

white paper^o

Business Interiors

Collaboration

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How the workplace can improve collaboration

Converging spatial, social and informational trends are creating demand for workplaces that support new patterns of collaboration.

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Collaboration is one of the most often-discussed and often-misunderstood business issues of our time.

Nearly all leading businesses today endorse the value of high-performance teams doing collaborative work, but there are many differing concepts, opinions and bewilderments about what that really means.

Many organizations are now actively pursuing and promoting more collaborative work while trying to force-fit evolving processes into existing workplaces. Like Cinderella's slipper on the wrong foot, it's an uncomfortable compromise. But most find themselves at a loss for what to alter. So they carve out more conference rooms, add a coffee station or seating in passageways, and call it good.

As part of its ongoing research into the interplay of work, workers, and the workplace, Steelcase has been actively studying collaboration for more than 20 years, using its own and customer workplaces to test theories in real-time applications.

Today, as the social implications of a multi-generational workforce converge with the informational implications of new technology tools, a new view of collaboration is emerging. To test concepts and provide a holistic view of how to support collaboration today, in 2009 the company created a behavioral prototype space for its marketing

communications team and conducted a comprehensive yearlong study.

The research process included video ethnography, interviews, journaling by workers, sensor data collection, and pre- and post-occupancy assessment tools.

Among the key findings was validation that a fundamental shift has occurred: most work today is done in collaboration with others versus individually. Moreover, rather than it being a segmented activity done in designated destinations such as a conference room, collaboration is now almost constant and it threads throughout the entire workday. It occurs at desks, in hallways, in team spaces, on smart phones and via the Internet, and it's often spontaneous and informal versus planned in advance. When the workspace is designed to fully support the new realities of collaboration, better learning, more innovation and faster decision-making can result.

In this paper, we provide an overview of the state of collaboration in offices today. Specifically, we explore the shift from work being primarily an individually focused enterprise to it's becoming a collaborative, "you and me" and "we" activity. We discuss new understandings of what collaboration is, and what it isn't. Finally, based on findings from the behavioral prototype space and the research conducted there, we offer new strategies for creating spaces that fully support today's collaborative work.

THE EVOLUTION FROM "I" TO "WE" AT WORK

Knowledge work is key to business success today, and research shows that typically it's accomplished in four different modes. First described in 1995 in the seminal book, *The Knowledge-Creating Company*, by Ikujiro Nonaka and Hirotaka Takeuchi¹, these four modes are essential to the process of building knowledge that in turn drives creativity and innovation:

Focusing – Every worker needs some time that's uninterrupted to concentrate and attend to specific tasks such as thinking, studying, contemplating, strategizing, processing, and other "head down" work best performed in one's own mental "zone."

Collaborating – Fundamentally, collaboration is about working with one or more people to achieve a goal, such as collectively creating content, brainstorming, etc. Ideally, all perspectives are equally respected, brought together to leverage the group's shared mind.

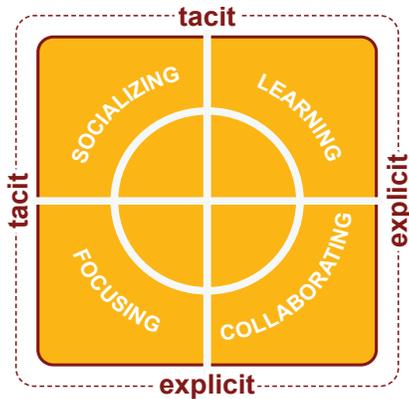
Learning – Learning is about building knowledge. Whether in a classroom or a conversation with peers, learning happens best by doing and building on what's already known. When thinking is made visible to others, learning is accelerated and becomes an integrated part of organizational culture.

Socializing – For knowledge to be fully internalized and useful, it needs to be socialized. When people socialize and work with others in both formal and informal ways, both learning and trust are built. Combining trust with an organization's intellectual capital creates the necessary ingredients for innovation.

Across the four work modes, workers create and use two types of knowledge: explicit and tacit. Explicit knowledge is the formal, systematic information typically found in documents, procedures, and manuals.

In contrast, tacit knowledge is deeply personal, harder to formalize, and learned by experience. It's communicated indirectly through metaphor, analogy, mentoring, and side-by-side doing.

