Collaborate Smarter, Not Harder

Through analytics, companies can reduce overload, attrition, and other costs of collaboration — and increase its rewards.

BY ROB CROSS, THOMAS H. DAVENPORT, AND PETER GRAY[i]

No question, in a competitive global landscape, collaboration allows companies to serve exacting clients more seamlessly, respond more quickly to changing environments, and innovate more rapidly. But when an organization tries to boost collaboration by adopting a new formal structure, technology, or way of working, it often adds a steady stream of time- and energy-consuming interactions to an already relentless workload, diminishing instead of improving performance.

Think about the consequences at an individual level: It's not unusual to feel as if we are just *starting* our work at 5 p.m., after the daily battery of demands has finally quieted down. Thanks to the plethora of technologies that keep us connected, increasingly integrated global operations, and the need for a multidisciplinary approach to deploying complex products and services, the problem has snowballed over the past decade, with collaborative time demands rising more than 50%. Most knowledge workers and leaders spend 85% or more of their time on email, in meetings, and on the phone.[1] Employees struggle with increases in email volume, the proliferation of new collaborative tools, and expectations of fast replies to messages — with deleterious effects on their quality of work and efficiency. Research tells us that simple distractions like checking a text message fragments our attention more than we realize, and more consuming distractions — such as answering an email — can cost us more than 20 minutes to fully regain our focus.[2]

Even though employees are acutely aware that they're suffering, most organizations don't recognize what's happening in the aggregate. "We can track an airline receipt down to two decimal places and create a whole infrastructure around compliance, but we have no idea how effective networks are or where collaborative time is being spent," lamented the CIO of one company we studied. With increasing pressure on organizations to become more agile, there is also a greater tendency to swamp employees with collaboration demands in pursuit of a *networked* organization. We have found that people have, on average, at least nine different technologies to manage their interactions with work groups. The result can be overwhelmed and unproductive employees, sapped creativity, and employee attrition.

Fortunately, it is possible to improve collaboration efforts with the help of analytics. Perhaps the first industry to do so was professional basketball, where quantitative analysts realized that some players scored relatively little but somehow made their teammates more successful.[3] Similar analysis has been deployed by professional soccer teams to identify what patterns of passing were most effective for scoring goals under particular circumstances.[4] But the benefits of understanding patterns of collaboration can be reaped in all kinds of organizations.

Using analytics to make collaborative activities more transparent helps companies identify and exploit previously invisible drivers of revenue production, innovation, and employee effectiveness. Analytics enables better management of what has become an enormous yet hidden cost for organizations, one that employees aren't equipped to manage on their own.

Five Ways Businesses Can Benefit

In our research on collaboration over the past decade, we have seen some effective uses of analytics emerge in two industry consortia, where we've identified whether collaborations are driving value or unintentionally consuming resources.[5] These organizations have gone beyond documenting simple collaborative activities — who talks to whom at what frequency — to systematically relating collaborative activities to key outcomes.

In particular, we found five main ways in which companies derive value from collaboration analytics. First, they scale collaboration effectively by deploying targeted analytics to connect critical roles (for instance, project leads and first-line leaders) and to link employees engaged in similar work who are distributed across functions, units, or geographies. Second, organizations improve collaborative design and execution by understanding

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how networks cross hierarchies and team structures, and by replicating drivers of success. Third, they use collaborative analytics to drive planned and emergent innovation through networks that cross capabilities, markets, or functions. Fourth, the insights they glean from analytics allow them to streamline collaborative work by diagnosing and reducing collaborative overload and removing unnecessary routine decision-making interactions. Fifth, companies engage talent by using collaboration analytics to identify social capital enablers of performance, engagement, and retention.

We'll explore each source of value in turn.

1 **Scaling collaboration effectively.** Most organizations have developed deep talent in knowledge-intensive core capabilities, but it's much less common that those individuals with expertise are systematically connected to one another. They can be far-flung throughout the organization, often distributed across functions, geographies, and P&Ls, which means that no single leader or unit is responsible for deriving benefits from their collaborations. As a result, scale benefits are often very limited.

Collaboration analytics, however, can maximize the benefits of scale in three key areas:

- **Around specific leadership roles** — typically first level and manager of manager — for which failure rates have a significant impact on the organization.
- **Across strategically important functional roles** — or pivot roles[6] — that have a disproportionate impact on execution or innovation processes.
- **Within communities of core technical experts** — whether scientific-, engineering-, or software-related — whom a company relies on for strategic capability.

