Intel IT Center
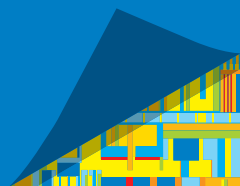
Modern Collaborative Technologies

Supporting Next-Generation Collaboration in a Changing Workplace

WHY YOU SHOULD READ THIS DOCUMENT

This planning guide can help IT managers establish the foundation for an immersive collaborative experience across the organization by understanding:

- Why improving the collaboration experience for all workers, whether in or outside of the office, is an integral part of modernizing how work gets done

- How supporting large team collaboration can be fully interactive and seamless, even when workers are dispersed across cities and countries

- How enabling smaller team and 1:1 collaboration can be more convenient and cost-effective by implementing the right technologies and tools

- What best practices and solutions have enabled Intel IT to support global collaboration

- How to deliver a seamless experience by using a rich client platform, such as one based on the latest Intel® Core™ vPro™ processors

Contents

Introduction

In business today, work is becoming less about a place people go and more about what they do. The latest innovations in technology have helped to create a distributed workforce, from ubiquitous Internet connectivity and cloud to a range of new devices. And that workforce now has the flexibility to work whenever they want, from wherever they can.

By embracing this new way of working, organizations can modernize how work gets done and change the way that workers turn information into action. Improving the collaboration experience for all employees, whether in or outside of the office, is an integral part of doing this successfully. When employees can easily work together regardless of location, it improves workflow and ultimately increases productivity across the business.

Delivering this level of compute flexibility also helps organizations differentiate and gain a competitive edge. If the right talent happens to be in another city or even another country, businesses can attract and retain that talent by supporting a compute experience that accommodates the level of flexibility and mobility that employees expect.

And as early as 2020, more than half of the workforce will be millennials, a generation that has grown up with technology in all aspects of their lives. As work styles continue to evolve, your workers will expect there to be new ways to collaborate, whether they're sitting next to one another or halfway around the world. Are you prepared?

New Workplace, New Challenges

With new ways of working comes the need for new ways to collaborate. In the past, collaborating with coworkers often meant having a face-to-face meeting in an office or conference room. This is no longer a guaranteed scenario. Because workers are dispersed, many companies are finding it harder and harder to schedule in-person meetings and manage the requisite travel arrangements and related expenses. As the workplace becomes more conceptual and less of a physical location, organizations must find the right way to let workers conduct business as if they were in the same room.

If some of your employees are together in an office building and some are remote, they need an easy way to connect and work together to keep things moving forward. Both IT and users agree: More than half of IT workers say the goal of enabling collaboration is to improve efficiency, while 65 percent of users see increased productivity as a direct benefit of collaboration.[1]

Yet for a distributed workforce, achieving this level of collaboration can be an obvious challenge. And it starts with the technology. When the available technology isn't sufficient, it can hamper workflow and drag down productivity. Even for employees in the same room, it can be difficult to connect to a projector and share work if you don't have a compatible adapter.

And while sketching ideas on a whiteboard is a popular brainstorming method, it has serious limitations for remote workers attending the meeting by phone. It also creates extra work for those in the conference room. Someone either has to explain what's written on the whiteboard, copy the work by hand into meeting notes, or take a photo of the whiteboard and e-mail it to the remote attendees. Remote workers can miss the opportunity to respond in a timely manner, and the true "collaborative" nature of the brainstorming effort is lost.

Enabling Next-Generation Collaboration

By taking a proactive approach and putting modern technology solutions in place, you can support existing workflows in real time and workers can speed decision making, whether they are across the table from one another or collaborating online.

IT is in the unique position to begin laying the groundwork for a fluid, immersive collaboration experience across the enterprise. This next-generation approach includes modern workspaces that are equipped with the latest innovations in wireless technology and collaborative tools.

The result is a natural, intuitive way for people to connect, both in and outside of the office. With the right tools and the right approach, you can increase productivity and agility across the business—whether it's for a large global team, a smaller group, or a simple one-on-one session.

Why Collaboration Matters

Employees spend 40 percent of their time at work collaborating.[§] Whether it's for a presentation, a brainstorming session, or simply getting a colleague's input on work, collaboration should be time well spent.

[§] *2011 Consumerization of IT Study: Closing the "Consumerization Gap."* Unisys (July 2011).

Approach #1:
Supporting Collaboration for Large Teams

When it comes to large groups, you may have workers around the globe who need to collaborate. This may include groups of workers in conference rooms at separate company sites, or individual workers at multiple remote locations around the region. And some workers may be simply dialing in from their desks instead of joining a larger group in a conference room.

