

The Duality of AI In Software Engineering

What We're Gaining, What We're Losing, and Why Simplicity Still Matters

Annie Vella | 17 to 19 June, 2025



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Toyota hilux 1988	\$5,000	▼	-	4 mins
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Bmw 320i E30 1990 <small>local</small>	\$5,500	▼	-	2 hrs 41 mins
E30 320i 1990				
7 Metre mitsy rosa 1980 bus	\$8,150	▼	4	2 hrs 55 mins
EKS MEGA TREADMILL RRP \$3750 510 TRACK <small>local new \$P</small>	\$1,099	▼	-	3 hrs 17 mins
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WEIGHT BENCH AND WEIGHTS <small>local new \$P</small>	\$219	▼	1	3 hrs 17 mins
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BUY NOW FOR XMAS				
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freeTXT 'YEP' to 5483
now to help support
the Yellow-eyed
Penguin Trust!
Vodafone live capable handsets only



What Made It Work

Simplicity

 Small team, strong ownership

 Few handoffs, high trust

 No Agile theatre or Jira

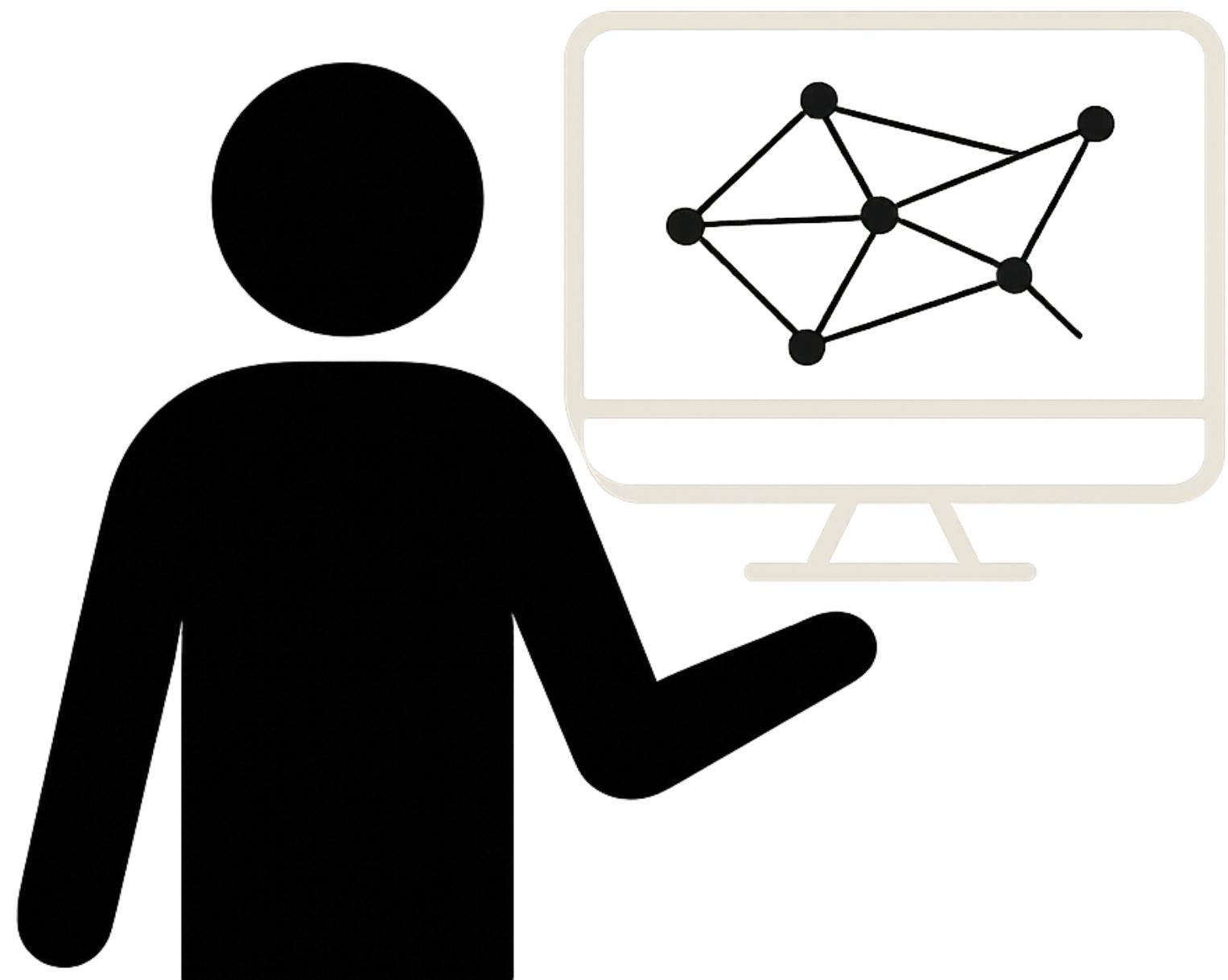
 Simple architecture

 Simple deployments

 Predictable, fast delivery

Simplicity gave us speed - and real productivity

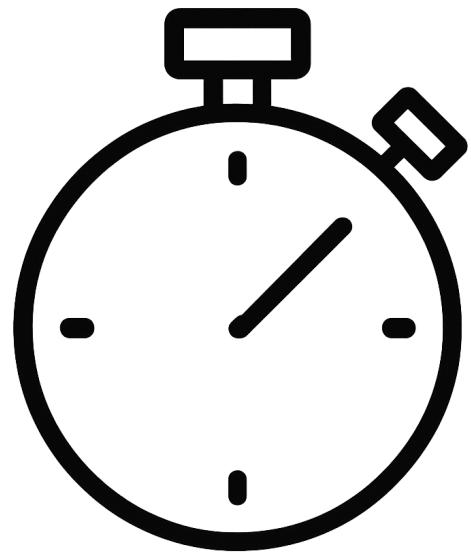
Why This Moment Matters



We've spent years adding complexity in the name of productivity

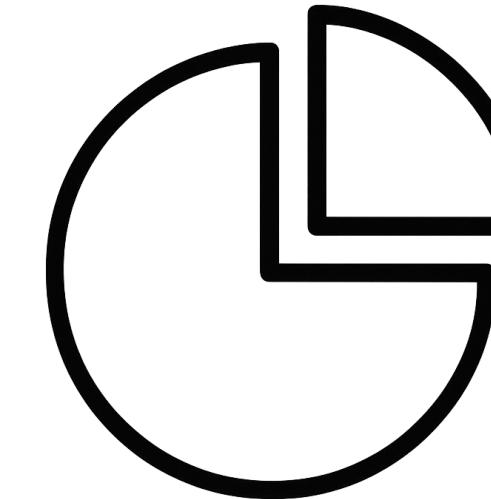
And now we're adding AI to the mix

The Promise of AI Coding Assistants



55.8% faster
development on
average

[GitHub & Microsoft
Research \(2023\)](#)



AI will write 90%
of code in six
months

[Dario Amodei
CEO, Anthropic \(2025\)](#)



97% of 13,372
global devs
use AI

[HackerRank Report
\(2025\)](#)

Speed · Scale · Adoption

Reimagining Software Engineering

What's our craft now?