Take, for example, General Electric, which has an enormous knowledge base in its more than 300,000 employees around the globe, across nine businesses. Prior to 2015, GE's efforts to link distributed pockets of expertise were uneven. "We had bright spots where cross-business expertise sharing was working, but we were not consistent within and across segments. It was limiting our scale opportunities," noted knowledge-sharing leader Dan Ranta. Leaders saw the opportunity to improve collaboration across the company through new analytics-powered expertise communities. The goal was to enable expertise integration in a natural way that would require little effort from the experts involved.

Ranta and his team first developed a quantitative model to predict whether a given community was ready to share its expertise globally, on the basis of data collected about successful knowledge-sharing communities elsewhere in the company. They calculated scores that reflected the maturity of collaboration among community members, their degree of mutual commitment to success, the extent to which their local technological environment would support a global community, and the level of support for a global community within their organizations. When the model predicted that a community was ready, Ranta's team included that community in a new knowledge-sharing architecture featuring discussion spaces where experts could interact globally. Those that were not ready were steered instead toward smaller and more focused structures, such as mission-based teams.

GE used analytics to predict which community member would have the right expertise to answer each kind of question and, through industrial-scale software, to automatically distribute questions to the appropriate community experts. For community management purposes, GE generated real-time analytics of collaboration patterns to identify the employees who were most engaged and making a difference across locations.

As a result of this work, GE's expertise is becoming easier to tap, wherever it resides. For example, GE's Renewable Energy business, with approximately 43,000 employees, has deployed 27 communities to connect individuals across hundreds of technical discussions that span geographical and business boundaries, collectively producing a vast array of solutions and learnings. In one year, 1,172 internal collaborators collectively solved a total of 513 customer problems, resulting in more than $1.1 million of cost avoidance in productivity. "Analytics powers our processes, minimizes the human cost of helping each other out, and lets us tap into the thickest vein in the 'gold mine of sharing,' which is human generosity and professional pride," Ranta noted.

2 **Improving collaborative design and execution.** Team-based structures are common in organizations, but employees assigned to too many teams end up slowing efforts and creating significant disruption if they burn out and leave.[7] Collaboration analytics can help leaders determine where team structures are most effective, informing in-house training and generating best practices that help replicate those networks and tune teams for agility and speed.

Lateral collaboration is particularly challenging in investment banking firms. Despite often advocating a "one firm" culture, the hierarchies that grow under a partner often lead employees to concentrate all of their efforts within their teams, while time constraints further limit their ability to learn about solutions available from other partner silos. This can lead client-facing teams to focus on selling their own solutions rather than integrated, holistic solutions that command higher margins and improve client retention.

Executives at one global investment bank realized that this partner-silo structural dilemma was preventing their firm from catching up to industry leaders. Through a network analysis, an analytics team quantified the number of revenue-producing ties among midtier team leaders to understand where integrated offerings based on bundles of skills were — and were not — happening. The team discovered an asset that had been overlooked: midtier employees who enabled others to cross-sell services. Compared with other employees, these "hidden integrators" had three times as many ties across partner groups, and their connections were almost five times more likely to link poorly connected teams. Financially, these hidden integrators accounted for more than six times the average cross-selling revenue.

But it turned out that in spite of their tremendous value to the firm, these hidden integrators were actually at risk. Several had recently departed the firm. Analytics revealed that they were underappreciated: Their impact on cross-selling was largely invisible to the company and not counted toward revenue generation. Leaders quickly adjusted the compensation system to acknowledge their critical contributions.

Perhaps most important, analytics revealed that these valuable integrators were successful in different ways. Some integrators specialized in enabling many smaller transactions, so the firm freed up their time for this. Other integrators excelled at enabling much larger transactions (more than $15 million), but because these occurred much less frequently, these employees had to be managed and rewarded differently for their longer-term efforts.

THE RESEARCH

The authors spoke with more than 100 managers and executives actively engaged in collaboration analytics projects.

Their sample was drawn from two industry-based consortia.

They focused on identifying where collaboration analytics had been used to make evidence-based decisions that affected business performance.