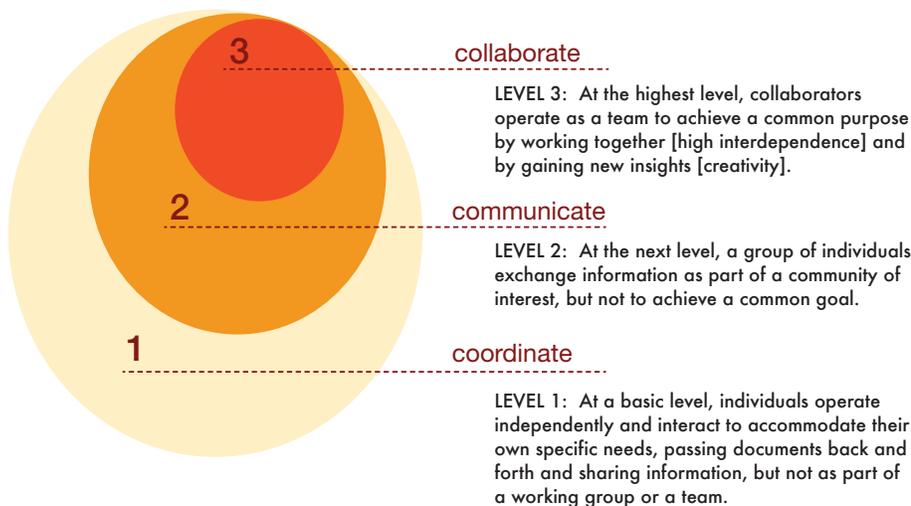
FOUR MODES OF KNOWLEDGE WORK



Source: Nonaka/Takeuchi, *The Knowledge-Creating Company* 1995

Whereas in the past, most people's work was individually focused², today the reverse has become true: 82% of white-collar workers feel they need to partner with others throughout their workday to get work done.³ Knowledge work has become fundamentally a social activity, an exchange where workers build on each other's ideas and create new knowledge together. Little wonder that workers want workplaces that support the social nature of work today. Increased collaboration unavoidably implies the need for a different type of workplace.

LEVELS OF PERCEIVED INTERACTION



Source: Michael Schrage, *Shared Minds: The New Technologies of Collaboration*

IT'S HARD & IT'S MESSY

There's an African proverb that says, "If you want to go quickly, go alone. If you want to go far, go together."

If collaboration is more important than ever, it's also never easy. Struggling to evolve, organizations and workers can mistake low-intensity interactions, such as coordination of individual tasks ("tossing it over to you") or communication ("keeping you up to speed on what we're doing") for true collaboration. What's more, they fail to realize that each level of interaction requires its own kind of space.

As researcher and author Michael Schrage has observed, most organizations lack the structures that allow people to pool their talents and work together. As a result, the goal of collaborating together to achieve a common purpose remains elusive.³ Without support systems in place, watered-down notions of "teamwork" often trump genuine collaborative interaction.⁴

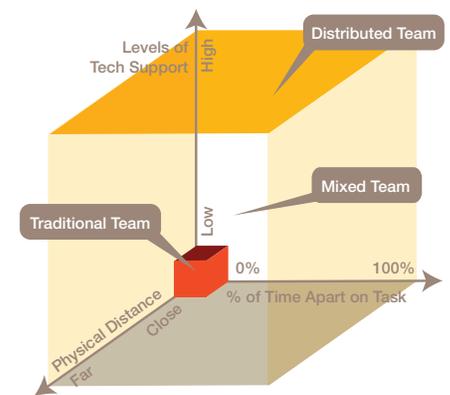
Generation Y is helping to drive the movement toward more informal collaboration, according to Steelcase research completed in 2009.⁵ Their preference for informal access versus scheduled meetings means that they come to the office to leverage social networks and participate in collaboration on demand.

Although Gen Y's presence in the workplace accelerates the need to support collaborative workstyles, the trend didn't start with them and isn't limited to them. Numerous studies in recent years, such as cutting-edge

research done at the Santa Fe Institute and published in Scott Page's landmark book *The Difference*, have validated that two or more heads really are better than one, and the group will measurably outperform the lone expert every time.⁶

But collaboration doesn't come automatically or easily. It's often messy and can be downright inefficient as people build the social, informational, and spatial pathways they need to work together effectively. For example, Steelcase research has shown that 70% of workers today say they waste up to 15 minutes just looking for a space to meet and 24% waste up to half an hour.⁷

VARYING DIMENSIONS OF TEAM STRUCTURES



Source: Griffith, Sawyer & Neale, *Virtualness and Knowledge in Teams* 2003

A team's structure can be determined by assessing its "dimensions of virtualness": level of technological support, actual physical proximity and duration of time apart [i.e. working alone].

