



## How collaborative workspaces nurture innovation.

### What got us thinking...

Every organization wants to improve communication, break down silos, and help people work together better. It's just good business. It's also a great way to foster innovation. In fact, most innovation in an organization is driven by people working in pairs. Research shows that when two people collaborate they learn more, solve problems better, and innovate more.

In addition, work in the knowledge economy is often team work: developing, sharing, and applying information with others. Therefore, a key to organizational success is how well people collaborate. So how can we plan the best work spaces for collaboration?

### Moving from force to trust

Historically, organizations built offices around the way their people reported. Proximity to power was proximity to management. The closer your office was to the CEO, the more power you had. Offices mirrored org charts: top management got the top floors, the most real estate, the most information. As you went down the org chart, so did floor space and information access.

As business has become more complex and the knowledge economy has taken over, information has become power. Work is global, workers are mobile, and people must work together to create, share, and manipulate information.

To handle increasingly complicated business issues and the tsunami of information, teams have proliferated and information networks have emerged. These networks are both physical and social, and they are a key to success in the information economy. Yesterday's workplace layouts can't support the collaborative work processes of today. As Peter Drucker noted, "Old organizations are based on force and new organizations are based on trust." <sup>1</sup>

So how do truly collaborative people work? What are the business benefits of supporting collaboration? How do you nurture communication and information sharing today? Steelcase research offers some answers.

## How work gets done

Steelcase research of different organizations across a variety of industries reveals that in today's knowledge-based economy, people spend nearly 80% of their day working either alone or in pairs. Much of that teamwork is working one-on-one with another person.

Working in pairs, or "dyadic" work, takes various forms. Steelcase has identified eight major types — from "talking over the back fence," an informal social exchange that evolves into information sharing, to co-creation work that's planned and may last for long periods of time.

Every time someone switches from solo to dyadic work, the work space changes. It changes from "I space," such as a personal workstation, to a "You and I" space, a place where two people work, such as when a coworker leans over a panel to confer with a colleague, or when someone drops in for a visit to kick around ideas.

Sometimes the pair moves to another space, moving their "You and I" space to another locale.

People in pairs share information and ideas, work together to create things, mentor and learn, and support and coordinate each other's work. Good ideas build on each other (laddering), important information is shared, tested, altered, retested, and solidified. From "what do you think?" queries through every step discovery and invention, the dyad gently nurtures innovation.

**Innovation measures jumped 15% when a design firm created a workplace that encouraged and supported brainstorming, peer critiques, and the free exchange of ideas.**

## Two heads are better...

Consider the essential relationships that foster so much learning: parent and child, teacher and student, business rookie and old hand. There's a synergistic power that pairs generate with focused face-to-face interaction, intimate communication, and working together. That dyadic power is why most innovation happens not by the isolated scientist in her lab, or

**"Millennials appreciate the knowledge the older person has acquired, and older workers in turn appreciate the ways millennials see the world today, and their vitality and agility in responding to it."**





Studies show that teams given visual display devices, easy access to storage, and the right worksurfaces, accomplish tasks twice as fast.

the designer logging long hours at his computer, but by people working together. In other words, collaborating. As author and consultant Warren Bennis puts it, we tend to forget that the Lone Ranger was part of a team. <sup>2</sup>

The power of collaboration even spans generations. A recent study co-sponsored by Steelcase showed that today's youngest members of the workforce, often called Gen Y or simply "millennials," are forming strong relationships with workers in the oldest generation, traditionalists, born before 1945. It's a complex relationship, according to the study.

Terry West, director of WorkSpace Futures Research at Steelcase, says the study showed that the two generations farthest apart in age work very well together. "They tend to form strong relationships based on learning *from each other*. It's not just a student-teacher relationship."

### Entrepreneurial actions spring from dyadic work

The size of the organization doesn't matter, according to the Steelcase research. Any size business, from multinational to micro start-up, can realize significant benefits from collaborative pairs, *if the work is actively and properly supported*.

