Collaboration Architecture

Get to Foundational, not Reactive

A Position Paper

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2026

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Abstract

Organisations have spent sixty-five years accumulating theory about knowledge work and four decades deploying collaboration tools. Coordination still fails at scale. This paper argues that the missing element is neither better theory nor better tools, but a professional discipline that operationalises both: Collaboration Architecture.

Drawing on the intellectual genealogy of knowledge work theory, Computer-Supported Cooperative Work, and sociotechnical systems design, it identifies why previous attempts to solve organisational coordination have fallen short. It then diagnoses the structural gap between organisational development and IT management that leaves coordination infrastructure unowned and undesigned and proposes Collaboration Architecture as the operational discipline that closes this gap.

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1. The Problem

In 2015, Behnam Tabrizi of Stanford University studied 95 teams across 25 leading corporations and found that nearly 75% of cross-functional teams are dysfunctional, failing on at least three of five criteria: meeting planned budgets, staying on schedule, adhering to specifications, meeting customer expectations, and maintaining alignment with corporate goals.[1] Seven years later, Deb Mashek and Dev Crasta surveyed 1,100 full-time US workers and found that 72% had experienced at least one workplace collaboration they described as *absolutely horrendous*. When asked how much professional development they had received on collaboration skills in their entire career, 31% said: none.[2]

The tools, meanwhile, have multiplied. Microsoft Teams replaced email, then joined it. Confluence was deployed but ended up forming many disconnected silos rather than coherent libraries. Slack arrived, then became another inbox. In the 2020s, WhatsApp has become the de facto coordination infrastructure — not because it is adequate, but because everyone has been invited to at least one WhatsApp group, even if they have no other experience of asynchronous group communication.

This is not a technology problem. Organisations have more collaboration technology than at any point in history. It is not an awareness problem. The need for effective coordination is universally acknowledged. It is not a motivation problem. People are not failing to collaborate because they do not want to.

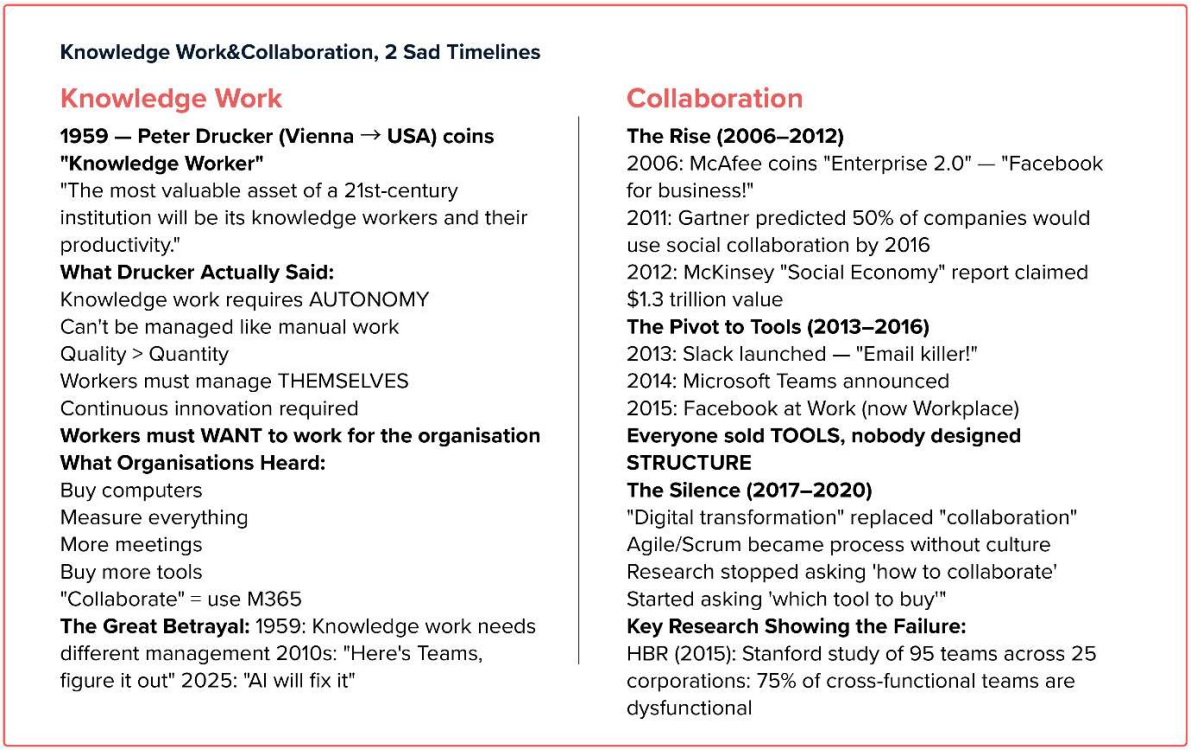
It is an architecture problem. The infrastructure that would allow coordination to function at organisational scale has not been designed. In its absence, coordination costs land on whoever cannot refuse them — the implementation teams absorbing decisions made without them, the service staff inheriting complexity engineered

