

THE SCIENCE BEHIND TEAM DESIGN

Six Research Principles That Determine 90% of Your Team's Performance

Most Agile transformations focus on ceremony execution. Decades of organizational research converge on a single uncomfortable truth: the conditions that determine whether a team succeeds or fails are set before the first Sprint ever starts. This brief summarizes six bodies of research every Agile leader needs to understand — and translates each into a concrete structural implication.

60%

of performance determined by
team design

40%

productivity lost to context
switching

180

Google teams studied in Project
Aristotle

2.5%

of people who can truly multitask
effectively

1. Hackman's 60-30-10 Model

4 Anchors → Trust

J. Richard Hackman, Harvard — Collaborative Intelligence & Leading Teams

60% of a team's performance variance is explained by structural design decisions made before the team begins work: membership stability, boundary clarity, available resources, and purpose clarity. 30% is determined at team launch. Only 10% is attributable to ongoing coaching and ceremony execution — where most Agile practitioners spend 90% of their energy.

Structural implication: Before coaching a struggling team, diagnose the structural conditions. Is membership stable? Are team members split across multiple initiatives? Does the PO have dedicated time? If these conditions are broken, no amount of ceremony improvement will produce sustained performance.

Key question: Are you spending 90% of your coaching energy in the 10% zone?

2. The Context-Switching Tax

4 Anchors → All

APA (Meyer, Evans & Rubinstein) · McKinsey Global Institute · Weinberg Quality Software Management

Chronic task switching consumes up to 40% of a person's productive time. Only 2.5% of people can genuinely multitask complex cognitive work without performance degradation. A developer on 5 projects is not giving 20% to each — they are paying a 60%+ cognitive tax and delivering fragmented output to all five. A 2024 study found heavy multitasking can temporarily reduce effective IQ by up to 10 points — greater than losing a full night's sleep.

Structural implication: Team allocation is not a soft preference — it is a hard performance variable. A developer allocated to 3 teams is effectively delivering at 40–50% of their potential while carrying 100% of their cost. Dedicated team membership is the minimum viable condition for knowledge work.

Executive framing: 'We aren't getting 20% of this developer's time. We are paying a 60% context-switching tax.'

3. Psychological Safety

4 Anchors → Safety

Amy Edmondson, Harvard (1999) · Google Project Aristotle (2012–2016) — 180 teams, 250 attributes

After two years studying 180 teams across 250 attributes, Google's Project Aristotle found psychological safety was the single strongest predictor of team performance — above IQ, experience, and technical skill combined. Teams where members feel safe to speak up, take risks, and admit mistakes consistently outperform those where they don't.

Structural implication: Psychological safety is not a culture outcome — it is a structural design outcome. When leaders interrupt, when POs are absent or reactive, when developers are split across competing priorities, safety collapses by design. Shielding the team from reactive noise is a structural decision, not a personality trait.

Google's finding: psychological safety is the #1 predictor — not IQ, experience, or technical skill.

4. Collective Intelligence & Equal Voice

4 Anchors → Equal Voice

Anita Woolley, MIT (2010) — collective intelligence study across diverse task types

The strongest predictor of a group's collective intelligence was equal conversational turn-taking — not average IQ, not maximum individual talent. Groups where everyone contributed roughly equally consistently outperformed groups dominated by one or two voices, even when those voices were the highest-performing individuals in the room.

Structural implication: Equal Voice is not a facilitation preference — it is a measurable performance driver. In the AI era, Equal Voice is also the primary mechanism for catching AI hallucinations: a fragmented team where nobody has space to say 'I think this is wrong' is a team that will ship AI-generated technical debt at scale.

MIT finding: equal conversational turn-taking predicts team performance better than individual IQ.

5. Purpose & Shared Vision

4 Anchors → Vision

Daniel Pink — Drive (2009), synthesizing Deci & Ryan Self-Determination Theory

Purpose — the connection of one's work to a meaningful outcome beyond the task itself — is the most powerful motivator for knowledge workers once baseline compensation needs are met. External motivators (bonuses, pressure, incentives) reliably improve performance on simple mechanical tasks. For complex cognitive work, they often degrade it.

Structural implication: A Shared Vision is not a mission statement. It is the team's lived understanding of which strategic outcome they are accountable for, and why it matters to real customers. When POs are unavailable, backlogs are feature lists with no outcome framing, and Sprint Goals are absent, Shared Vision collapses — and with it, the primary intrinsic motivator for knowledge work.

Pink's finding: purpose is the strongest driver of sustained knowledge work performance.

6. Team Size & Communication Load

Design principle

Hackman longitudinal studies · Amazon Two-Pizza Rule (Bezos)

Team performance degrades non-linearly with size because communication channels grow factorially: 5 people = 10 channels; 10 people = 45 channels; 15 people = 105 channels. Jeff Bezos's two-pizza rule operationalized this into a hard structural constraint enforced across all of Amazon. Smaller, stable, cross-functional teams with clear boundaries consistently outperform larger shared-resource matrix teams — even with more individually talented people.

Structural implication: Team size and team stability are design decisions, not HR realities to accept passively. If your Scrum team is growing beyond 9–10 people, or if it is a rotating cast of shared resources, the communication overhead alone is preventing high performance before any other factor is considered.

Amazon's rule: if two pizzas can't feed the team, the team can't communicate effectively.

"Performance is a byproduct of environment, not effort. Agility is the byproduct of a system designed for focus."

Research Brief · "Stop fixing your Scrum. Start designing teams that can actually think." — Mark Palmer, CST, CTC · GreatFishAgility.com/Focus · mark@greatfishagility.com · 501.773.2152