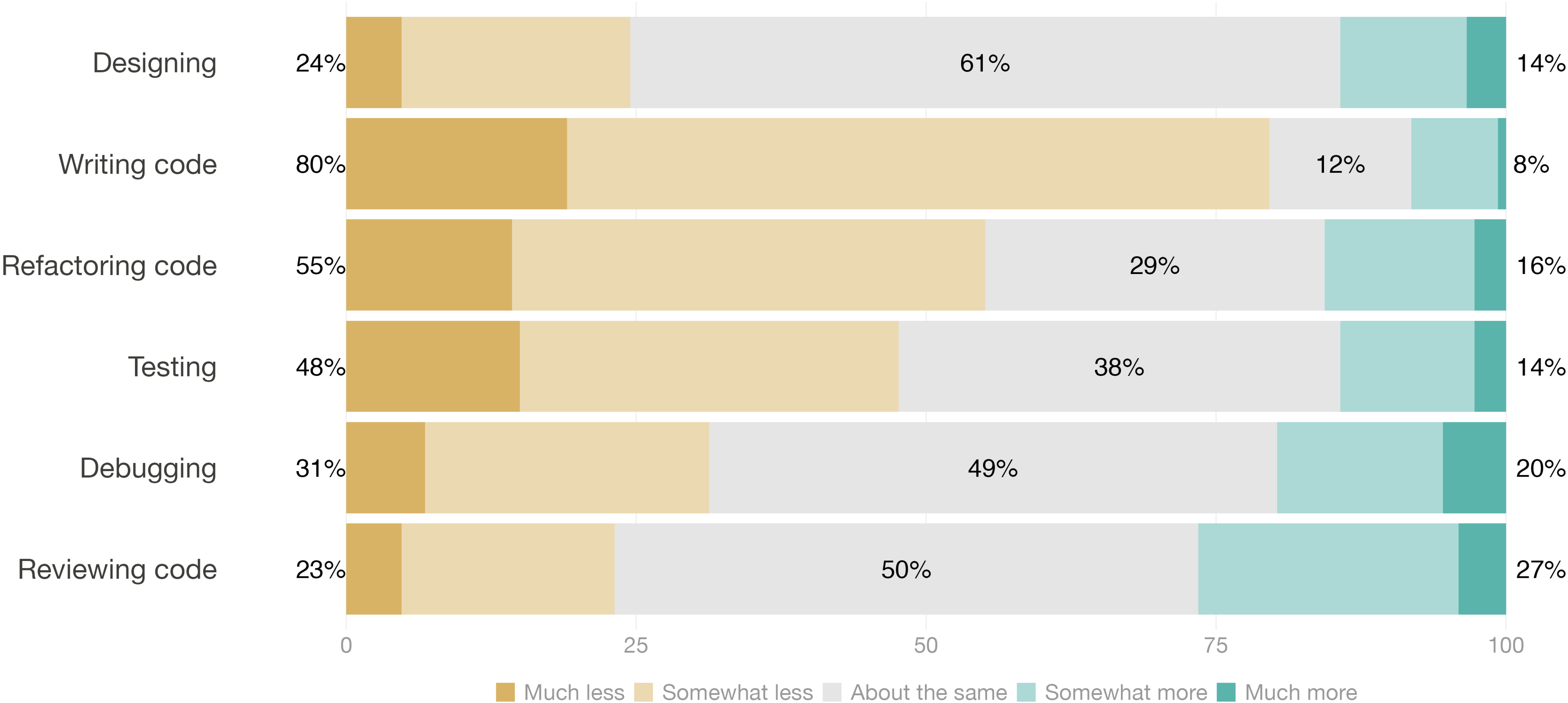
What happens to the people when the tools change the work?