Efficient collaboration is becoming even more of a challenge today, with workers increasingly distributed across locations and geographies versus all co-located in one place. Increasingly, collaboration in today's organizations is now "mixed presence" team work – i.e., workers in one location interact with each other and also with distributed team members via technology-enabled collaboration. The varying dimensions are the level of technology support, actual physical proximity, and duration of time apart.⁸ Although there's less need for individual workstations with a distributed workforce, the need for collaboration spaces increases.

With cloud computing one of the established trends of the decade and the launch of technologies like Google Wave and Intel's Dynamic Composable Computing, worker data is becoming more easily shared, enabling new levels of synchronous collaboration for even distributed teams.

However, no matter how or where people come together, achieving collective mind isn't a given. Simply getting people connected doesn't assure productive collaboration. Distractions and divided attention are the norms of the day. For example, consider what happens during a typical meeting: varying degrees of attention to the work at-hand are expected and mostly tolerated. Especially if peoples' sightlines to displays of information are compromised or nonexistent (which happens frequently in conference rooms and audio- or video-conferenced meetings), attention quickly diverts.

Another common threat to successful collaboration is involving too many people at once. In general, smaller groups are preferred. Consider how some individuals and organizations size teams:

TEAM SIZES

Evan Wittenberg, director of the Wharton Graduate Leadership Program, notes that team size is "not necessarily an issue people think about immediately, but it is important." According to Wittenberg, while the research on optimal team numbers is "not conclusive, it does tend to fall into the 5 to 12 range, though some say 5 to 9 is best, and the number 6 has come up a few times."

In software development, the practice of scrum/agile methods organizes the teams according to the rule of 7 plus/minus 2.

At Amazon, Jeff Bezos is said to limit team size to the number of people that two pizzas can feed, 5-8.

Research on group learning with students generalizes "ideal" team size to be between 4-6 individuals.

At Google, self-directed teams scale from 2 to 5 individuals.

Michael Schrage in the book *No More Teams* cites the historical importance of collaboration between two individuals: Picasso/Braque, Watson/Crick, Wozniak/Jobs

Like a chain letter that expands its reach exponentially, as the size of the team increases so does the difficulty of managing communications within it. With two people, there is only one possible interaction. With three people, there are four. With a four-person group, there are 11, and so forth.

As illustrated by the chart at right,⁹ the number of possible interactions explodes in groups with more than six people. That's why usually collaboration happens best among 4 to 8 people.

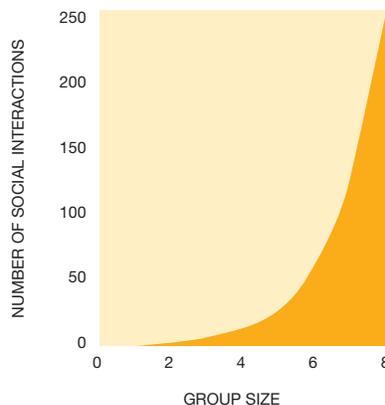
In light of all the challenges to successful collaboration, the design of the workplace

is key. It's important to craft the interactions, tools, and spaces that can extend the individual into the common ground of collaboration, easily and often. When support systems such as easily accessible shared spaces and the right technologies are in place, the efficiency factor can be favorably tipped so that effective collaboration becomes easier.¹⁰

BEYOND AS-IS

Most workspaces today don't support collaborative work processes. There's little choice in where and how to work. Individual workstations separate people from each other, and meeting spaces must be reserved in advance. In addition, they can easily dwarf the participants and tamp down energy and mood. Areas with audio privacy for phone

GROUP DYNAMICS IN GROUP SIZE



MEETINGS: HERE TO STAY

Collaboration is becoming more opportunistic and informal, but scheduled meetings are probably here to stay as an established business ritual. To better understand the essentials of productive meetings, Steelcase researchers formulated an A8 framework. As spatial experiences, each of these eight activities provokes fundamental spatial opportunities — for before, during, and after meetings.