*Are we still software engineers
if we no longer write the code?*



What I've Been Studying

Study

University of Auckland

- Master's of Engineering
- The impact of AI on software engineering
- Professional software engineers using AI

Research Questions

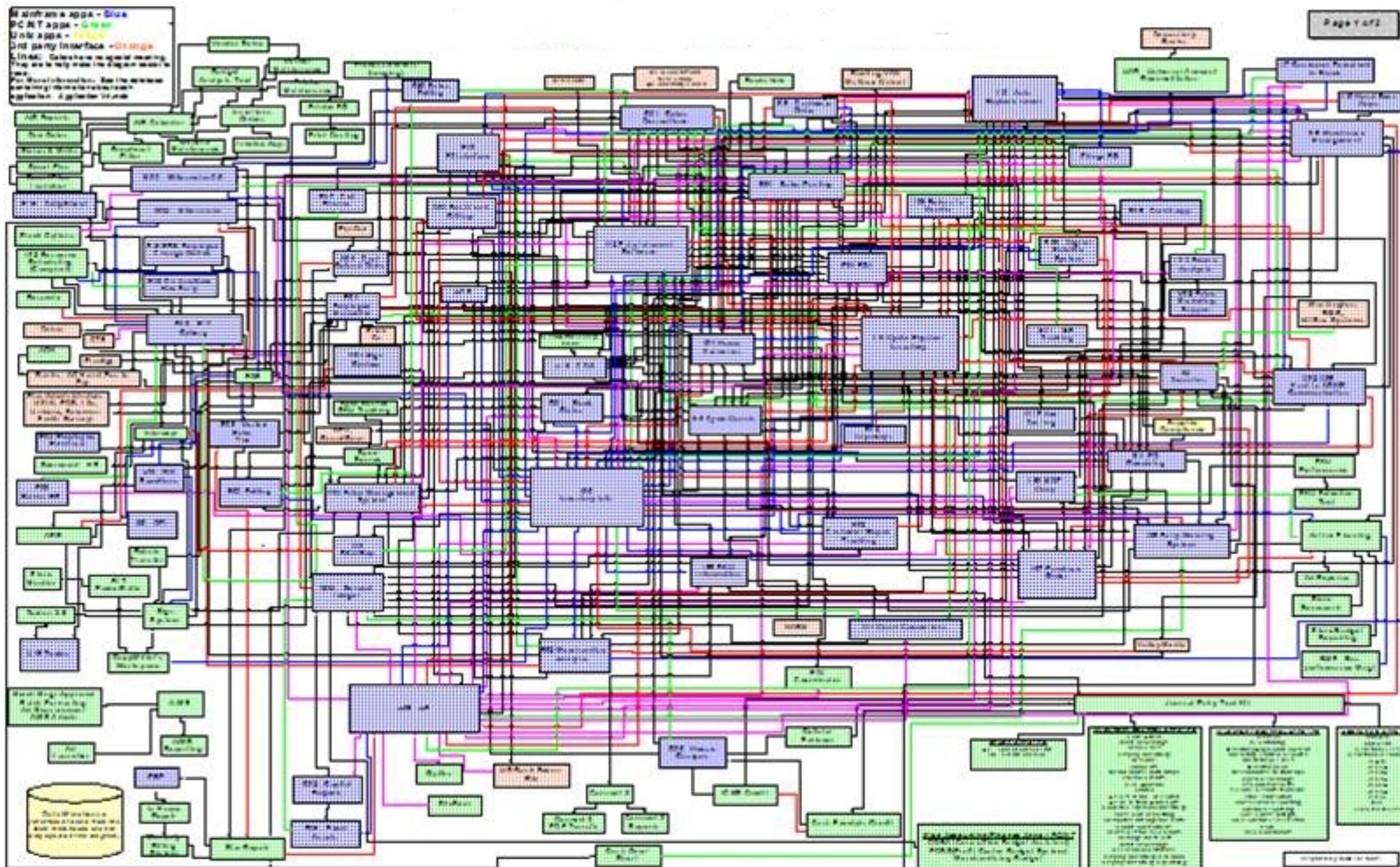
- Workflow and task focus
- Productivity and developer experience
- Skills acquisition and retention
- Prompt engineering as a core competency

Approach

Longitudinal study

- Mixed methods
- 2 x questionnaires
- Semi-structured interviews

The Productivity Illusion

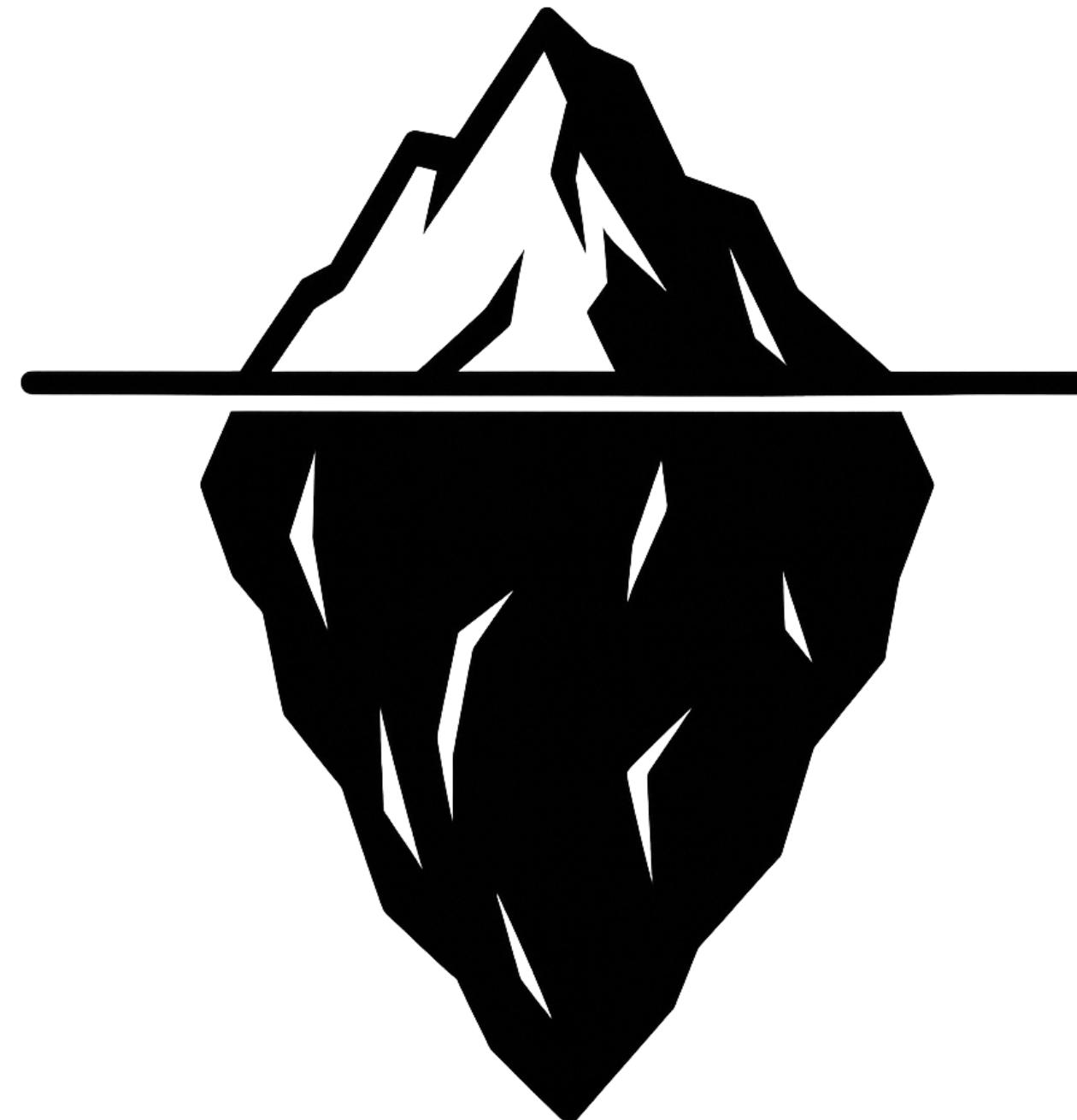


We Default to Addition

“Our brains tend to default to addition rather than subtraction when it comes to finding solutions.”