Mixed methods · Professional software engineers · 28 countries · Oct 2024 - Apr 2025



Our Focus Is Shifting

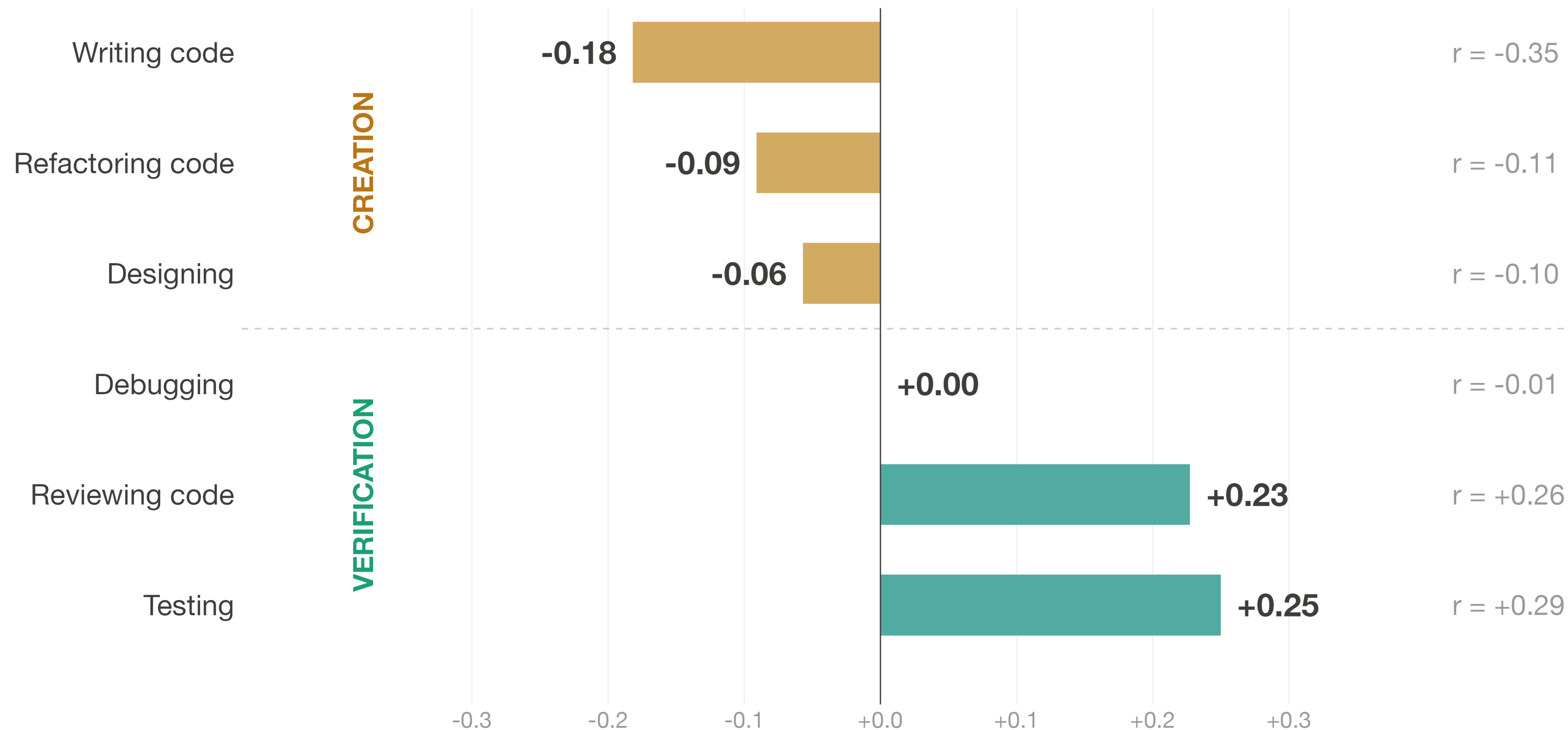
Perceived task focus changes · Q1 baseline · n = 147



Reviewing code was the only task where engineers reported spending more time - every other task sat below neutral

The Creation to Verification Shift

Within-participant change · mean paired change Q2 - Q1 · n = 88



Significant shift in balance toward verification ($r = 0.39, p = 0.006$) · Neither group significant in isolation

Supervisory Engineering Work

Directing

Specifying intent, crafting prompts, managing context, and iterating when output misses the mark

"Mostly reading the code and directing AI on the right way"

Evaluating

Reading AI-generated output and deciding what to accept, modify, or reject

"Has increased the 'is this code correct', 'is it maintainable', 'is it secure' and 'is this just probabilistic hallucination' time up"

Correcting

Fixing errors, integrating output into existing code, and maintaining consistency

"Identifying when the LLM has lost the thread of the problem and halting it is essential"