upstream, the individuals maintaining informal networks that should be organisational infrastructure.

This paper argues that closing this gap requires a professional discipline: Collaboration Architecture.

2. The Intellectual Genealogy

Collaboration Architecture does not emerge from nowhere. It stands at the intersection of four bodies of knowledge, each of which identified part of the problem and stopped short of solving it.



[Figure 1: Collaboration & Knowledge Work — Two Sad Timelines]

2.1 Knowledge Work Theory (1959–present)

Peter Drucker introduced the concept of knowledge work in *Landmarks of Tomorrow* (1959) and developed the term “knowledge worker” in *The Effective Executive* (1966).[3] He spent the following decades describing with precision what knowledge work requires: autonomy, self-management, continuous innovation, and the recognition that the worker, not the manager, holds the expertise. In *Management* (1973), he set out six factors for knowledge worker productivity, insisting that quality matters at least as much as quantity, and that knowledge workers must manage themselves.[4]

Organisations heard "buy computers." The digital transformation of the following decades was understood primarily as tool deployment. The management transformation Drucker described — different structures, different accountability, different infrastructure — was not built. By 2012, the McKinsey Global Institute was reporting that knowledge workers spent 28 hours per week writing emails, searching for information, and collaborating internally — 70% of a working week consumed by coordination that should have been designed away.[5]

2.2 Computer-Supported Cooperative Work (1984–present)

In 1984, Irene Greif of MIT and Paul Cashman of Digital Equipment Corporation organised an interdisciplinary workshop of twenty researchers at Endicott House in Dedham, Massachusetts, coining the term "computer-supported cooperative work."[6] The first open CSCW conference followed in 1986. Greif later reflected that the field emerged from converging trends in distributed systems, networks, and office automation.[7] For four decades, CSCW researchers have documented how people collaborate, what technology supports and what it prevents, and how coordination requirements differ across contexts.

The German-language branch of CSCW contributed the 3K Model — Kommunikation, Koordination, Kooperation — as a framework for understanding the distinct layers of collaborative work.[8] European CSCW more broadly maintained a stronger focus on workplace ethnography than its North American counterpart; the European tradition focused on enterprise systems and retained its grounding in studies of actual work practices.[9]

CSCW identified the problem with precision. Its core achievement, as researchers within the field have acknowledged, has been to uncover how cooperative work functions and to develop foundations for designing support for that work.[10] Theory and methods for *support* — not for infrastructure design. The field's contribution was research into what collaboration technology should do; the operational question of how organisations should design their coordination infrastructure remained outside its scope.

The closest CSCW came to treating coordination as infrastructure was Susan Leigh Star's work on the ethnography of infrastructure. Star argued that infrastructure is not a substrate — pipes, servers, cables — but a fundamentally relational property: something becomes infrastructure in relation to organised practices.[21] Her eight properties of infrastructure — embeddedness, transparency, learned as part of membership, built on an installed base, visible upon breakdown — describe with precision the coordination patterns that organisations naturalise until they fail. Her concept of *articulation work* — the invisible labour required to make formal systems function — names exactly the coordination cost that lands on whoever cannot refuse it when infrastructure is absent.[22] Star developed methods for studying infrastructure; the question of how to *design* it remained open.