<https://www.sciencealert.com/heres-why-our-brains-always-want-to-solve-problems-by-adding-not-taking-away>

Simplicity Was Never the Default



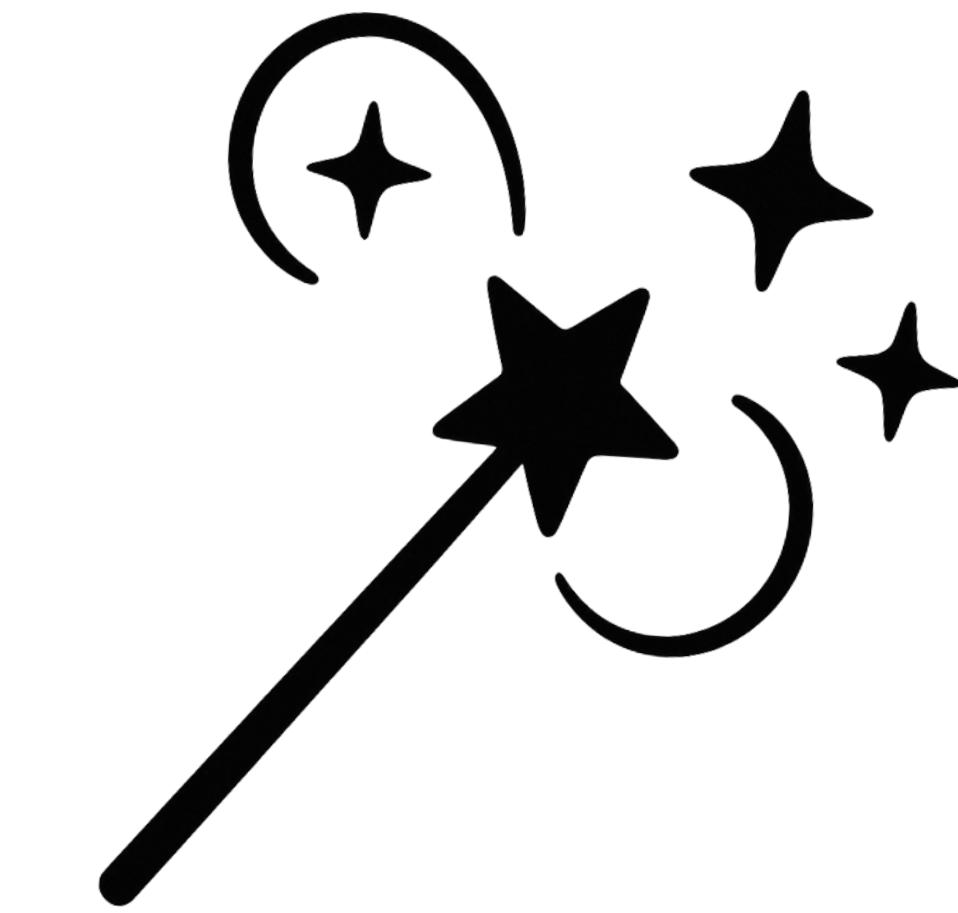
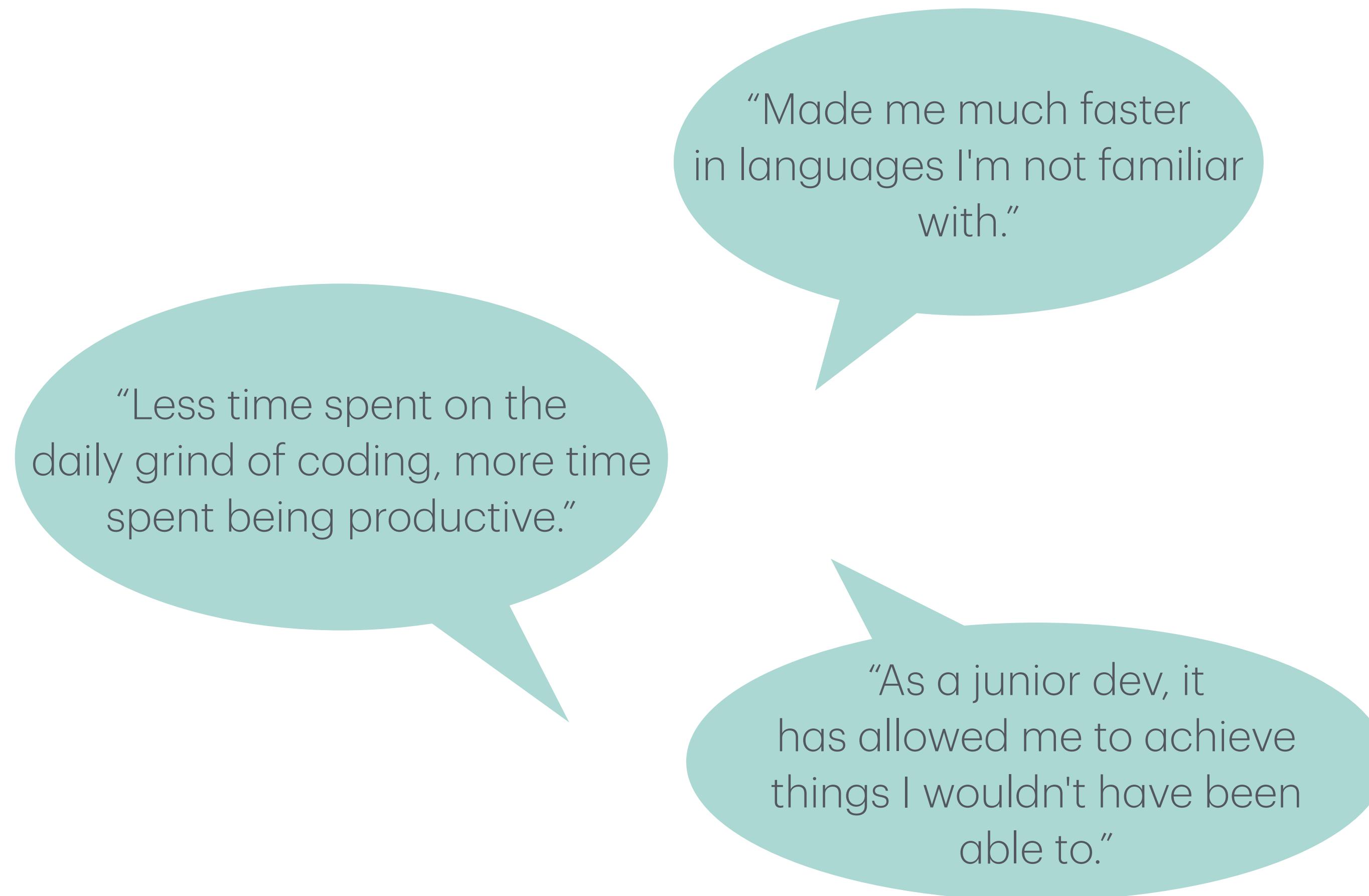
At Trade Me, simplicity wasn't
strategic

*It was a constraint.
And it worked.*

Five Dualities of AI In Software Engineering

Each gain introduces a tension.
Each tension demands leadership.

