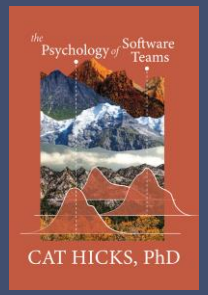
Where are Skills Gaps Slowing Tech Adoption at Scale?



Dr. Cat Hicks

Author of *The Psychology of Software Teams*

Founder @ Catharsis

catharsisinsight.com

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From 1950 to 2026,
Jobs changed.

How much change do we see **inside existing jobs**
versus by people moving into different jobs?

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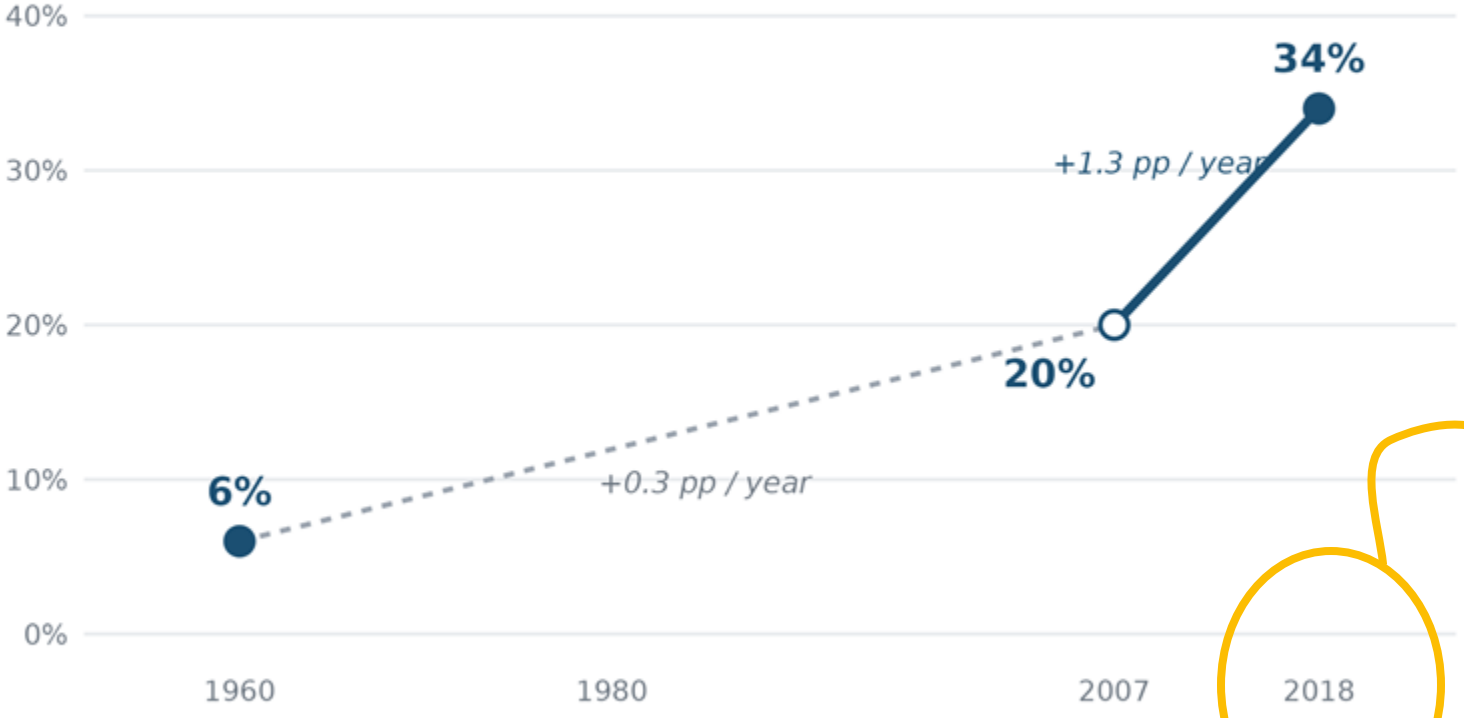
Decision-making went from a niche task to a third of all jobs

Share of U.S. jobs intensive in decision-making tasks
(judgment, prioritizing, diagnosing, strategizing)



Deming (2021), NBER WP 28733. 1960 and 2018 as reported;
2007 derived from "nearly half the increase came after 2007."

Pre-chatgpt!

Sources:
Deming, D. J. (2021)

Wuchty, S., Jones, B. F., & Uzzi, B. (2007)

Hicks, C. (2026). *The Psychology of Software Teams.* CRC Press.