BEFORE THE MEETING, YOU...

1. **Anticipate:** prepare for what lies ahead by planning and packing what you'll need
2. **Approach:** experience the moments on the way to your intended destination, getting mentally prepared

DURING THE MEETING (NOT NECESSARILY IN SEQUENCE), YOU...

3. **Arrive:** experience the transition to "here," knowing you're in the right place
4. **Assemble:** are face-to-face with people and information, positioning to engage
5. **Array:** work everything into patterns that come to life side by side; posting and displaying, show and tell, citing, note taking, discussion, collaboration
6. **Aside:** make temporary switches to interdependent peripheral interactions by multi-tasking
7. **Adjourn:** wrap up at the close of a session by winding down, uploading/downloading, wrapping up, departing

AFTER THE MEETING, YOU

8. **Act:** do individual work, translating your task to make a contribution to the "collective mind"

Source: Steelcase Workplace Futures Discoveries

and videoconferencing are few and far between, so workers make do in their workstations, frequently disrupting others. Social spaces, if they exist, often don't have power sources or WiFi, so they're under-used. There are few places to array work-in-progress for discussion or show finished work for future reference. Individual workstations are set up for focused work only, and there are few places to go when you need to do work with others other than "third-places" such as coffee shops, which often don't adequately support work processes and can compromise company-confidential information.

Steelcase's marketing communications team was experiencing these realities in its "before" space. Although their work was all about innovating for creative outputs, collaborative behaviors weren't easily exemplified in their space. At the same time, the team was becoming increasingly mobile and distributed. Their leaders wanted to help the team build a stronger shared identity, be able to respond to changes quicker, and get to decisions and innovations faster.

The new behavioral prototype space was designed to put emerging hypotheses about collaboration to the test of day-to-day work experiences. However, it wasn't a myopic experiment. The space was specifically designed to accommodate all four work modes: focused, social and learning, as well as collaborative. It provided collaborative settings integrated in close proximity to individual workstations that were unassigned to provide choice and control to a mix of resident and mobile workers. Spaces varied in size and technology to support a range of work. In total, it was a space designed to support the ways work is changing.

BEFORE & AFTER

The space was set up to support focused work in individually assigned workstations.

FOLLOW THE USER

Not surprisingly, collaboration happened more often in the new space specifically designed to support it, though not always in predictable ways. As researchers studied how people used and interacted within the new environment, several key "ahas" emerged.

Collaboration is iterative and mostly informal. The study confirmed that effective collaboration is an intertwined progression of face-to-face and virtual interactions as workers move through the day. It flows

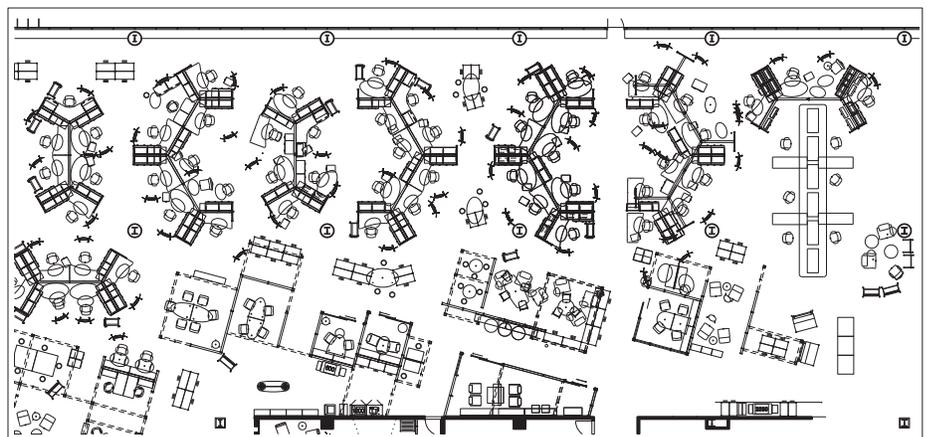
almost continually and often informally throughout and beyond the workspace, not as a single occurrence or destination-dependent, but as a constant theme of the workday.

Equal access to information is crucial. True collaborative work happens most and best in spaces that easily support 4 to 8 people (physically and virtually) and everyone has equal access to digital and analog information displays and can see each other eye-to-eye. For example, in the Steelcase prototype space, area A (shown in gold) was equipped with a large round table, a circumference of whiteboards, and simultaneous information projections on opposite walls. It was everyone's favorite space to meet. Meanwhile, right next door, area B (shown in red) was used significantly less because it didn't have the design features that supported democratic access to information.