Duality 1: Friction Fades

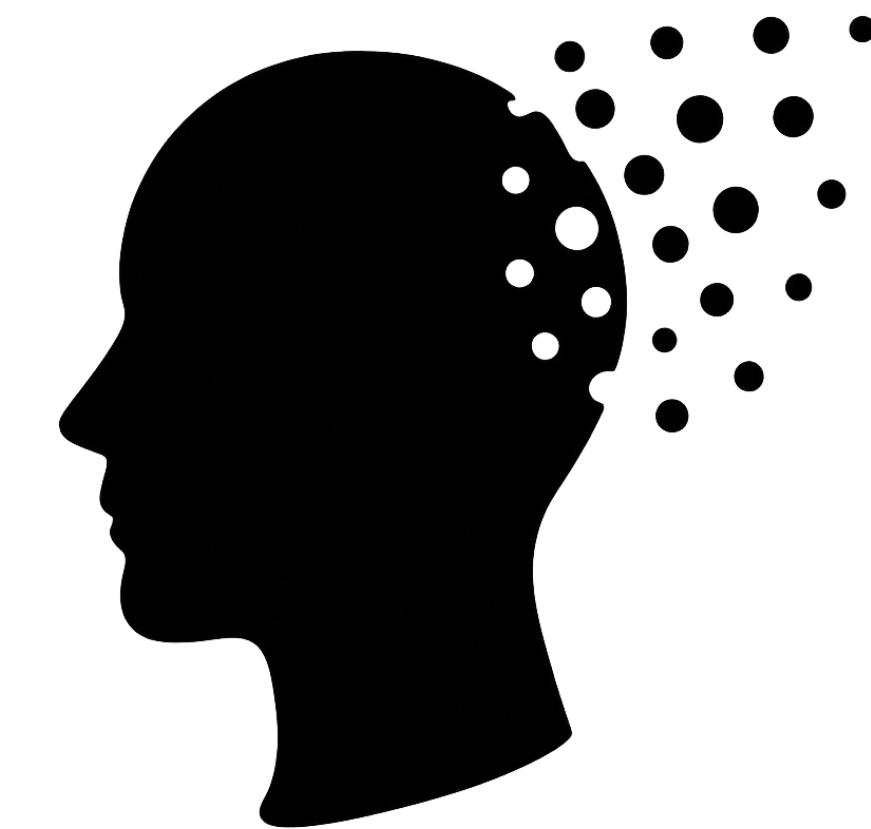
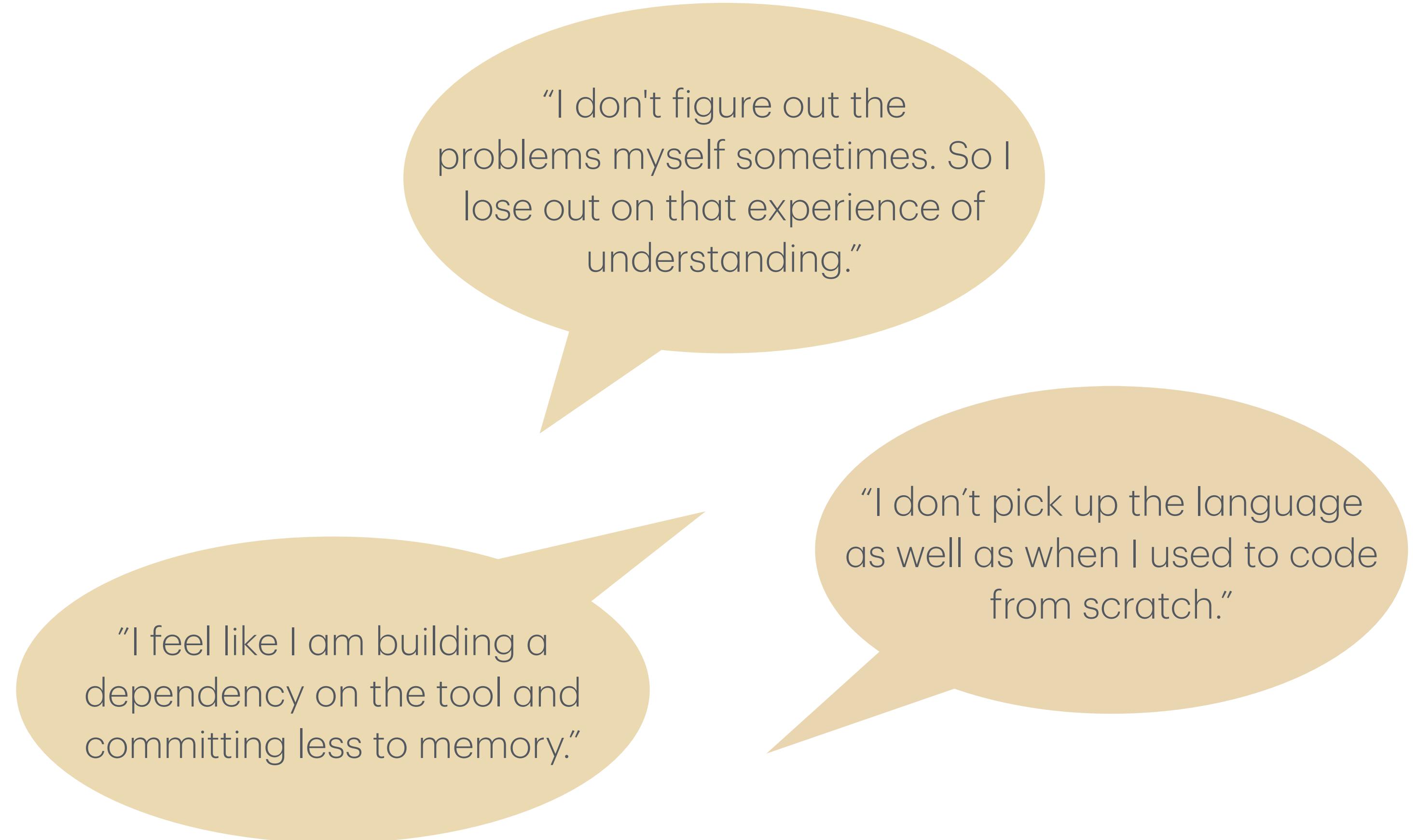


Instant momentum

Fast feedback loops

Reduced blockers

... But Learning Fades Too



- ✖ Cognitive offloading
- ✖ Skill erosion
- ✖ Tool dependence

Smoothing Out The Terrain



When the terrain is too smooth,
will we even notice what we're
stepping over?

Duality 2: Higher-Level Thinking



Thomas Dohmke • Following

CEO at GitHub

2mo • Edited •

...

GitHub Copilot is the first use case where AI has joined a sector of the workforce at-scale. In just a few years, prompting has become the new coding. Developers are morphing into systems thinkers and high-level architects. And we are generating a step change in the speed of software production globally. Now, GitHub Copilot enters its agentic evolution -- becoming the first AI agent broadly embraced by the global workforce.

Thank you for lending your voice to the story [Yang Lu & Tapestry, Jason Gowans](#) & Levi Strauss Co, [Brent Foster](#) & TD Bank group and [Kalyani S.](#) & Verizon.



How AI Tools Are Reshaping the Coding Workforce

wsj.com

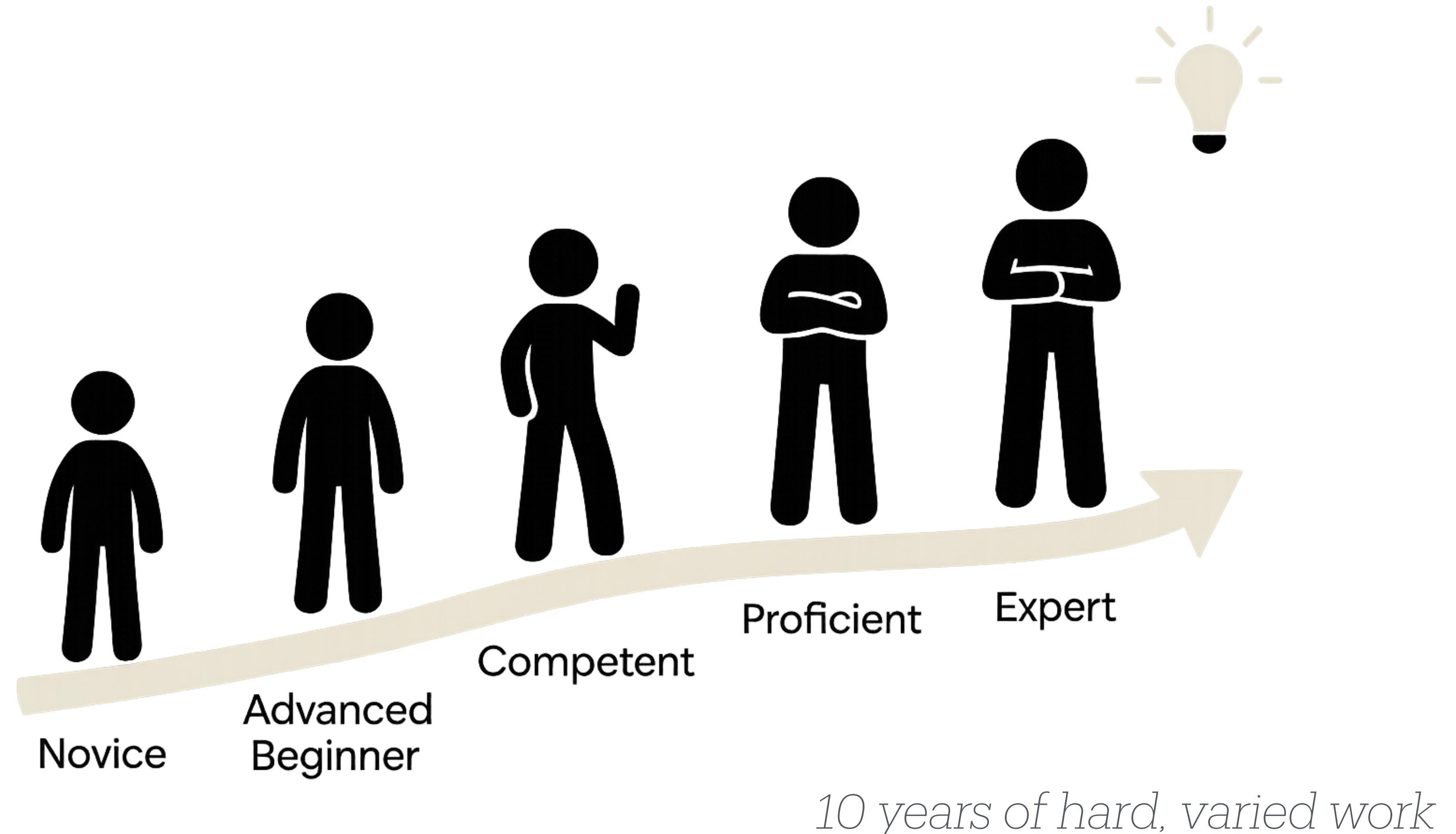
AI is
transforming
software
engineers
into architects

https://www.linkedin.com/posts/ashtom_how-ai-tools-are-reshaping-the-coding-workforce-activity-7303108929264275456-O5v2