What % of increases in judgment, decision-making, planning tasks happened within-job?

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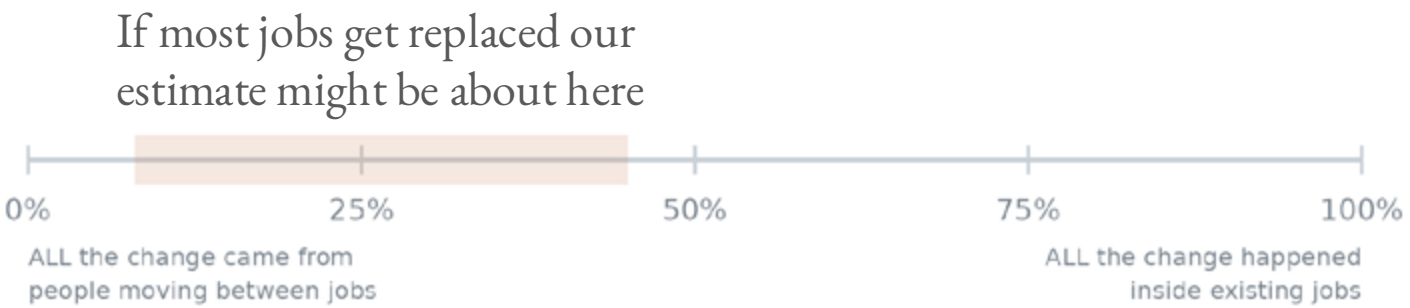
We talk a lot about jobs getting replaced



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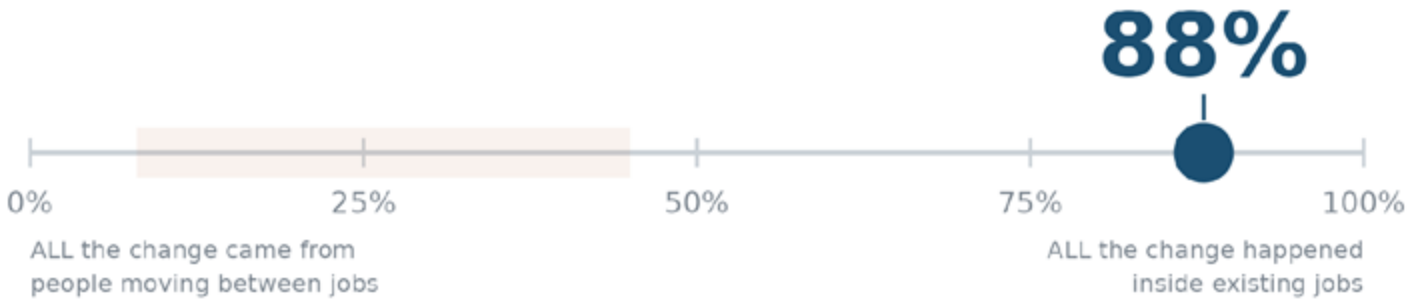
But the tasks inside jobs are changing!



Atalay, Phongthiengtham, Sotelo & Tannenbaum (2020), American Economic Journal: Applied Economics 12(2)

More analysis: Freeman, R. B., Ganguli, I., & Handel, M. J. (2020, May). Within-occupation changes dominate changes in what workers do: A shift-share decomposition, 2005–2015. In *AEA Papers and Proceedings* (Vol. 110, pp. 394-399)

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TASKS Routine and administrative → **New decisions & judgments**