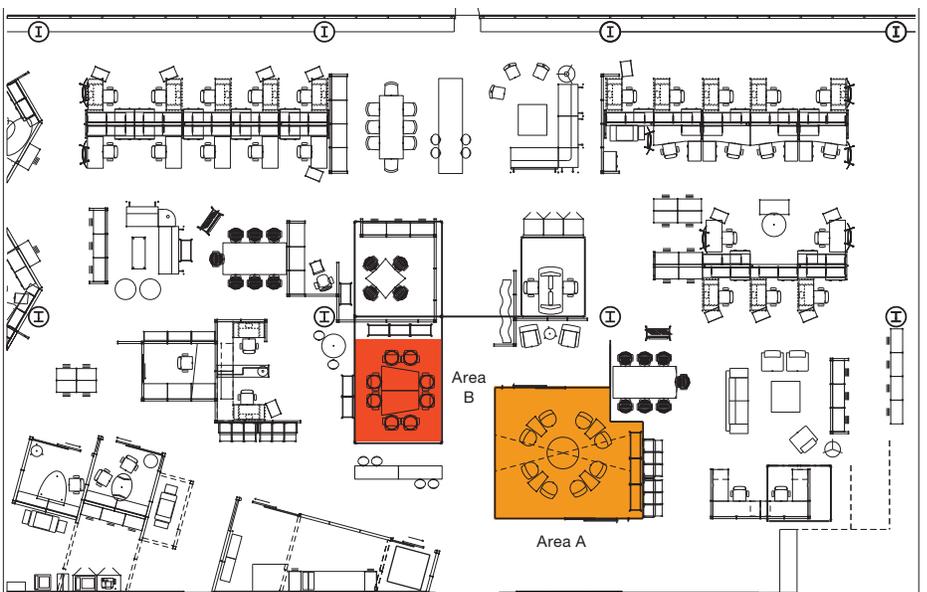
Technology rules. If a space has easy projection and teleconferencing capabilities, it gets nearly constant use. Meanwhile, "dumb" spaces that are low on technology capabilities are used far less. In an ideal collaborative work environment, there's easy access to data and power throughout with no "dead zones" so workers can share digital data with others anytime. Technology needs to be simple to use, easily present, and never detracting from the purpose at hand.

Visual contact is key. Like a good restaurant that's not too empty and not too packed, the right amount of people density in the workspace makes a positive difference. In the Steelcase prototype space, if people could see each other, they'd go over and talk to each other. Benching workstations increased collaboration because they allowed workers to make easy eye contact, which increased the likelihood that someone would stop by a

STEELCASE'S MARKETING COMMUNICATIONS TEAM "BEFORE" SPACE



STEELCASE'S MARKETING COMMUNICATIONS TEAM "AFTER" SPACE



co-worker's space for a quick conversation and then return to individual work. Because workers didn't have individually assigned workstations, they often adjusted their proximity so they'd be close to the people they needed to work with on a given day. With technology and each other right at hand, many communication and coordination activities happened right at workstations versus moving to a destination.

A social space is critical as the hub of the work area. It serves multiple purposes: a place for individuals to talk about work casually and as a "town center" to pull together the larger group. In addition, social space sets a cultural tone for the rest of the space. In the Steelcase prototype space, high-energy standup encounters were frequent and face-to-face collaboration occurred here more often than anywhere else.

Providing space for private, focused work remains critical for productivity. Collaboration worked well throughout the Steelcase prototype space, but focused work was a challenge for some workers as they adapted. Paradoxically, as the trend toward collaboration intensifies, privacy — visual, audio, and psychological — also is escalating in importance.