... But Intuition Can't Be Prompted

The Dreyfus Model

- Recollection
- Recognition
- Decision
- Awareness

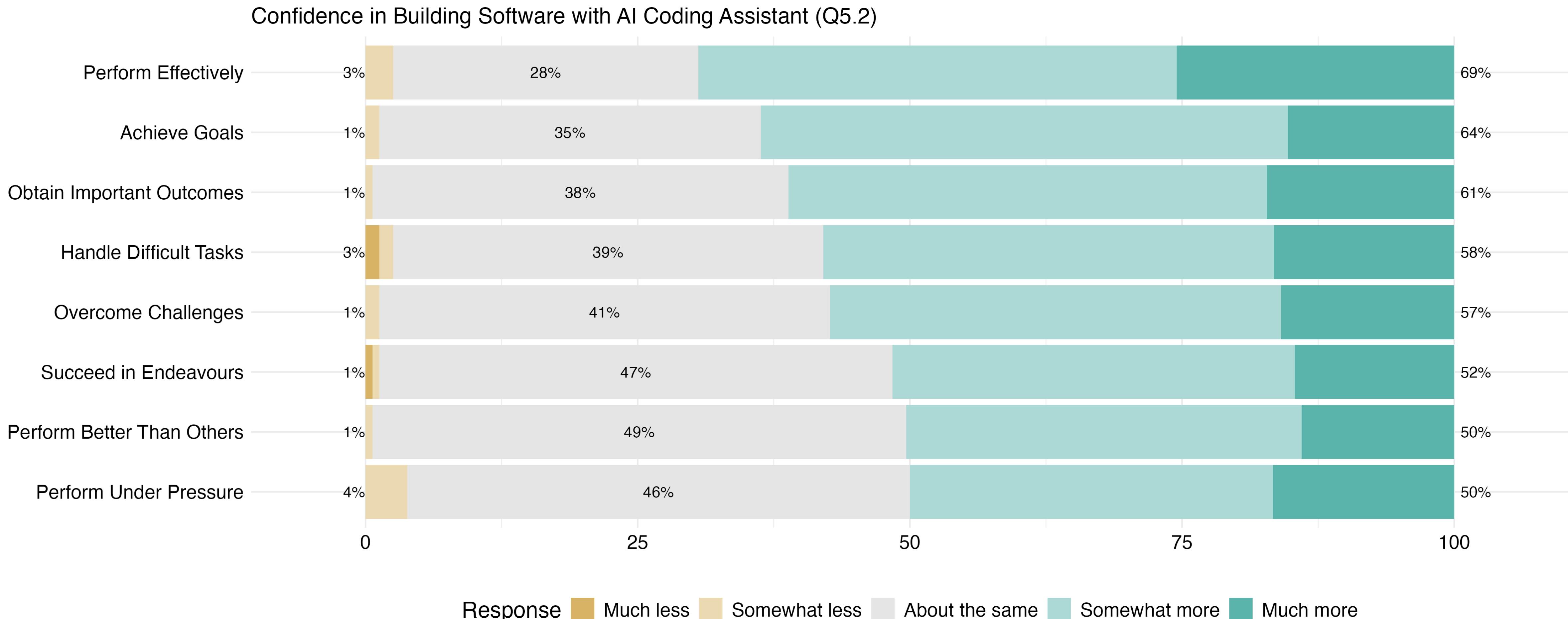


Supporting Career Growth



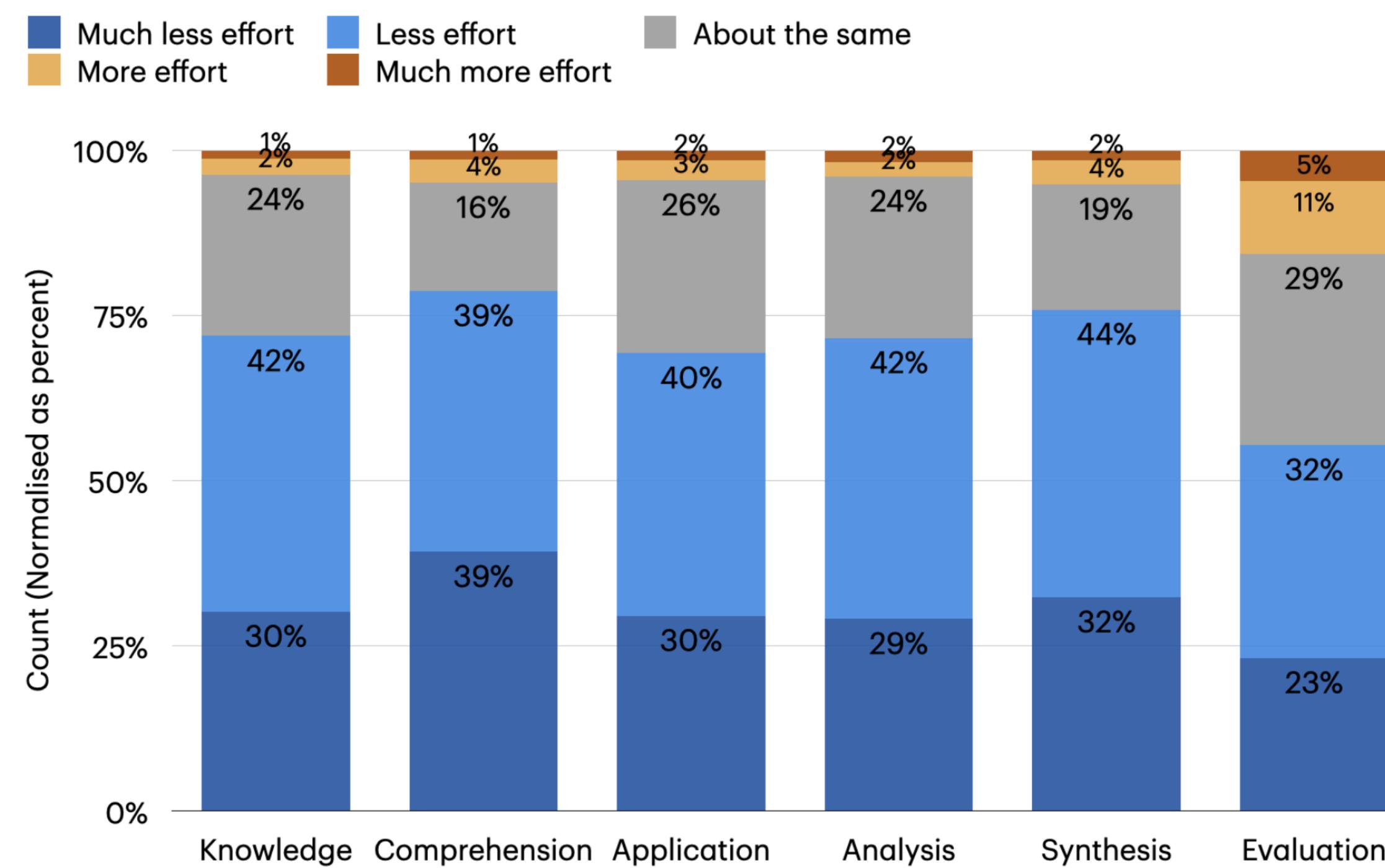
What's the new apprenticeship model when the craft is abstracted away?