The Productivity-Experience Paradox

84%

report improved
productivity



stable across both time points

27%

report worsening
developer experience

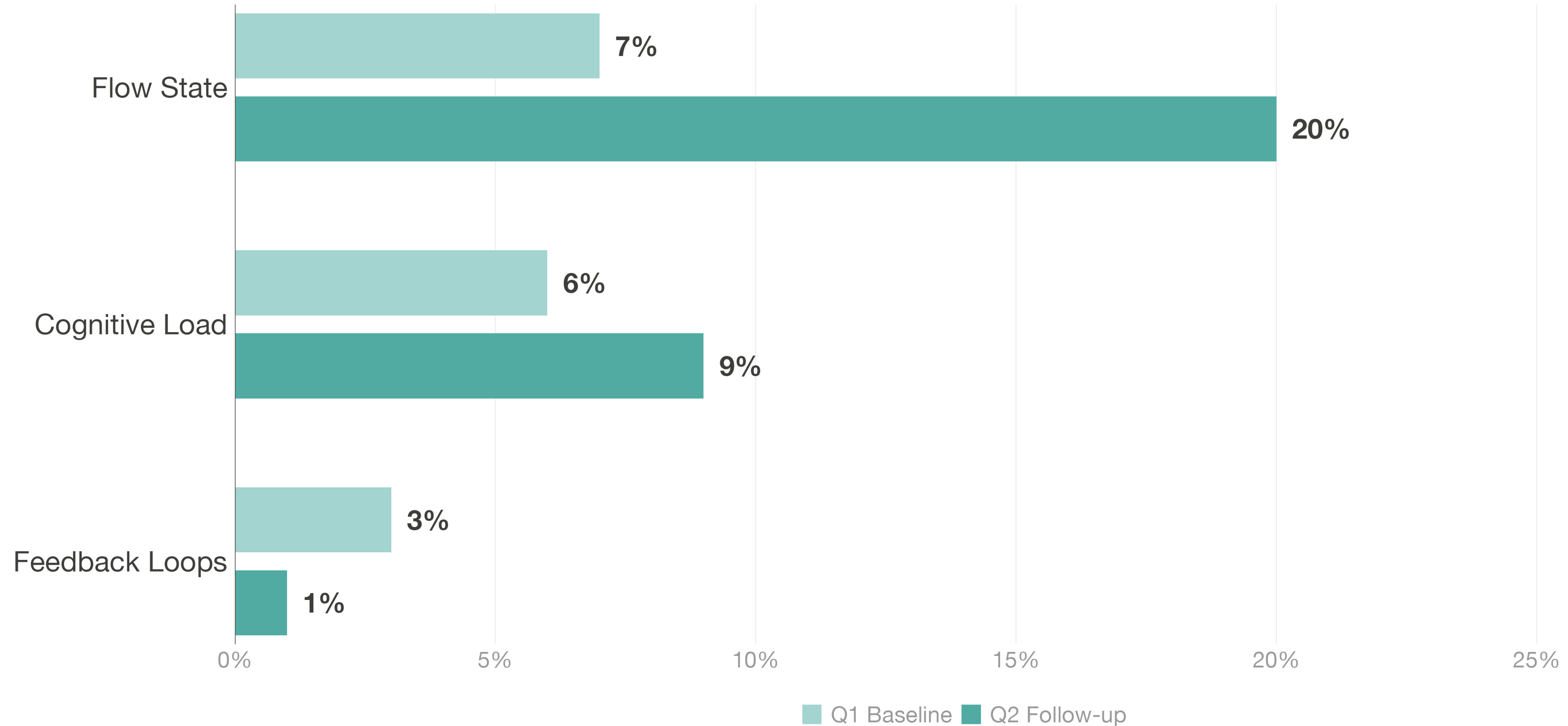


up from 14% six months earlier

Changes in productivity and developer experience didn't track together

The Erosion of Developer Experience

Percentage reporting worsened experience · matched participants · n = 94



Flow state drove 76% of negative reports at Q2. Only feedback loops improved significantly ($r = 0.38$, $p = 0.039$).