TALENT Niche specialist → **Work across domains**

Cognition → **Metacognition**

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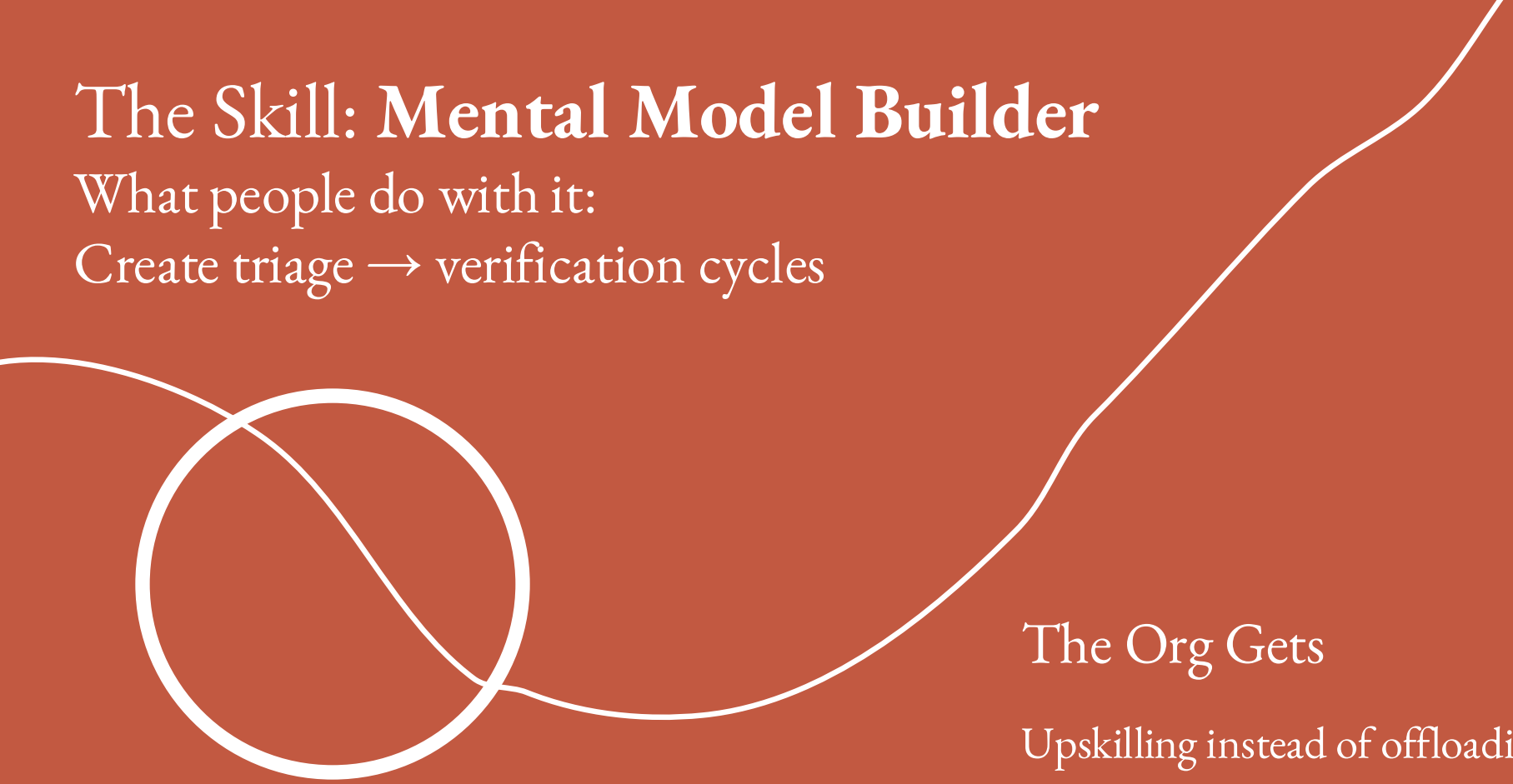
The Skill: **Mental Model Builder**

What people do with it:

Create triage → verification cycles



The Org Gets

Upskilling instead of offloading

AI error fixes instead of automated disasters

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Using *AI capabilities*

to grow a *deeper mental model*

Instead of *eroding it*

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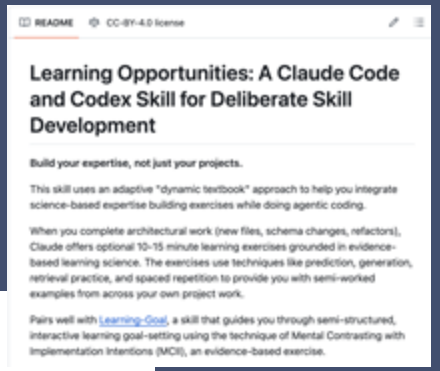
My Accidental Intervention

I'm not taking time to learn
I'm overwhelmed
Everyone is saying my brain is melting

> open source agentic workflow for active expertise building
>2.4k+ github stars + adopted by hundreds of teams


README CC-BY-4.0 license

Learning Opportunities: A Claude Code and Codex Skill for Deliberate Skill Development

Build your expertise, not just your projects.

This skill uses an adaptive "dynamic textbook" approach to help you integrate science-based expertise building exercises while doing agentic coding.

When you complete architectural work (new files, schema changes, refactors), Claude offers optional 10-15 minute learning exercises grounded in evidence-based learning science. The exercises use techniques like prediction, generation, retrieval practice, and spaced repetition to provide you with semi-worked examples from across your own project work.