A related stream of research, Collaboration Engineering, came closer. Emerging from Group Support Systems research, it found that groups led by expert facilitators could routinely save 50% of labour hours and reduce project cycle times by 90% — but these benefits were usually only realised with expert facilitators, who were scarce and expensive.[11] The dependency on external expertise was identified but not resolved. The question of how to build organisational capacity for coordination — rather than importing it — remained open.

2.3 Sociotechnical Systems Theory (1951–present)

In 1951, Eric Trist and Ken Bamforth published their study of coal mining methods in the Yorkshire coalfields. Bamforth was himself a former miner — the research came from inside the system, not above it. Their foundational insight was that optimising the technical system while leaving the social system unaddressed produces dysfunction.[12] Mechanisation had been introduced to increase productivity; instead, absenteeism averaged 20% and labour disputes were constant. The technology worked. The coordination around it did not.

Sociotechnical systems theory was influential in organisational development for decades. It produced the principle of joint optimisation — that social and technical systems must be designed together — and applied it across industries. But after an initial period of practical application, it was displaced by operational management fads: total quality management, business process reengineering, lean six sigma. The principle survived; the operational methodology for implementing it did not. The gap between "social and technical must be designed together" and "here is how you design them together" was never systematically closed.

Researchers within the field have acknowledged this explicitly, arguing that sociotechnical thinking needs to extend its conceptualisations and apply its core ideas to new domains.[13][14] The field itself knows it stopped short.

2.4 The Practice Branch: Failed Promises (2006–2020)

The 2000s and 2010s produced a series of attempts to operationalise collaboration at organisational scale, each of which collapsed into something smaller than it promised.

In 2006, Andrew McAfee coined "Enterprise 2.0" in *MIT Sloan Management Review* to describe the business use of emergent social software platforms.[15] His explicit diagnosis was that previous collaboration technologies — groupware, knowledge management systems — had imposed too much structure, pre-defining how people would work together. His solution was different tools: wikis, blogs, social bookmarking. Tools that would let structure emerge. The diagnosis was correct; the prescription remained at the tool layer.

In 2012, the McKinsey Global Institute published *The Social Economy*, claiming that social technologies could unlock $900 billion to $1.3 trillion in annual value, with two-thirds of that value coming from improved internal communication and collaboration. Productivity of knowledge workers, they estimated, could improve by 20–25%.[5] The report acknowledged in its own analysis that realising these benefits would require substantial changes in organisational structure, processes, practices, and culture. At the time of publication, most companies had not achieved substantial benefit, despite 72% already using social technologies in some form.

The tools wave continued. Slack launched in 2013. Microsoft Teams followed. Facebook at Work (now Workplace) arrived in 2015. Microsoft acquired Yammer for $1.2 billion. Everyone sold tools. Nobody designed structure.

By 2017–2020, "collaboration" had largely dropped from organisational discourse, replaced by "digital transformation" and in Germany "New Work" — a framing that conveniently omitted the question of how people would work together with the new technology. Agile and Scrum became ritual without culture. The question shifted from "how should we collaborate?" to "which tool should we get?"

Enterprise Social Networking, which had promised to make organisational knowledge flows visible, was absorbed into HR-focused "Employee Experience" platforms. Knowledge Management, which had promised living systems for organisational knowledge, became document repositories — filing cabinets with better search.

3. The Diagnosis: Where Coordination Lands

The four branches of the intellectual genealogy share a structural pattern: each reached the boundary of its own discipline and stopped. Knowledge work theory described what organisations needed but produced no operational methodology. CSCW researched the tools but did not address how organisations design infrastructure around them. Sociotechnical systems theory identified the principle of joint optimisation but did not operationalise it. The practice branch deployed tools without designing protocols.