Self-Efficacy is the Differentiator

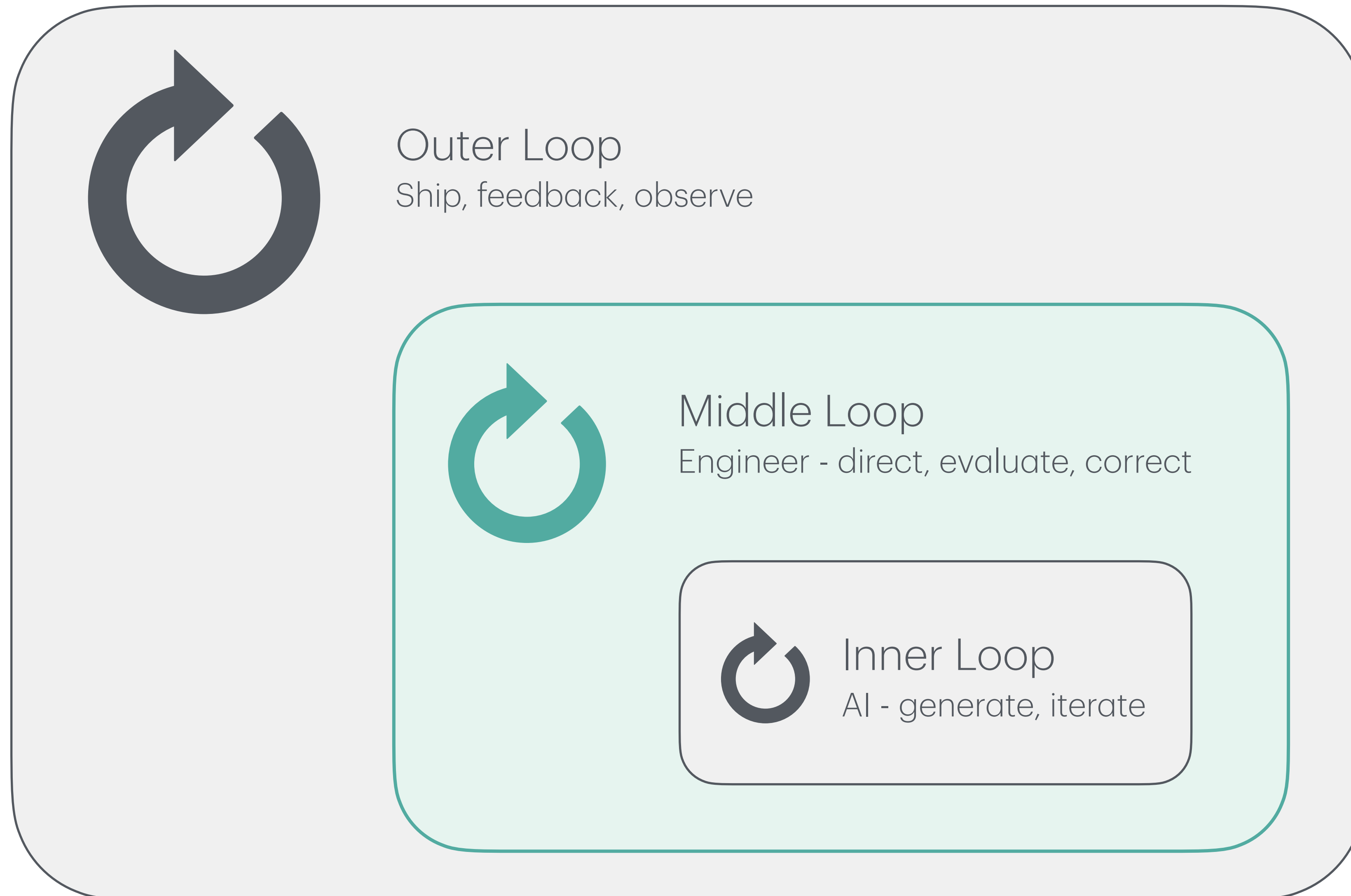
10.68x

More likely to report
improved productivity

Self-efficacy as the dominant predictor
Not demographics, seniority or tools

Junior engineers reported significantly higher self-efficacy than seniors

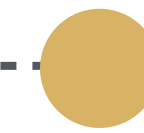