Duality 3: Self-Confidence Grows



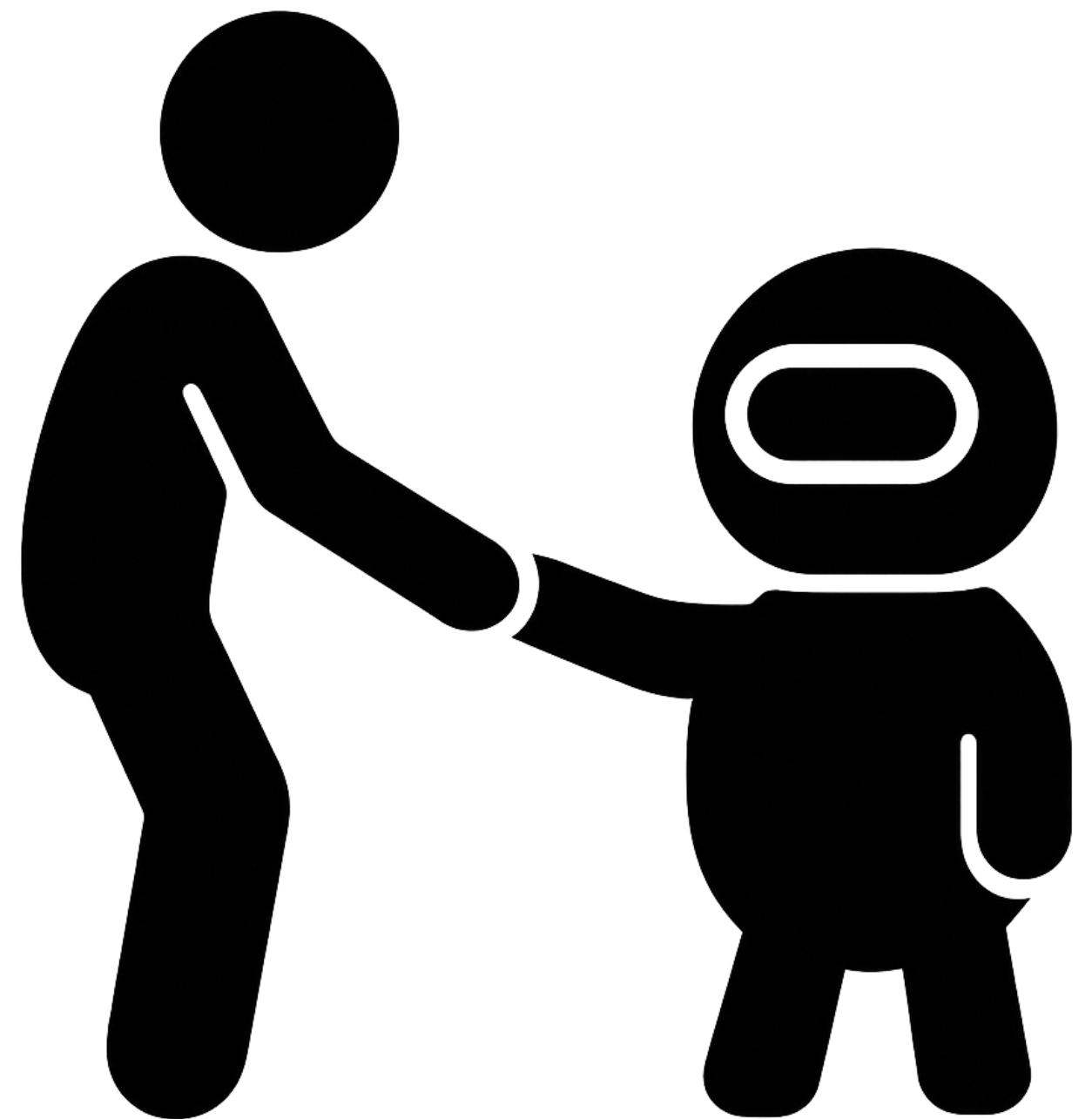
... But It Can Lead Us Astray

“Higher confidence in GenAI is associated with less critical thinking”



- ✖ Doesn't signal doubt
- ✖ Amplified misplaced trust
- ✖ Vigilance decrement

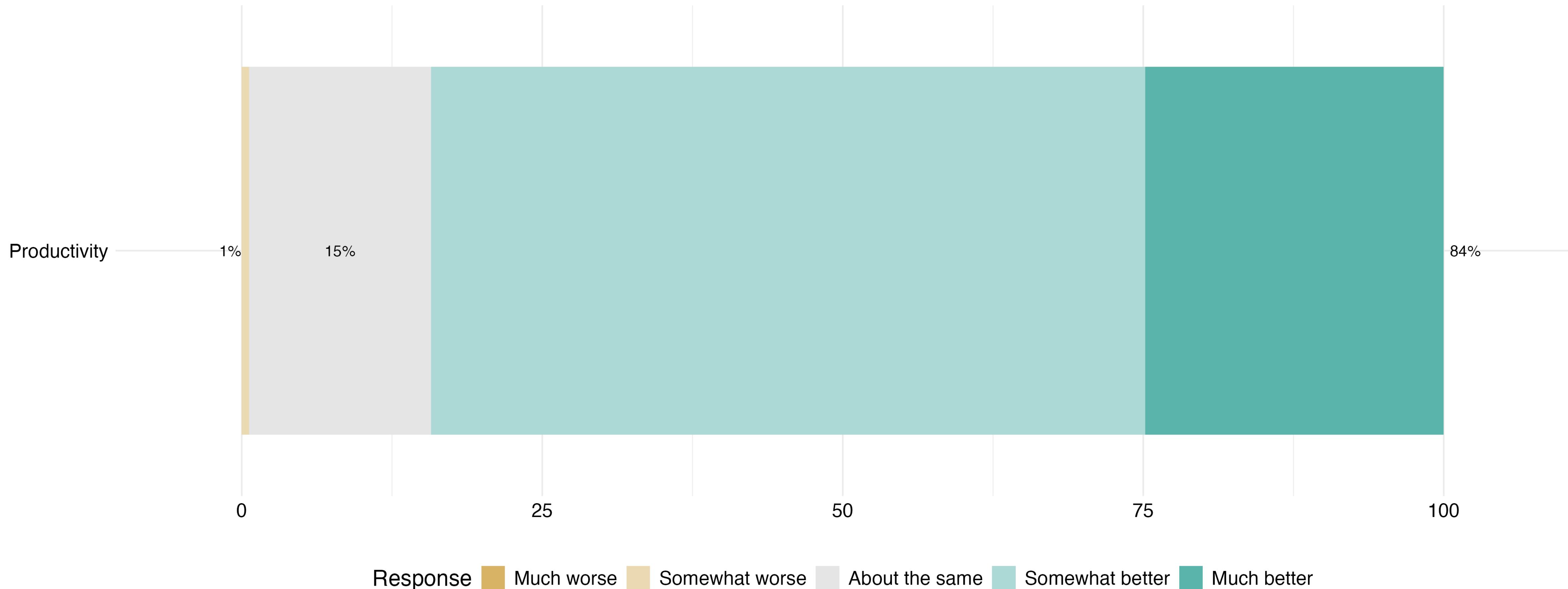
Building Calibrated Trust



If the answers sound right,
what keeps us checking?