3 **Driving planned and emergent innovation.** Innovation is inherently a social process, grounded in the creative friction that comes when people with different types of expertise and experiences pull one another in unexpected directions and arrive at something entirely new. Understanding where an organization should stimulate innovation by building networks that bring together people with different kinds of expertise is not something best left to chance. Collaboration analytics can uncover silos across capabilities that — if better integrated — could spur innovation and translate creative ideas into production-ready offerings.

General Motors used collaboration analytics to do just that. Radically new business models are emerging in the automobile industry for shared mobility, autonomous driving, electrification, and connectivity. In the face of such opportunities and an unprecedented set of nontraditional competitors, GM recognized that it had to take bold actions to adapt to this new world.

GM rapidly acquired startups and hired new talent to boost its technological capabilities in core strategic areas. But despite these investments in GM's *human* capital, executives also recognized the importance of *social* capital, or the networks of ties that connect employees and amplify their individual capabilities. To produce a dramatic increase in the company's agility and innovativeness, GM focused on creating what then-chief talent officer Michael Arena termed *adaptive space* — a network of connections that link the entrepreneurial pockets of innovation within the company to its traditional execution-focused operational elements.[8] This began to chip away at historic silos. Creating adaptive space required interventions around four different kinds of networks: idea discovery, concept development, innovation diffusion, and organizational disruption. Although all were important, let's focus on the second stage — concept development — in which promising ideas were rapidly developed into emergent innovations.

Arena asked the internal analytics team to study the networks of two development groups that transformed ideas into novel prototypes. One was better at this than the other. Collaboration analytics derived from network data revealed that the more successful group had a clustering coefficient (the degree to which a group consists of small, tightly knit subgroups) that was more than two times higher than that of its less successful counterpart. The more successful group was better at forming small subgroups that collaborated on a single task or function of the overall development challenge. That way, they were able to concentrate on perfecting one thing at a time and make rapid, focused progress.

As you might expect, the successful group also had a density metric (a measure based on how many ties link a group together) almost double that of the less successful group. Through these ties, team members tasked with one aspect of development shared their advancements with members from other clusters in ways that helped combine local innovations into a functioning, broader automotive concept. Interestingly, while the successful network had more internal ties, its members had *fewer* external ties to potential idea sources in industry or academia, so they were free from outside distractions that could hinder their focus on the task at hand throughout development. The less successful development group had more external connections, which were valuable in enabling discovery of new insights but often led the team to hedge their development bets by simultaneously pursuing multiple different possibilities. Ironically, this had a negative impact on the speed of concept development and prolonged the decision to shut down less successful prototypes.

Collaboration analytics can play a powerful role in identifying where excessive connectivity is draining time, slowing speed to market, or hurting employee morale.

The combination of acquiring skilled employees and ensuring that these individuals are properly positioned in the network has enabled GM to adapt faster to the disruptive forces that surround it.

4

Streamlining collaborative work. As employees spend more of their time in meetings, on phone calls, and on email, collaboration analytics can play a powerful role in identifying where excessive connectivity is draining time, slowing speed to market, or hurting employee morale. Collaboration overload can beset specific individuals or roles, and collaboration analytics can identify the situations where some people are collaboratively far less efficient than others in the organization.[9] Sometimes overload is created through excessively inclusive decision processes. In general, overload occurs when more than a quarter of the people who interact with any individual employee report (through an internal survey) that they cannot improve their own performance without more access to that individual.

Perhaps nowhere is streamlining collaborative work more important than in the commercialization of new pharmaceuticals. Commercialization occurs after most of the enormous investments required to develop a new drug have been made but before the product hits the shelves. It is extraordinarily time-sensitive, with a single day's delay costing the company millions in lost profits. But drug commercialization is also incredibly collaboration-intensive, requiring orchestration among regulatory affairs, medical affairs, R&D, sales, marketing, legal, advocacy, manufacturing, and many other functions.

Streamlining collaboration can have a direct and immediate effect on the bottom line. The leader of a drug commercialization unit in one pharmaceutical company we studied discovered that truth after using collaboration analytics to identify opportunities to increase efficiency of routine decision-making, which often seemed to be taking too long. The analytics team asked each member of the commercialization group to answer a series of questions about his or her network of collaborators, including how much time each spent in routine versus nonroutine decisions. Armed with data about the estimated delay these types of decisions caused, the team used text analytics to calculate which categories of decisions delayed the process the longest.