The Middle Loop



Two Kinds of Joy

Results-oriented

Journey-oriented

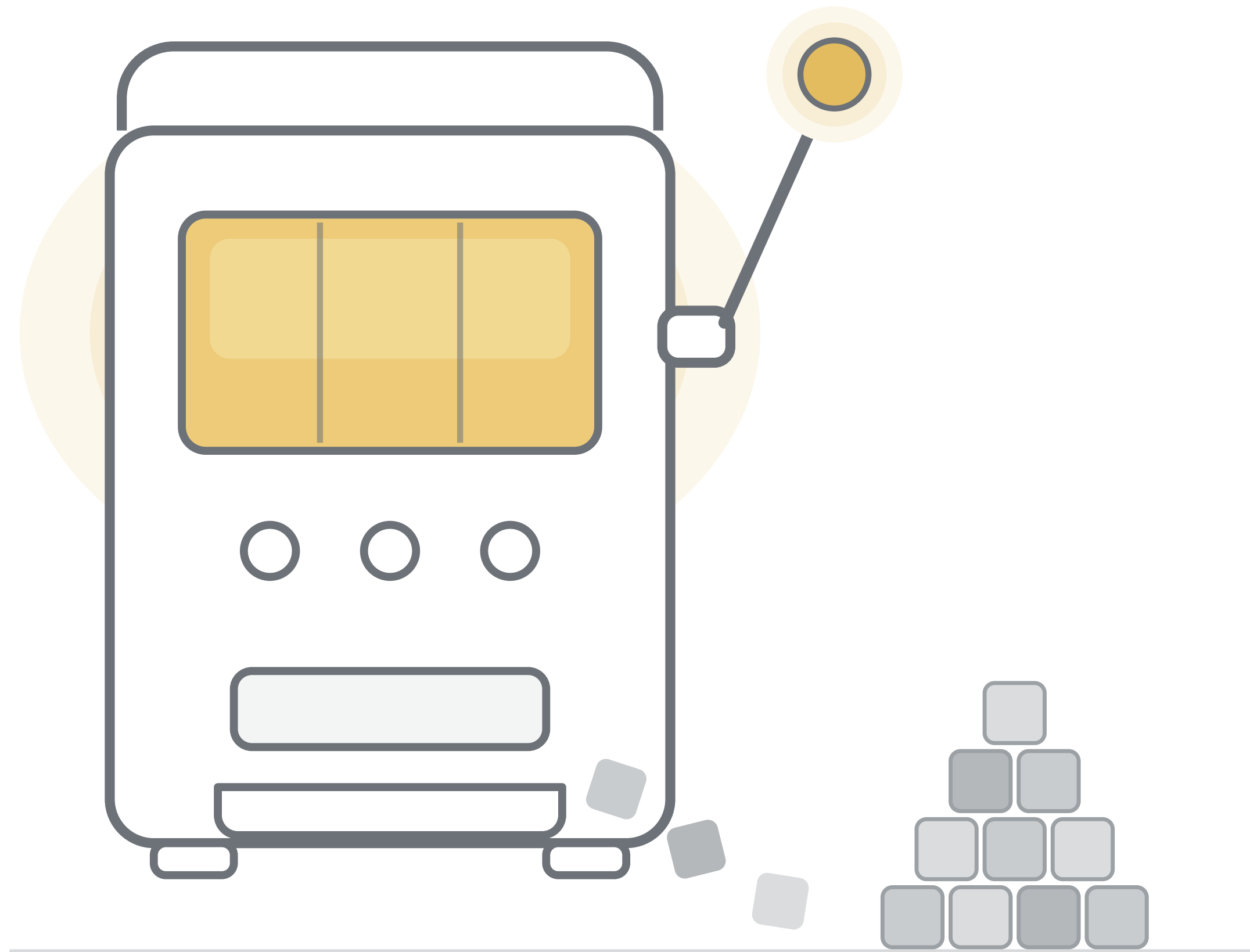


Joy from the outcome

Joy from the figuring-out

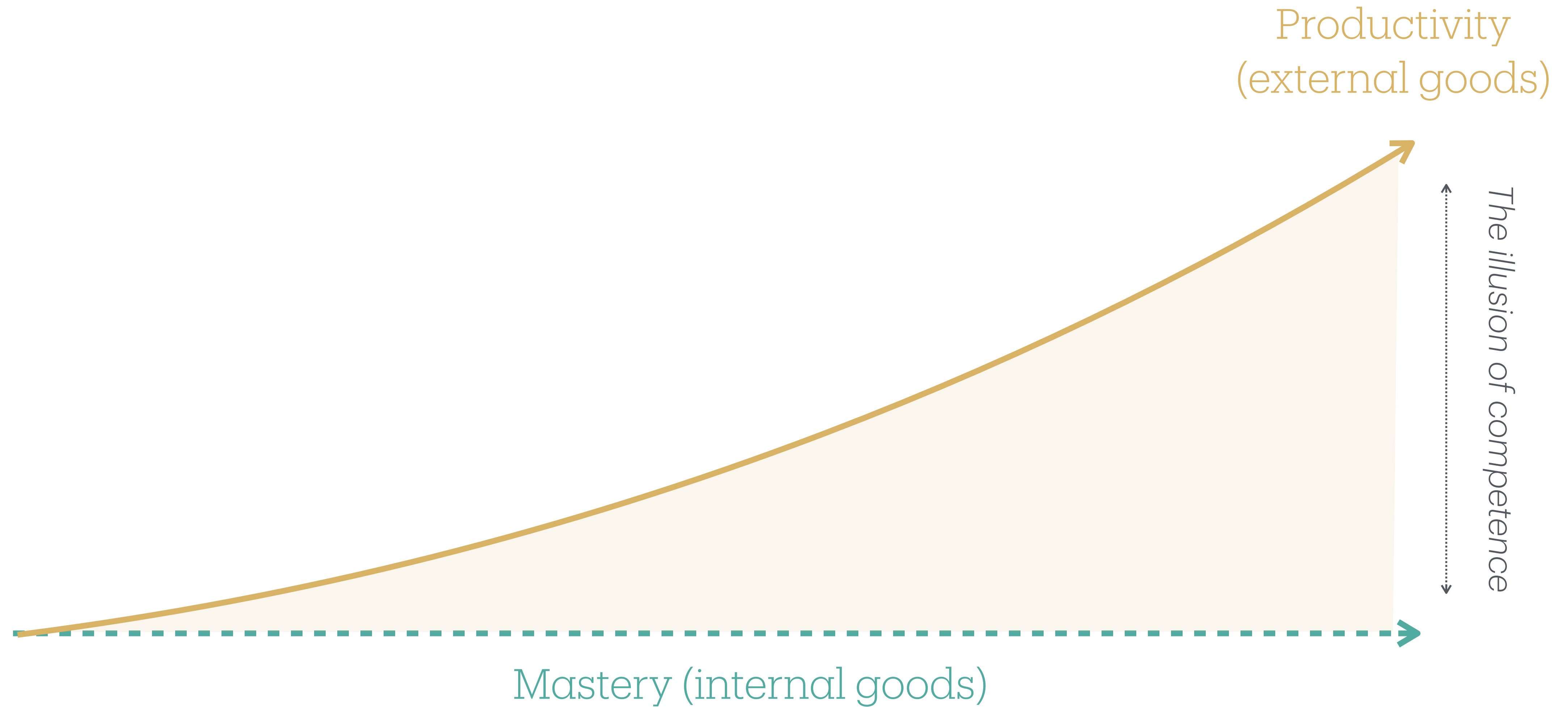


The Auditor's Fatigue



- Junk flow is seductive
- Supervising has a ceiling
- So you cut corners
- The pressure lands downstream
- And it compounds

Judgement Is The New Skill



Focus on Judgement

Signals

Support judgement now

Where to look
How much to trust

Seams

Build judgement over time

Protect the first hard attempt
Unaided checks

The inner loop was where we built judgement.
We're leaving it, so where do we build it now?