For example, Pittsburgh-based communications design firm Agnew Moyer Smith, Inc. (AMS) opened a new workplace in 2004 designed to promote a free exchange of ideas, frequent brainstorming and work sessions, and peer critiques — work that's most often performed by people in pairs.

"The differences have been immediate and apparent," says Don Moyer, AMS principal. "We see more collaborative work sessions, clients spending more time here, more work on display and under discussion. Productive conversations happen at the coffee station. Across the board, I see us getting better results faster."

The effect of their workplace on the firm's people and work processes has been impressive: networks that encourage collaboration are 14% healthier; innovation measures are up 15%; effectiveness of work processes is up 37%.<sup>3</sup>

### Pairs need management's support

Many business professionals assume pairs work would naturally be supported in a modern, knowledge-focused organization. Yet most companies unwittingly place many obstacles in the way of the kind of collaboration that leads to innovation.

- awkward physical workplace arrangements
- furniture that discourages social interaction (that's how dyadic work often starts)
- offering few ways to accommodate how pairs want to work
- inadequate seating in personal workspaces (or none at all) for visitors
- awkward means for displaying and sharing information (or none at all)

Adding to the challenge: the needs of working pairs and how they interact vary by job type. For example, a pair of software engineers may require multiple monitors while working together, while industrial designers working with paper and three-dimensional prototypes need larger worksurfaces for shoulder-to-shoulder collaboration.



### Space essentials

After observing and categorizing the various ways people work in pairs, Steelcase researchers developed strategies for supporting dyadic work. To leverage the power of pairs, workplaces should support:

- quality interaction between workers, not just social communication
- easy transitions from individual work to dyadic work, and back again
- worker control over the duration and type of dyadic interaction
- guest amenities, such as information display, space to work, adequate seating, etc.
- positive interruptions for the individual that result in productive dyadic work

Key design issues for dyadic spaces include preserving the effectiveness of the individual, accommodating various types of guest behavior, and democratizing dyadic interactions.

Dyadic work often begins with social interaction. Improving communication through clear visual access, while balancing acoustical and visual privacy needs, means providing a range of open and enclosed spaces so workers have access to both “I space” and “You and I” space. If the space allows the worker to position themselves in their workstation in a way that signals their availability for dyadic work, it helps preserve the individual’s effectiveness.

The work of pairs work suggests for seated, standing, leaning, perching and various other alternative postures. Lightweight guest chairs for impromptu dyads, standing-height work-surfaces for short-term work with another person, and places to perch for quick consult are all appropriate applications.

When guests drop by for dyadic work, longer work surfaces support shoulder-to-shoulder collaboration. Access to information is important in any dyad, so physical and technological barriers should be addressed with white boards, monitor arms, display tools and other methods.

During Steelcase research, a test group was provided dual monitors in a single workstation with a worksurface appropriate for supporting two people working side by side. At the end of the research, participants reported improved productivity of up to one hour per day. At the end of the study, the test group didn’t want to give up the dual monitors.

### Fact pac

Pairs learn by “laddering.” When two people collaborate, they build on each other’s thoughts and ideas. Psychologists call the process laddering. It starts when we’re young and it’s critical to how we learn.

Dyads are wonderful problem solvers. A University of Pittsburgh study of 22 dyads showed that people solve more problems correctly when they collaborate, especially when the tasks are conceptual or complex.

Dyads overcome institutional inertia to innovate. Finnish researchers investigated the dynamics of business networks and found that dyads play a central role in business. They contend that dyads are best suited for overcoming the inertia that exists in corporations and effecting the most change. They concluded that all entrepreneurial and strategic actions within companies come from dyadic work.<sup>4</sup>

## Fact pack

Collaborators must be able to manage their technology. Researcher Charles Crook notes that computers can help or hinder how people collaborate and says “material environments will constrain and facilitate a whole range of social interactions that can occur within them.” Thus, the collaboration and effectiveness of a group can be encouraged or hindered by the layout of the space.<sup>5</sup> Additional research has shown that displays and input devices have a major impact on the effectiveness of dyads since they significantly change ergonomic conditions and workspace requirements.