Focusing on each area of opportunity for improvement, leaders and their staffs drafted guidelines for optimal decision-making, in some cases developing decision-flow schematics to ensure that all parties involved knew the best sequence and time lines. They revised governance principles and trained employees to push responsibility and accountability down in the organization.

The analytics team also discovered significant variation in how much time individuals spent collaborating with certain roles within the unit and preparing for those interactions (what we term *collaborative efficiency*). Statistical analyses identified four specific roles in which individuals were acting in ways that they may have believed to be efficient but that did not adhere to any standardized best practice. Those who were most efficient in those roles consumed only a small amount of time from each person in his or her network, while those who were least efficient consumed many times as much. Subsequent calculations revealed that improving the latter group's efficiency could have a catalytic effect on the entire organization. Simply bringing it up to average could free up more than 17,000 hours of collaboration time annually in the rest of the organization — *the equivalent of almost nine full-time employees.*

With these insights, the unit was able to recoup thousands of hours and shave time off the overall commercialization process. Analyzing collaboration in this way showed that changes were possible and desirable, and provided the diagnostic insights to help other groups in the company discover new and better ways of doing their jobs.

Using survey-based data about collaboration is not the only way to glean useful insights about a company's collaboration inefficiencies. It's also possible to extract collaboration data from existing digital sources, such as meeting and email data, as a byproduct of other behaviors. Freddie Mac, a leader in the secondary mortgage market, employed a "passive data" collaboration analytics engine that enabled its analytics team to easily identify opportunities for streamlining. One unit seemed particularly effective, and analysis of passive collaboration data revealed how those employees' behaviors were different from others in the company. This group had created a culture of empowerment and strong working relationships among employees. For instance, they spent 56% less time in "approval related" meetings and 29% more time on approval-related emails. They also worked with greater autonomy, spending 20% less time in meetings where their supervisor was present. And they were more focused when in face-to-face collaborations, having 40% fewer meeting conflicts and sending 18% fewer emails while in meetings.

Engaging talent. A rapidly developing set of collaboration analytics applications has emerged as a natural extension of the people analytics functions in organizations. Organizations are making quick progress on a variety of thorny talent-related issues — and generating impact in areas where progress has often traditionally been limited — by incorporating social capital drivers of success alongside traditional human capital drivers. For instance, companies are doing the following:

- Reducing attrition through analytics models that identify the collaboration patterns that predict retention.[10]
- Promoting individual performance and transition success by studying networks of high performers and helping others to replicate those networks.[11]
- Refining performance management processes to locate and retain top collaborators whom traditional systems often miss.
- Using evidence-based approaches to generate more impact from diversity and inclusion programs.

Booz Allen Hamilton provides a rare example of the use of predictive collaboration analytics to not just anticipate but also improve employee retention. The company had already developed a predictive attrition model based on data such as demographic attributes, work characteristics, level in the organization, length of service, and compensation and benefits. The model pinpointed key attrition drivers and identified employees at greatest risk of leaving the company who might benefit from targeted interventions. However, after the model was developed, additional social factors that might affect attrition came to light.

Data suggested that the risk for turnover was highest following an employee's transition to a new role. Further analysis revealed that how an employee

managed networks shaped the odds of leaving after a transition. Mapping data about the size, reach, and quality of each employee's collaboration network against attrition data uncovered different insights at specific tenure bands. The analysis contradicted much of the traditional advice about networks (for instance, that a big network is always a good network).

Five categories of network-based factors distinguished employees who departed within two years of joining the company from those who stayed. (See "Network Drivers of Retention at Booz Allen Hamilton.") The people who stayed were those who created more energy in their interactions with others, helped others find a sense that their work had purpose and mattered, generated "pull" (or demand) for their talents, created diversity of thought through broader networks, and connected with a strong peer cohort. On the basis of these findings, Booz Allen implemented a new onboarding program that focused on the specific network dimensions that were most likely to increase retention. Follow-up analyses confirmed a significant improvement in retention as a result of the new collaboration training.