But the persistence of this gap is not explained by academic history alone. It is maintained by the way organisations currently divide responsibility for coordination between two professional domains — organisational development and IT management — each of which addresses part of the problem and explicitly or implicitly excludes the rest.

3.1 What Organisational Development Does

The organisational development side of the enterprise has produced substantial work on collaboration. Working Out Loud, developed by John Stepper, became a

significant movement in German manufacturing: Bosch alone had 6,000 participants in 50 countries; Daimler, BMW, Siemens, and Continental all participated through the cross-company WOLCoP community, which won the HR Excellence Award in 2017.[16] Alongside WOL, a constellation of practitioner communities — Cogneon's knowledge management network, New Work initiatives, the INQA government programme for quality of work — has worked to improve how individuals and teams experience collaboration.

Change management frameworks, most notably Prosci's ADKAR model, have become embedded in organisational practice across industries. ADKAR moves individuals through five stages of change adoption: Awareness, Desire, Knowledge, Ability, Reinforcement. It is a rigorous framework for what it does. What it does is sort people into champions, neutrals, and resisters, and work to move individuals through adoption stages.

What these approaches share is their unit of analysis: the individual, the team, the culture. They produce people who are better at navigating and coping with dysfunction. They produce teams with improved communication habits. They produce cultures that value openness. What they do not produce is coordination infrastructure. A thousand people practising Working Out Loud in an organisation without designed knowledge flows still do not have designed knowledge flows. Better individual habits are valuable. They are not infrastructure.

3.2 What IT Management Does

On the other side of the enterprise, IT management has its own framework for knowledge and coordination. ITIL 4 defines a knowledge management practice whose purpose is "to maintain and improve the effective, efficient, and convenient use of information and knowledge across the organisation."[17] This sounds comprehensive. In practice, it is scoped explicitly to the Service Knowledge Management System, in service of IT service delivery. When knowledge management extends beyond that service scope, ITIL 4 acknowledges it has no clear owner. As one widely used ITIL reference states directly: "For an ITIL framework, who oversees knowledge management? It's IT. But if there's other knowledge management systems not specific to service management, you'll have to determine who will manage it."[18]

Enterprise Architecture provides governance frameworks — TOGAF, ArchiMate, business capability models — that document what exists and describe how it should be governed. These are valuable. They do not design operational coordination. They tell an organisation what constraints apply; they do not design the structures within those constraints.

The tools are deployed from this side: Microsoft 365 environments, Confluence instances, ServiceNow implementations. But deploying a tool is not designing infrastructure. ServiceNow, for instance, is an ITIL-based platform designed to manage IT service knowledge within the service management scope. Organisations

that implement ServiceNow as their coordination infrastructure are making a category error that the framework itself would not claim to support. The tool is excellent at what it does, and it can certainly be designed to function as organisational coordination infrastructure. It does not form this infrastructure out-of-the-box.