Duality 4: Productivity Accelerates

Impact of AI Coding Assistants on Productivity (Q4.1)

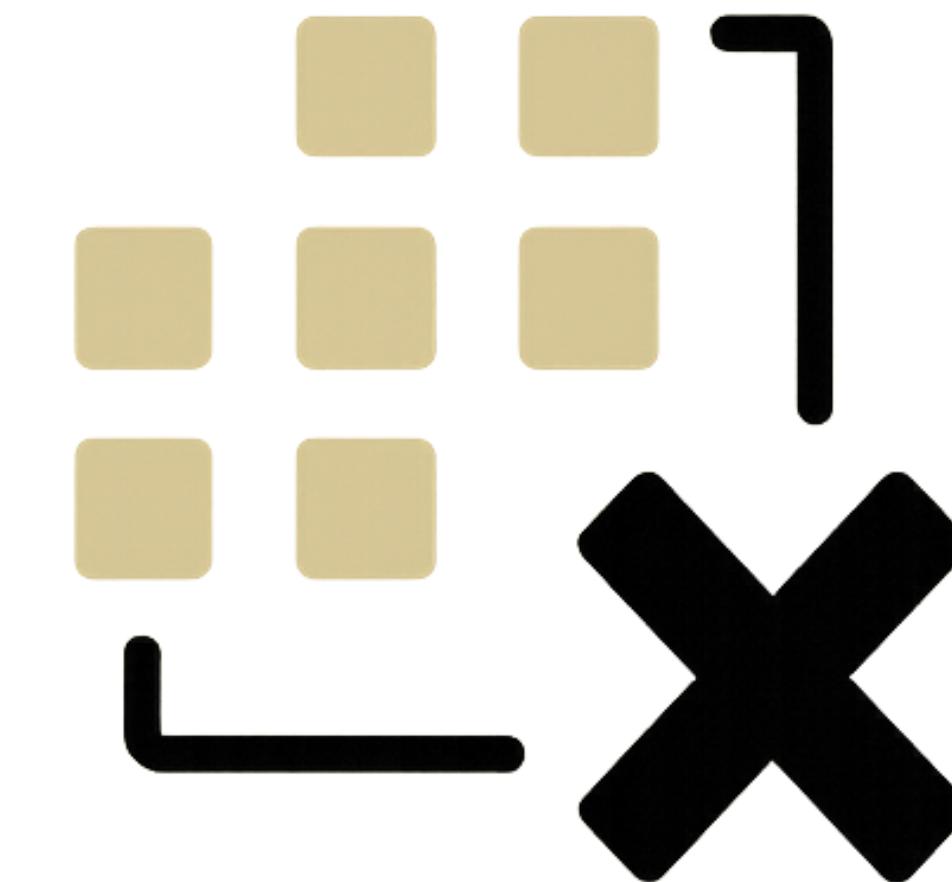


... But Quality Suffers

GitClear analysed 211m lines of code written 2020-2024



17.1% increase
in copy-
pasted code



8x rise in
duplicated
code blocks



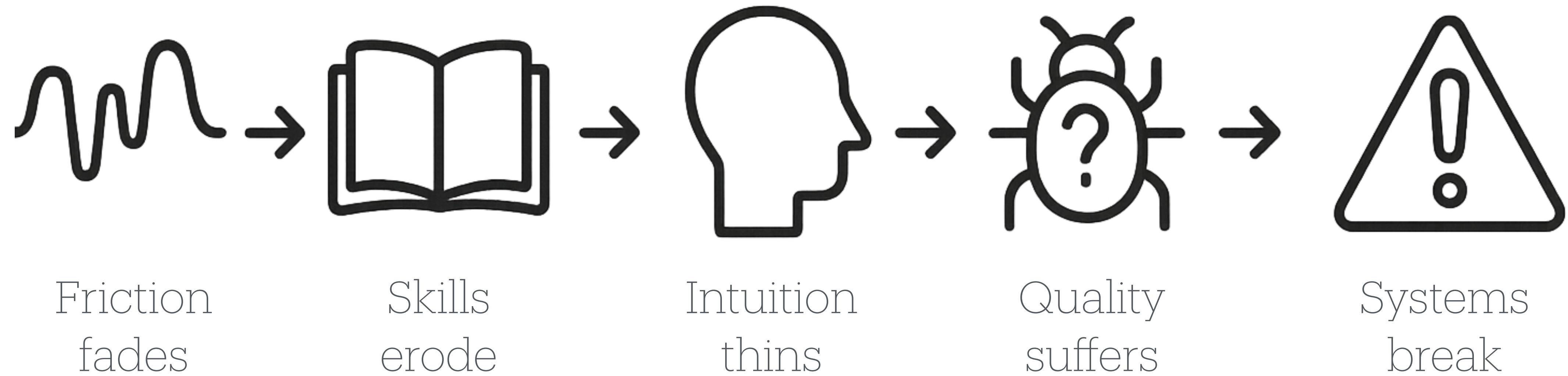
26% increase
in code churn

Maintaining Quality While Moving Fast

Are we writing code today that
we'll still trust - or even understand
- a year from now?



It's All Connected

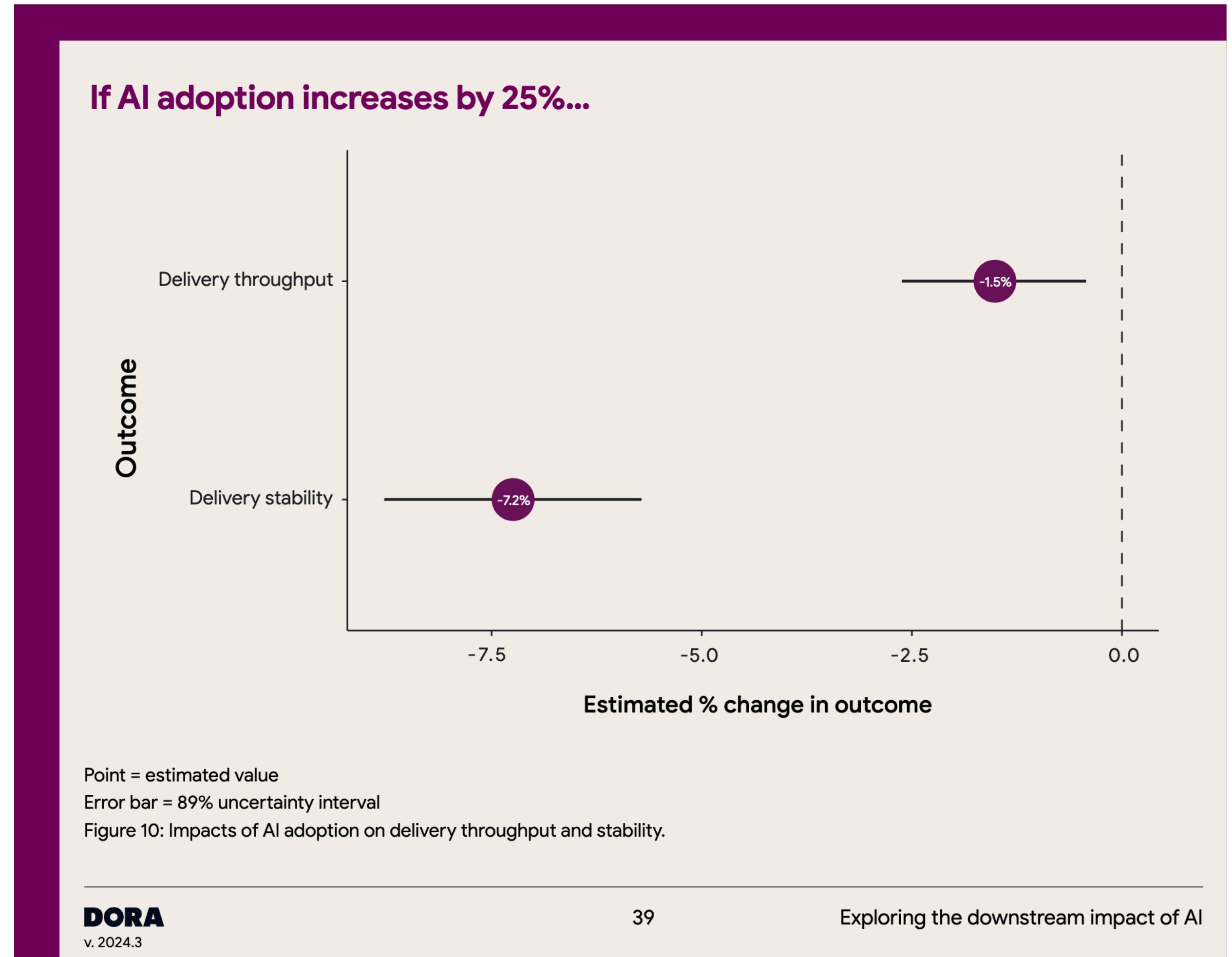


These trade-offs don't sit in isolation. They compound.