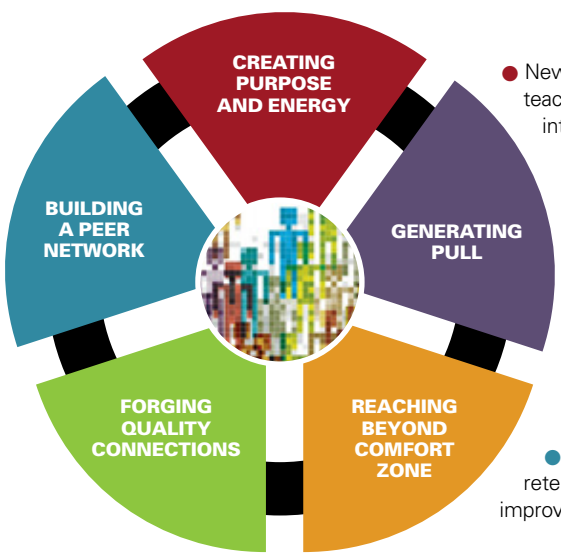
A second example involves using collaboration analytics to more efficiently and effectively assess performance management — a key driver of employee engagement[12] — at W.L. Gore & Associates, an R&D-based product development company. The company's flat, lattice-like organizational structure empowers associates to decide which leaders to follow and also makes them directly accountable to members of their teams. Without traditional bosses to evaluate performance, team members rate one another on their contributions (impact and effectiveness), which is combined into a ranking of all associates within their areas across the company. The ranking system is then used to determine associates' compensation.

By 2015, Gore had grown to more than 9,000 associates, which greatly increased the complexity of the contribution-evaluation process. The company's global growth meant that many associates were working on multiple colocated and virtual teams, with any single team aware of only a small slice of an associate's performance. As a result, evaluating contributions could take many days to complete for a single associate, particularly for those individuals who were central to the networks of performance in the company.

Gore began to explore a more streamlined, two-pronged approach, using collaboration analytics. First, automated surveys empowered individual associates to nominate network contacts who knew their contributions best. An algorithm ingested all this collaboration data and revealed which associates were in a position to compare pairs of other associates. A second automated survey then presented each associate with pairings of collaborators they

NETWORK DRIVERS OF RETENTION AT BOOZ ALLEN HAMILTON

Collaboration data analysis shows that new hires who stay with the company are those who engage in these behaviors.



- Newcomers who create purpose and energy engage in specific, teachable behaviors around interaction quality that more rapidly integrate them into the network.
- Entry speed is enhanced not by telling others about one's expertise but rather by asking questions and slowly morphing what one knows to incumbents' needs.
- Large networks do not predict longer tenure; the extent to which people build ties outside their operating units and into the broader organization matters most.
- Retention is not enhanced by building weak informational ties but rather by building strong, mutual ties that benefit both parties.
- Ties up and down the hierarchy do not affect newcomer retention; instead, lateral ties to peers provide benefits that improve performance and enhance retention.

were uniquely suited to evaluate and asked them to rate whether one was a stronger contributor than the other. All this typically took each associate 15 to 20 minutes to complete rather than hours or days. Analytics run on the aggregated data set then produced rankings for all associates in the company.

For a pilot in a 200-person unit, Gore found that the rankings were highly comparable to those recently generated through the traditional contribution assessment process. The process was fully rolled out in 2017. "Conservatively, we estimated 10,000 hours a year that our approach saved, but in reality, it was probably several multiples of that," noted team member Willis Jensen. Equally important, the new process was still well aligned with the company's empowerment culture.

DESPITE WIDESPREAD AGREEMENT that collaboration is critical to achieving desired business outcomes, organizations have been flying blind on how to maximize that value under specific circumstances. Too often, well-intended collaboration initiatives have actually been counterproductive, sliding into overload for key employees. With collaboration analytics, we can begin to shed light on who needs to collaborate with whom about what, what types of collaboration yield particular results, and how collaboration affects employee satisfaction, performance, and attrition.

Far beyond traditional analytics that simply provide descriptive, visual models of who talks to whom, a new generation of collaboration analytics is emerging, with more predictive and prescriptive capabilities. These analytics use advanced methods, including machine learning, to identify key data without requiring extra effort from employees and to relate collaboration metrics to a variety of business performance measures. They have the potential to ensure that initiatives designed to help make your team more productive don't backfire spectacularly.

These new approaches are putting collaboration analytics on an even plane with other important analytical tools in organizations. They are bringing the decision-making power of data and analytics to human cooperation at work.

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