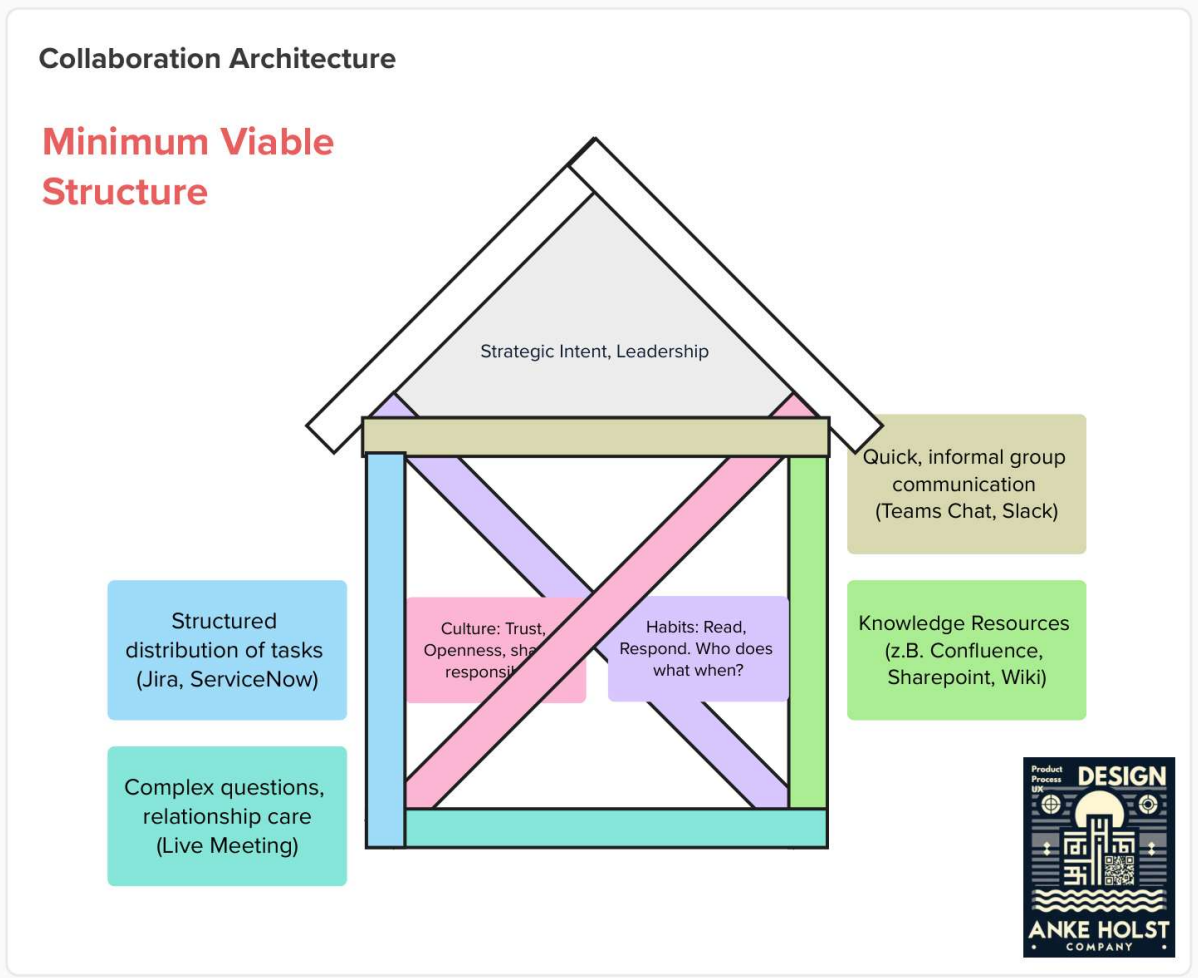
3.3 The Consequence

Responsibility for coordination infrastructure bounces between these two domains and lands in neither. Organisational development has culture and training tools but no infrastructure design mandate. IT management has a framework that explicitly scopes coordination out of its remit once it extends beyond service delivery. HR commissions culture programmes and mindfulness, life coaching or resilience. IT deploys platforms. The question of how people in this organisation coordinate their knowledge work — what protocols govern knowledge sharing, what infrastructure makes decisions visible, what design ensures that coordination capacity exists where it is needed — has no professional owner.

This is not negligence on either side. It is the structural consequence of disciplinary boundaries that were drawn before the problem was fully understood. When ITIL was designed, knowledge management was primarily an IT service concern. When organisational development consolidated its methods, coordination infrastructure was not yet a recognisable professional category. The boundaries made sense when they were drawn. The problem they collectively leave is that the operational layer — the one between governance and practice, between principles and what organisations build — remains unoccupied.

In that unoccupied space, coordination costs do not disappear. They are absorbed by whoever cannot refuse them: the teams building informal workarounds where official systems fail, the individuals maintaining knowledge in their heads because no infrastructure exists to share it, the operational staff coordinating across silos through personal relationships because no designed protocol does it for them. Rob Cross and Inga Carboni's decade of organisational network analysis across organisations of 2,200 to 45,000 employees has identified six distinct archetypes of collaborative dysfunction — patterns that are systemic, not individual.[19] These findings confirm what practitioners inside organisations have been observing: the problem is structural. The solution must be structural. What Star called "infrastructural inversion" — foregrounding the backstage elements of work practice — is the methodological starting point for any discipline that would address it.