My hunch: an Integrated System Environment (ISE)

Simulations

Build mastery & judgement

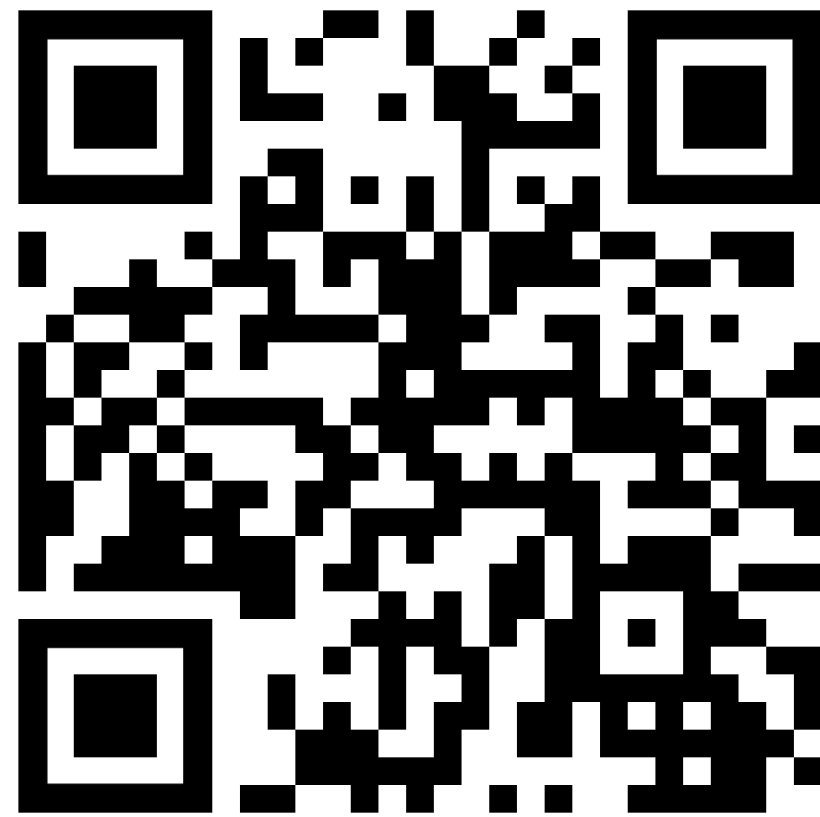
Signals

Maintain internal-model alignment

ISE

Thank you

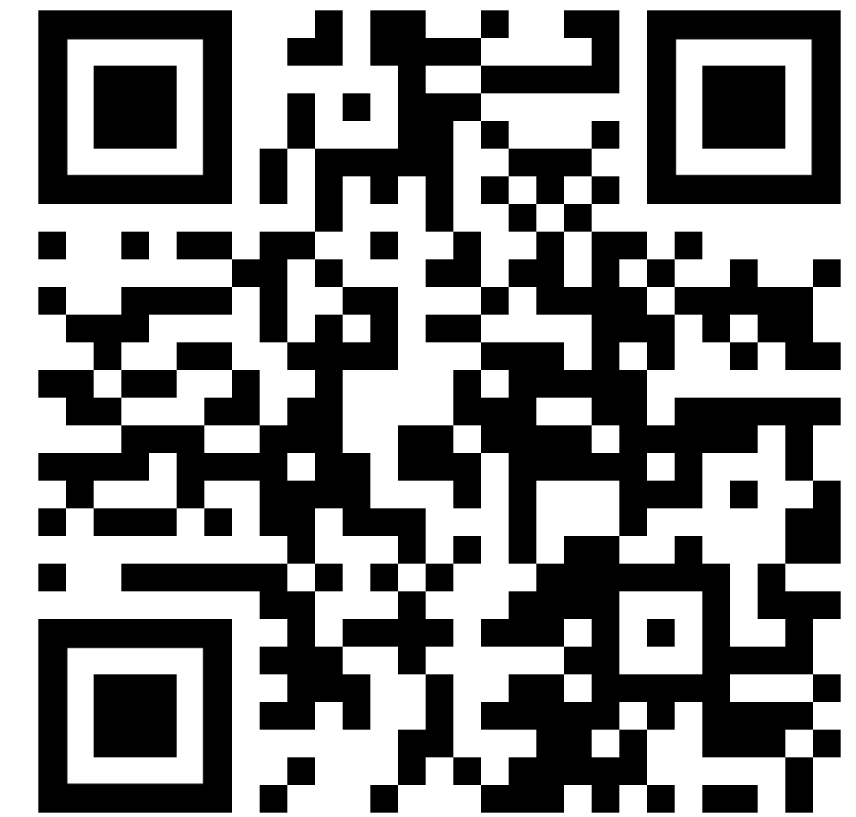
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Study Paper