Democratizing dyadic work is important to both individuals in a dyad. Establishing an equal footing promotes information sharing and the laddering of ideas. Easily reconfigured worksurfaces (for example, a mobile table, or an adjustable height worksurface) and padded seats on mobile pedestals provide easy places for shoulder-to-shoulder discussions. Thus egalitarian spaces support powerful collaboration, learning, and innovation.

### Group collaboration

As work becomes more cross-functional, group collaboration has become more important. Workers today routinely share information and ideas across aisles, divisions, even continents. Group, or “we” spaces, help facilitate collaboration, which can range from casual, spontaneous interactions to more formal, structured work sessions.

Unfortunately, group spaces such as well-planned team areas and project rooms are typically in short supply in business workplaces.

Steelcase has identified several successful approaches to group workspaces. One approach is to add a collaborative zone to a work station cluster. A collaborative area with a table and chairs supports both dyadic and small groups. Access to worksurface, piling areas, and archival storage helps support the sharing of information and ideas.

Another approach is to provide a collaborative space or “neighborhood” in the midst of a group of workstations. Pairs and small groups can collaborate close by their workstations and stay in close proximity to resource information and project artifacts.

One key element of such neighborhoods is vertical display space, especially in visual businesses (engineering, architecture, advertising, publishing, etc.). Plenty of vertical space allows the group to post their work, which informs and inspires others, provides easy access for review and edit, and showcases completed projects for the rest of the organization.



### Boeing collaborative spaces take off

Businesses that plan workspaces to support collaboration have seen significant results. The Boeing Company had engineers and office workers housed in a separate facility a quarter-mile away from the mechanics and manufacturing employees in the plant who built the company’s 737 aircraft. Communication between the people who designed the planes and those who built them was difficult and slow.

For its new \$10 billion Renton, Washington manufacturing site, Boeing literally built communication and collaboration support into the workplace. The people who design the planes now work in the same facility with the people who build them. There's a visual connection between workers. Glass walled offices sit not far from 737s under construction. There's plenty of group space for impromptu meetings, even communal "knowledge cafes" with libraries, soft-seating, and information display equipment.

These improvements don't take any more room. In fact, Boeing reduced the facility's real estate usage by 40%.

Boeing measured the change brought by their new facility and the organization's changes in work process and work culture:

- a newfound "connectedness" between employees and the aircraft
- earlier and better problem solving
- a higher sense of urgency to improve
- greater worker satisfaction.

Those factors, and the adoption of a lean manufacturing approach, contributed to a huge improvement in productivity: it used to take 24 days to build a 737. Now it takes just 12.

### Groups need tech, too

Wireless technology continues to change how and where people work. People spend less time in their own space, more time in other locations. This might suggest a declining need for fixed technology in the workplace. In fact, Steelcase research suggests the opposite is occurring.

Consider the contents of a typical mobile worker's briefcase or backpack: laptop, wireless phone and/or PDA, perhaps some CDs or a USB travel drive, maybe an iPod. Workers thus equipped can work on their own and from practically anywhere.

Yet the reality is that they still work frequently with others. It's both the nature of knowledge work and the desire of knowledge workers to interact and collaborate. Cross-functional teams need face-to-face collaboration more than ever. They also need places to meet: project spaces, meeting rooms, team areas. They need to tap into networks, hook up to projectors, and display information on flipcharts and marker boards.

So instead of a group of unconnected individuals, we have dyads and teams working together. These workers now need to leverage both mobile tools and the power of collaboration. One approach, especially when real estate is at a premium, is to take advantage of in-between space such as a hallway or part of a larger room and turn it into a productive, collaborative space. Lounge seating makes the space a more informal and comfortable place for collaborating.

An investment in visual display devices such as electronic whiteboards, and support for information persistence with convenient open and archival storage and surfaces for piling materials, pay substantial dividends: studies show that teams accomplish tasks *twice* as fast when they use those tools.