4. Collaboration Architecture: The Operational Discipline

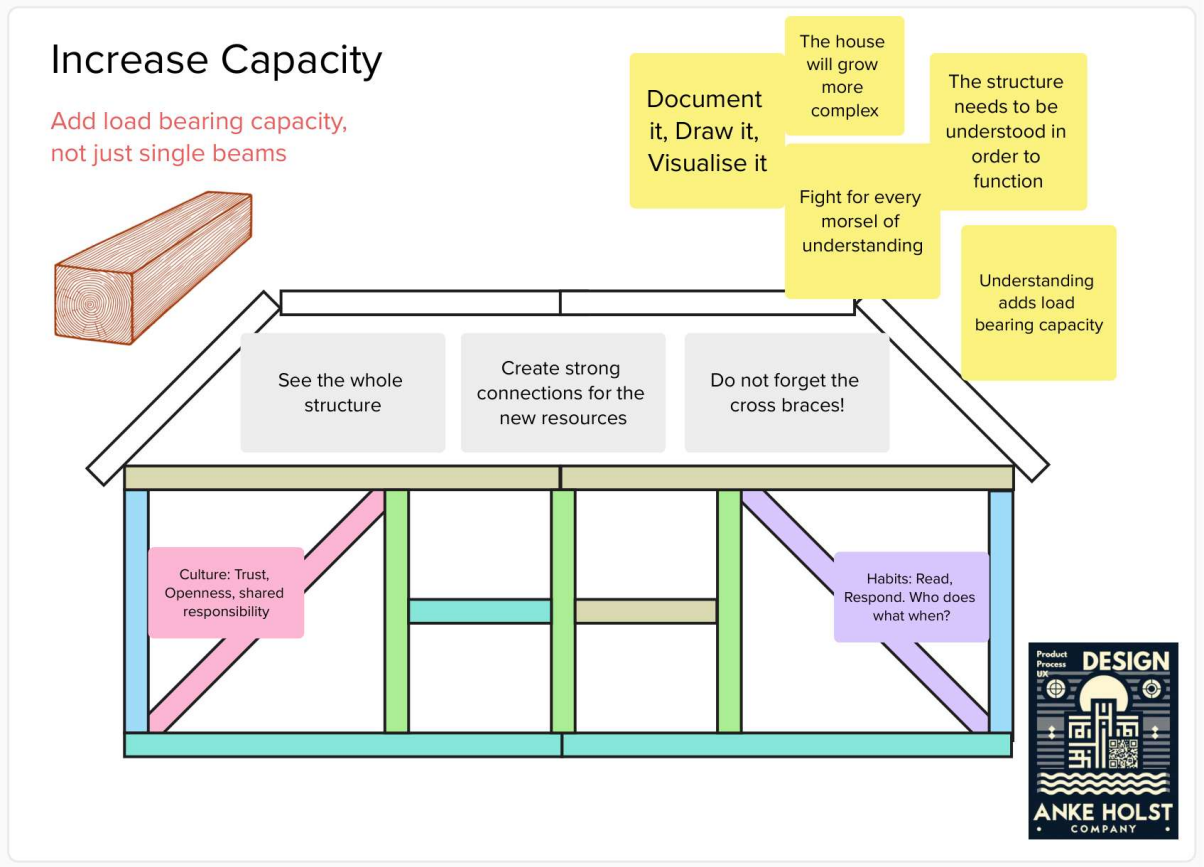


[Figure 2: Minimum Viable Collaborative Structure. Seen from the point of the user, it focuses on the functions of the various tool categories. The mnemonic device of a timber framed house works to show the function of the cross braces, as well as an invitation to enter]

Collaboration Architecture is the professional practice of designing coordination infrastructure — the combination of organisational structures and collaboration tools — for knowledge-working organisations. A specific target audience are industrial organisations where operational technology — software — is part of the product.