Pairs well with Learning-Goal, a skill that guides you through semi-structured, interactive learning goal-setting using the technique of Mental Contrasting with Implementation Intentions (MCII), an evidence-based exercise.

github.com/DrCatHicks/learning-opportunities

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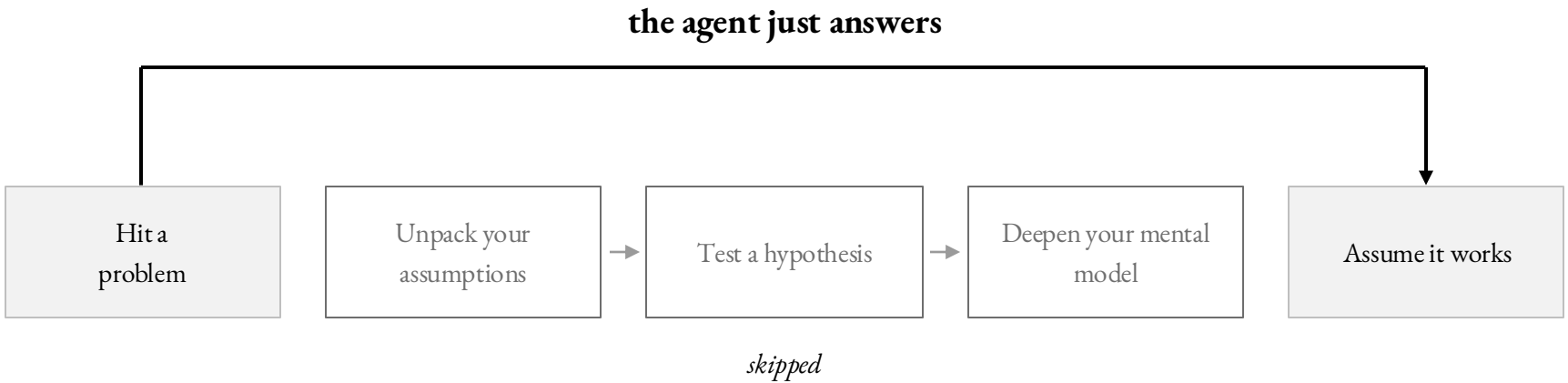
Learning debt: the risk when people are disincentivized from learning



Hicks, C. (2023). “It’s Like Coding in the Dark”: The need for learning cultures within coding teams. Catharsis.
Hicks, C., & Hevesi, A. (2024). A Cumulative Culture Theory for Developer Problem-Solving. Catharsis, Uploop.

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Metacognitive strategies build expertise back as we test our mental models against complex systems

Learning-Opportunities: a just-in-time exercise, ~15 minutes based on your existing work context

Agent used to *efficiently quiz you* and *give feedback* during learning moments, not provide the answer

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The skill: **Silo Breaker**

What people do with it:

Transfer learning → expertise patterns rapidly across domains

The Org Gets

Patterns that raise the floor

Talent identification for the new era

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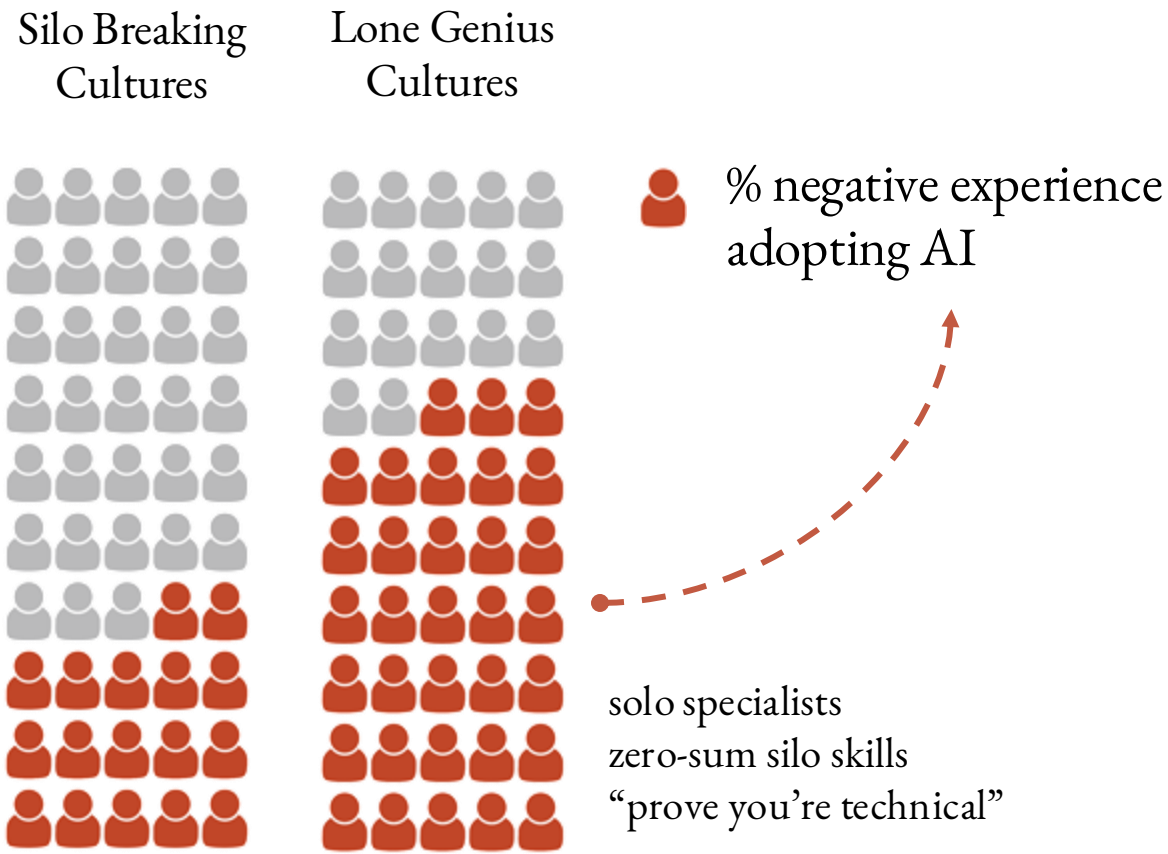
5000+ Tech workers & Managers



Open source science!

Hicks, C. M., Lee, C. S., & Foster-Marks, K. (2025). The New Developer: AI Skill Threat, Identity Change & Developer Thriving in the Transition to AI-Assisted Software Development.

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Talent wants to feel *seen*

for Metacognitive Skills

Designing & **Applying** expert patterns

Engineering AI data & context, fixing stale assumptions

Teaching others, creating rules that lift the floor

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The Metacognitive Transformation

Active Learners outpace passive experts

Mental Model Builders find paths to human expertise

Silo Breakers to blow up Specializations

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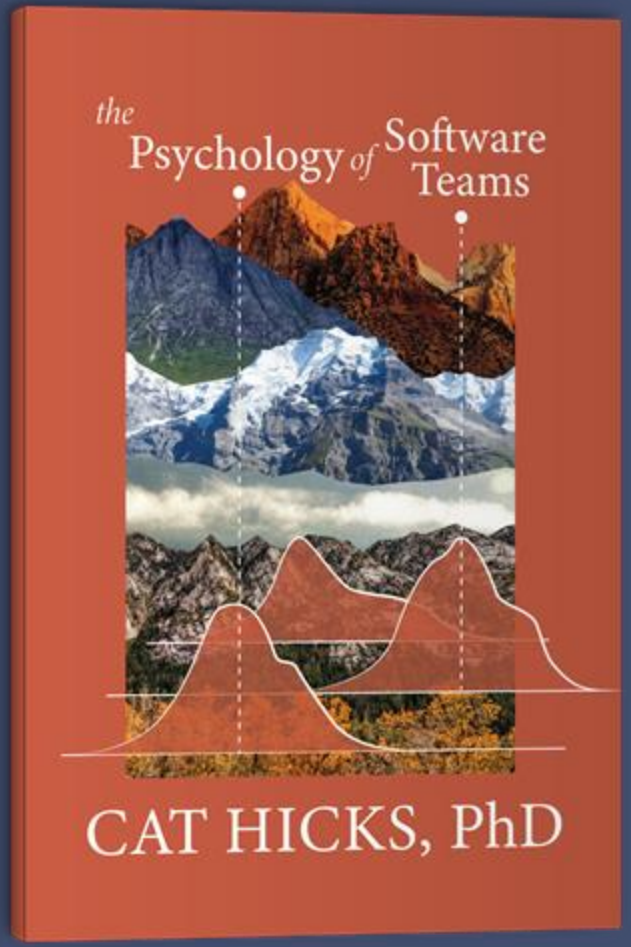

Science-backed lessons for leading the metacognitive teams of the future

Learning resources, frameworks and open source science for your orgs

SCIENCE

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