### Methodology

The data and insights forming the basis of this paper come from two major research projects. First, the Steelcase Workplace Survey, an ongoing research project to study and analyze workplace and worker needs, issues, and attitudes. Begun in January, 2004, the Workplace Survey includes surveys of employees in over 50 different organizations around the world. Feedback on about 40 different workplace issues allow benchmark comparisons of employee satisfaction levels, what affects the performance of the workplace, the causes of lost work time, the implications of different work styles, and the different ways people manage information in a knowledge economy. The Survey results are tabulated on an ongoing basis, and currently are based on responses from over 9,300 workers.



## Methodology

Steelcase's ongoing user-centered research is the second information source. Using a proprietary process —Understand/Observe/Synthesize/Share — Steelcase researchers transcend focus groups and questionnaires to observe workplaces in use. Researchers take thousands of photographs, conduct video ethnography, use time lapse photography, and carefully document their observations, then synthesize their observations to identify important patterns and trends. They distill these key findings into principles that guide user-centered design. By sharing this research in papers such as this one, and through other methods, we hope to inform and inspire others interested in workplace planning.

Additional insight was provided by “Capture It: Knowledge Interactions and the Flexible Older Worker,” a study conducted by the Helen Hamlyn Research Centre at the Royal College of Art in London, in partnership with design firm IDEO, architects DEGW, and Steelcase.

**Be true to the team:****There are many ways that space can nurture group collaboration**

Colleges, for example, use hallways, atriums, and other communal spaces to support easy collaborations between students and faculty in between classrooms, offices, and labs. Window ledges are made wide enough to function as workspaces or seats. Information displays and computers are located in heavily trafficked areas. Wireless networks reach the furthest courtyard.

Access to technology is important, but much work remains paper-based in many industries. Collaborative spaces can easily support groups working with massive amounts of paper. Sufficient horizontal workspace and display space, and visual access to materials and information in storage are critical considerations.



Project team spaces are more common than ever. Lawyers need a dedicated case room, auditors need a space to sort through massive amounts of paper, or a cross-functional team needs space for product development.

Conference rooms are the first to get hijacked by such a group, a move that actually benefits neither the team or the organization. Designed too-often for sit-down meetings, conference rooms lack the technology, display capability, resource storage, and flexibility that a team needs. Plus, adjacencies of key personnel, such as a paralegal's proximity to a case room, and ready access to materials, need to be considered. A borrowed conference room usually provides few of these benefits.

Sometimes a team space is the workers' home base, too, such as when workers spend most of their time at a client site. Providing spaces for heads-down concentration in the context of the team space is important, as well as centralizing resources for the group. An added benefit of a well-planned group space can be a reduction in square footage per person by combining the home base and team space into one.



### A quick summary: Make space for innovation

The myth of the larger-than-life individual working alone to create amazing new inventions is romantic and compelling, but nevertheless a myth. In a global knowledge society, people working together is the real source of innovation. From impromptu “what do think about this?...” conversations in the hallway to planned dyadic workspaces, collaboration is how people need to work today. Organizations who plan workspaces to support collaborative work processes and work styles will be the most likely to produce larger-than-life innovations.

#### Footnotes

- <sup>1</sup> Peter Drucker, Harvard Business Review, 2000
- <sup>2</sup> Warren Bennis and Patricia Ward Biederman Organizing Genius: The Secrets of Creative Collaboration, Perses, 1997
- <sup>3</sup> Results gathered using Steelcase Workplace Effectiveness measurement tools. Reported in “Case Study: Agnew Moyer Smith, Inc.” Steelcase, Inc. December, 2004
- <sup>4</sup> Aino Halinen, Asta Salmi and Virpi Havila “From Dyadic Change to Changing Business Networks: An analytical framework” Journal of Management Studies, November 1999
- <sup>5</sup> Charles Crook Computers and the Collaborative Experience of Learning, 1994, Routledge