Here, the challenge is structural: industrial organisations have developed effective coordination patterns for physical production over decades. Software development embedded within them operates on fundamentally different principles — knowledge-intensive, iterative, requiring continuous coordination across functions that were never designed to work together. Without deliberate infrastructure design, the software part of the organisation will be dysfunctional by default. Not because the people are wrong, but because the coordination requirements of software

development are categorically different from those of the industrial context it sits inside — and that difference must be designed for, not managed around.



[Figure 3: Extending the structure]

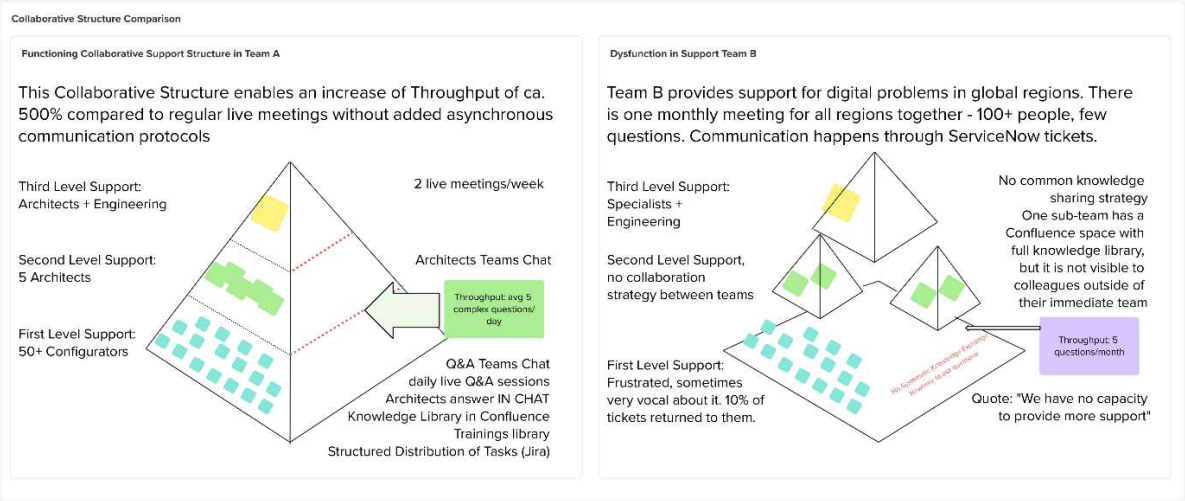
What Collaboration Architecture is *not* is as important as what it is.

It is not change management. Change management sorts people into champions, neutrals, and blockers, and works around the blockers. Collaboration Architecture treats resistance as information — people who understand a system well enough to resist change to it are usually the people who understand the system best. They are interviewed first, not managed around.

It is not tool deployment. Having Confluence does not mean knowledge flows. Having Teams does not mean coordination happens. Tools without designed protocols are filing cabinets. Infrastructure requires design.

It is not another consulting framework floating above operational reality with absolute confidence in its offering, leaving implementation complexity to whoever cannot refuse it. That is precisely where coordination costs land. Collaboration Architecture works at that layer.

4.1 The Work



[Figure 2: Collaborative Structures Exist Already — They Need Documenting]

A Collaboration Architect enters an organisation not with a framework to impose but with questions to ask and documents to read. The first months are archaeology — mapping what already works, finding the informal networks that carry real coordination load, reading the gap between what governance documents say and what operational practice reveals. The desire paths that people have worn through official systems — the WhatsApp groups, the informal Teams channels, the meetings that only work because two specific people are in them — are data. They show where the official infrastructure failed and what people needed. The resistance is data. The people who have been saying "this doesn't work" for three years are interviewed first, because they have already done the diagnostic work.