MEASURING THE 3D IMPACT

The research project confirmed that space plays an integral role in successful collaboration. Pre- and post-occupancy "cultural scorecards" based on worker survey results showed measurable improvement in 11 key dimensions:

- Adaptability
- Identity
- Learning & development
- Idea generation
- Idea sharing
- Putting ideas into action
- Accountability
- Managing individual performance
- Risk orientation
- Team dynamics
- Trust

In addition, post-occupancy Workplace Satisfaction Surveys showed that 95% of respondents said their new workspace enabled communication between employees. Similarly, 95% said they had access to spaces for unplanned or impromptu meetings, and 68% said they now spend less than 5 minutes finding a place to meet. Improved productivity was cited by 82%, and 82% also said their workplace enabled

them to make effective and informed decisions. (The Steelcase Workplace Satisfaction Survey is a global research tool that designers have used with over 133 clients and nearly 23,000 respondents to understand a variety of workplace issues that impact employee satisfaction.)

As importantly, journal entries and interviews revealed that workers were genuinely energized by the new space. They expressed that they were better able to generate new ideas, build knowledge, and get multiple points of view.

PLANNING FOR COLLABORATION

As organizations and designers plan collaborative spaces, Steelcase researchers identified several planning considerations. Each calls for different space considerations and new best practices to successfully engage workers in working together.

Rolling collaboration

Sharing tacit knowledge in real time

- Enable staying 'in-flow' while in motion; leverage segues throughout the day with meaningful encounters via effective settings in casual environments.
- Support a "braided" collaborative experience — formal/informal, planned/impromptu, face-to-face/virtual.
- Encourage dynamic/iterative exchanges by providing visual tools for sharing and building ideas.

Density

Creating an energetic buzz

- Leverage the natural energy caused by density of occupants.
- Consider multiple uses of space.
- Provide visual/acoustical connections so workers can mentor and be mentored, learn through "eavesdropping," and share knowledge informally during the flow of the day.

Layering:

Accommodating multiple resources

- Provide for the layering of analog and digital information.
- Leverage vertical surfaces as communication/collaboration tools inside/outside of project team spaces to encourage knowledge sharing beyond the team.
- Enable real-time updates of the evolution of project work.
- Support the transition of analog work into digital documentation.

- Provide ways for workers to share information from personal devices in a larger format to encourage group participation.

Zoning

Providing the appropriate range of settings and acoustics

- Be mindful that more-open collaborative environments require a balance of enclosed spaces for focused work, conference calls, and telepresence.
- Consider zoning the overall environment into quiet, social, collaborative, and speakerphone areas.
- Enable workers to have choice and control of where they work by providing a range of settings to support multiple work modes: focused, social, learning, and collaborative. Consider a range of "I" to "we" settings in open and enclosed areas.

Proximity

No longer bound by "assigned seating"

- Encourage workers to switch where they sit on a regular basis to build stronger networks between people, projects, and ideas.
- Provide vertical surfaces close to collaborative neighborhoods to encourage interaction with content and to group-build a "shared mind" around ideas. Design shared information walls close to resident workers as reference points for ongoing work.
- Consider that any space or affordance that's more than 50 feet away from the workspace will typically not get used. Design meeting rooms, enclaves, project areas, etc., within close proximity of teams.

Tools

Critical for collaboration

- Plan every setting as a collaborative setting to maximize the opportunities for collaboration. Provide data, power, shared vertical elements (screens, whiteboards, tack space) to enable the exchange of tacit knowledge.
- Keep in mind that brainstorming tools that allow workers to democratically participate will best support idea building.

7) Social

Leveraging informal networks

- Consider breaking down silos between teams by providing shared casual space for information encounters and sharing work.
- Consider food as an attractor for bringing people together.
- Provide for support of shared spaces, collaborative tools, and work behaviors. Consider assigning an “owner” to help facilitate adaptation to the space and cultural changes.
- Provide open settings where people can work while making themselves accessible to others.

THE BOTTOM LINE

As knowledge work continues to evolve, collaboration is an emerging issue that's key to business growth. As workers seek to rapidly build on each other's ideas to create new forms of knowledge and innovation, the workspace can either significantly support or compromise their intentions and behaviors. Even as work becomes more dependent on technology and workers spend more time immersed in the digital world, the workplace is increasing in importance as the central hub that tethers workers to each other for interactions that are both necessary and desired. As such, the shift from private enclosed offices and cubicles to spaces that are intentionally shared and multifunctional may well be the biggest change in office design that happens throughout our still-new century.

Different work requires different space. As organizations reduce individual workspaces, there's opportunity to replace some of that space with solutions that foster collaboration, learning, fast decision-making and innovation. Done right, they can make traditional conference rooms obsolete.

ACKNOWLEDGEMENTS

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ENDNOTES

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