Early Warning Signs: Stability Is Falling

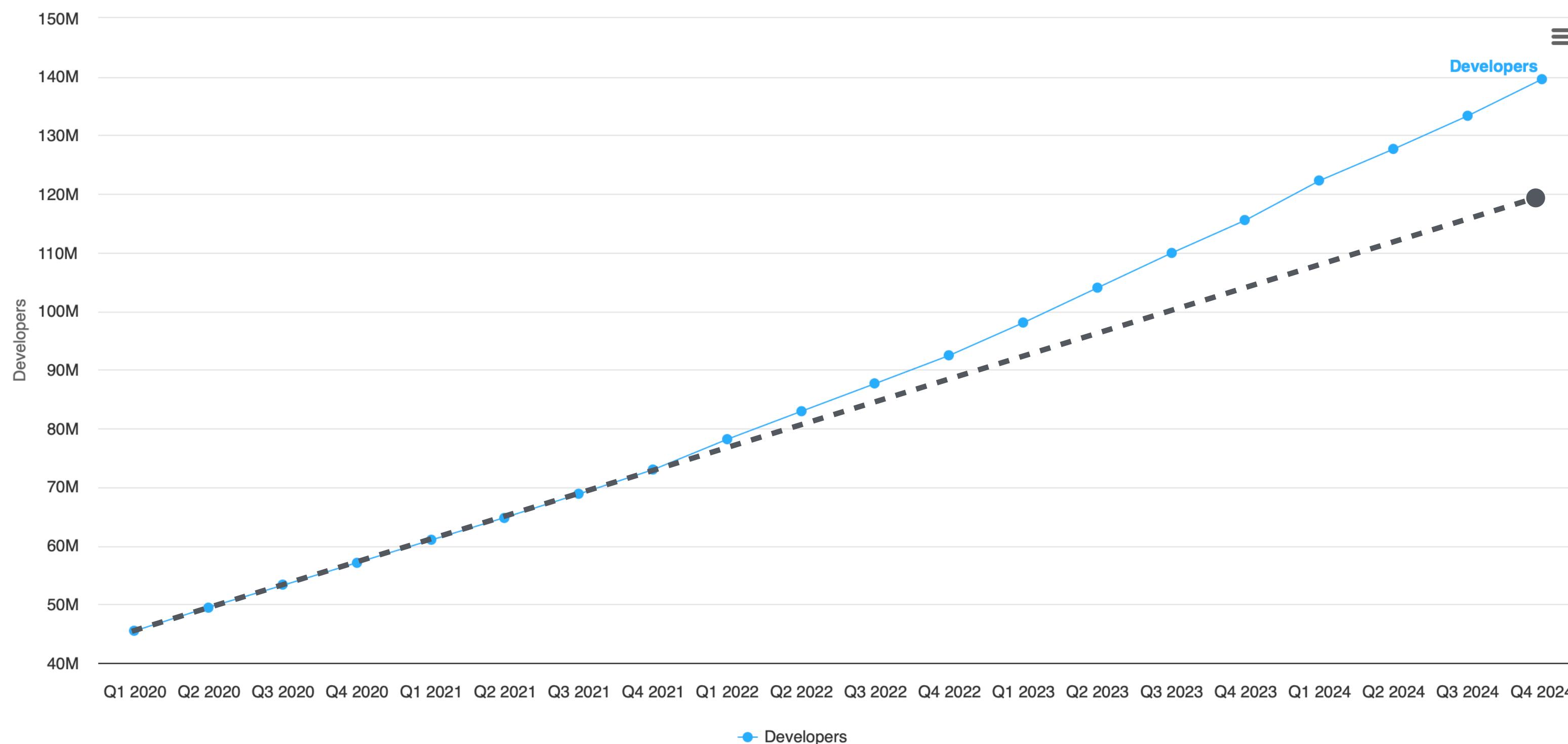
DORA Report (2024)

AI adoption is negatively impacting software delivery performance.



Duality 5: Creation Becomes More Accessible

Count of Developers Globally ↗



The
democratisation
of software
development

<https://innovationgraph.github.com/global-metrics/>

The Quiet Identity Shift

“Many of us became software engineers because we found our identity in building things. Not managing things. Not overseeing things. *Building* things. With our own hands, our own minds, our own code.



But that identity is being challenged.”

<https://annievella.com/posts/the-software-engineering-identity-crisis/>

Leading Through Redefinition



How do we protect *belonging*,
purpose, and *pride*, when the
role itself is changing?

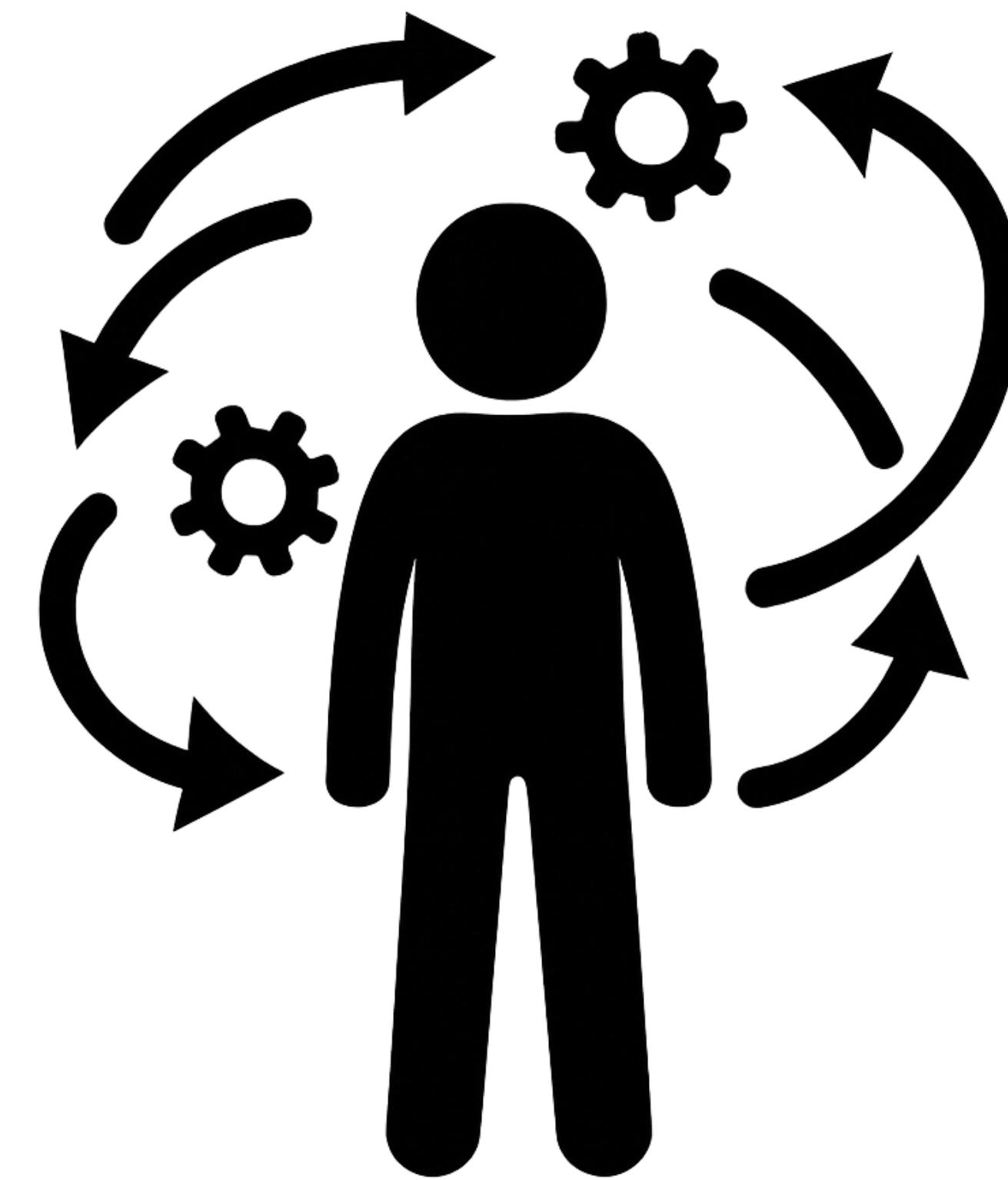
Every Gain Has a Cost



We need to see both - or we risk sleepwalking into more complexity.

Awareness Is a Leadership Practice

If we stop noticing,
complexity wins by default



What Are We Preserving?



In a world where complexity
comes easy,
simplicity becomes a deliberate
act of leadership.

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Bluesky: <https://bsky.app/profile/codefrenzy.bsky.social>