From that foundation, infrastructure is designed with the people who will use it, not for them. Protocols are written. Tools are configured to support the protocols rather than the other way around. The timber-frame structure gets built: four functional walls — task management, live communication, async communication, knowledge resources — load-bearing cross-braces of culture and habits without which no structure bears weight, a roof of strategic intent that can now mean something because there is a structure beneath it.

The tools of Collaboration Architecture are primarily visual. The timber-frame model shows organisations what minimum viable coordination infrastructure looks like. The Hierarchy of Information Needs maps the gap between "knowledge exists somewhere in this organisation" and "knowledge flows to where it is needed when it is needed." Archaeological Document Analysis makes value system incoherence visible in organisations' own documents — where stated principles contradict operational incentives, where governance commitments are undermined by management frameworks.

The measure of success is not satisfaction scores or tool adoption rates. It is capacity: how much coordination overhead has been removed, how much knowledge now flows that previously did not, what work is now possible that was not before. The relevant question is not "how do people feel about collaboration?" but "how many hours per week are people spending on coordination work that should have been designed away?"

4.2 The Principle

The central principle is Mündigkeit — the capacity for self-determined action. Part of the role consists of creating understanding for the role itself — designing the conditions in which organisations can see what coordination infrastructure is, why it matters, and what it costs them not to have it. The Institute exists in part to develop these methods: ways of making invisible infrastructure visible before it is built.

Organisations that understand their own coordination infrastructure can maintain and extend it as they grow, as products change, as people leave. That understanding is what the work builds toward.

This requires practitioners who have been trained to do it well, and organisations that know what they are hiring. Both are currently scarce — not because the need is unclear, but because the discipline does not yet formally exist. Collaboration Architects are too often placed in roles that were never designed to hold this work, fighting for legitimacy rather than doing the work itself.

When that cost has a name and a discipline has the mandate to address it, the energy that practitioners currently spend fighting to be understood becomes energy spent doing the work. The Institute for Collaboration Architecture exists to make that possible: to develop the training pathways, the professional standards, and the body of knowledge that allow organisations to hire for this role — and to find practitioners who have been prepared to fill it well.

5. Why Now, and Who Needs to Move

The conditions that made this gap tolerable are ending.

AI tool deployment is following exactly the pattern of previous tool waves — and the McKinsey playbook of 2012 is being replicated almost verbatim. Platforms are sold with implicit promises that the technology will solve coordination. They are deployed into organisations without designed infrastructure. They will produce additional complexity rather than reducing it. In 2012, the promise was that social technologies would improve knowledge worker productivity by 20–25%; the vast majority of organisations did not achieve substantial benefits.[5] Organisations that do not design their coordination infrastructure before deploying AI at scale will compound existing dysfunction, not resolve it.

Øystein Fjeldstad, Charles Snow, Raymond Miles, and Christopher Lettl proposed "The Architecture of Collaboration" in 2012 as a theoretical framework for actor-oriented organisational forms, built on actors who can self-organise, commons for resource sharing, and protocols for multi-actor collaboration.[20] The theoretical architecture exists. The operational practice of building it inside organisations does not. Collaboration Architecture is that practice.

The professional discipline that addresses this gap bridges Enterprise Architecture, ITSM, and organisational development — three fields that have each claimed adjacent territory without occupying the operational infrastructure layer. Enterprise Architects are particularly well positioned to drive this work: they already work at the boundary between governance and operations, they understand that infrastructure requires design, and they have, through the Business Capabilities model, the organisational mechanism for making coordination capability visible, fundable, and improvable at enterprise level.

Adding Collaboration to the Business Capabilities model is not an administrative act. It is the beginning of making coordination infrastructure legible at the level where it can be resourced and designed.

The sixty-five-year gap between what Drucker described and what organisations have built is not inevitable. It is the consequence of no professional discipline having the specific mandate to close it. Collaboration Architecture is that discipline.

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Anke Holst has been collaborating online since the early 1990s and advising organisations on coordination infrastructure since 2008, across UK public sector and German industry. She is developing Collaboration Architecture as a professional discipline through the Institute for Collaboration Architecture. She speaks at EA Insights DACH 2026 (Bonn, May).