For larger teams like these, re-creating that in-person "face-to-face" meeting experience can be a challenge. The technology must enable the right level of interactivity for all participants to work together seamlessly, regardless of location.

With an interactive whiteboard and HD audio and video capabilities, you can create a real-time meeting experience for all participants, putting everyone in the same virtual room.

- **Using interactive whiteboard capabilities** – Let's say you have workers at two different company sites with electronic whiteboard capabilities. With an interactive whiteboard and an ultrasmall form factor in place, team members at each site can view and edit the work in real time. Integrated video capabilities let workers see each other and collaborate with ease: One team can use the whiteboard to share a presentation or image, and all team members can create and edit content simultaneously from either location.

  Even better, all edits are automatically saved, transcribed, and distributed as soon as the meeting ends. All workers can participate in real time, and there's no extra time spent trying to capture things after the fact.

- **Adding a mobile PC** – This level of interactivity also works well when some users are remote. Some team members might be in a single conference room with electronic whiteboard capabilities, while others are calling in from mobile PCs with touch screens that allow them to participate in interactive sessions. By using integrated video capabilities, Internet access, and online meeting software, all participants can see and hear one another and make live edits to the electronic whiteboard. And it tracks in real time: If a remote worker makes an edit, it is instantly live in the conference room, and vice versa.

Approach #2:
Bringing Together Small Teams

Smaller group meetings often have the same technology challenges as larger groups, whether people are working together in the same room or collaborating virtually from multiple locations. Luckily, today's intuitive display solutions are best suited for these smaller work sessions and also work well for compact spaces.

- **Working without wires** – By using new wireless display capabilities and an enabled mobile PC, workers have everything they need at their fingertips. Whether they're collaborating with team members or with clients, workers can connect wirelessly and securely to a conference room projector or monitor to share work.[2] By adding a simple adapter to an existing projector or display, workers can connect automatically. Soon, capabilities such as wireless docking and wireless charging will help create an even more seamless working experience while doing away with the clutter of wires.

- **Deploying an all-in-one (AIO) solution** – If workers have colleagues visiting from another site for a face-to-face meeting, they might use a conference room with a dedicated AIO solution that simplifies collaboration and modernizes your workplace. This can include a portable AIO PC, which can be mounted or installed in the room and function as a smart screen. Or it might be a movable AIO PC housed on a cart, giving workers the flexibility to move it from room to room as needed.

The use cases are flexible for this modern solution: Workers can quickly access a presentation from a shared team site to review and edit with the group, or use the multitouch-enabled smart screen for brainstorming. This option works well when workers don't have electronic whiteboard capabilities because the AIO PC can function in the same way.

Approach #3:
Enabling 1:1 Collaboration

Finally, meeting one-on-one can pose its own challenges, especially because the level of technology can vary. Often, a client may not have access to the same resources as your workers and vice versa. The latest touch-enabled mobile PCs can help solve this challenge.

- **Working flexibly with a 2 in 1 device** – Let's say a worker is in a face-to-face meeting with a client and discussing a document. With a 2 in 1 device, they can readily convert it to a tablet to share the screen, or simply flip the screen and present work across the table. It's an intuitive way to stay focused on the task at hand and follow the natural flow of work without technology getting in the way.

- **Creating a virtual meeting room** – Whether workers are in the same room or collaborating online, mobile PCs can serve as virtual meeting rooms using technologies such as Microsoft* Lync* and many others. Workers can easily share their desktop, edit documents together in real time, and brainstorm by using the touch screen. And by enabling audio and video calls directly through the PC, you can reduce the number of landlines and bridges needed for your organization.

Intel IT: An Inside Look at a Global Approach

With the need to support 98K employees at 168 sites in 65 countries, Intel IT is constantly working to optimize collaboration across its global business. Nearly two decades ago, collaboration at Intel was primarily done face-to-face. Yet as new technology became available, Intel IT acted proactively to build a foundation for a mobile enterprise. And just three years later, 80 percent of employees had embraced mobility at work.[3] By providing the right devices and enterprise services—including an advanced wireless network—employees were able to work securely from any location with Internet access.

Intel IT: Solution Requirements

Intel IT wanted to create a set of solutions that support high-quality collaboration. Each solution must be:

- Using an all-in-one or other compact PC based on Intel® vPro™ technology
- Cost-effective
- Flexible
- Readily available

Supporting Personal and Team Collaboration Tools

For Intel IT, embracing mobility was only the first step. It was followed by making changes within the business to accommodate this new way of working. One of the more recent approaches Intel IT used was to develop a strategy to evaluate and deploy the collaboration tools needed at Intel. This included addressing two separate types of tools: personal and team collaboration tools.

To make it easier for individuals to work together, Intel IT enabled personal collaboration tools that allow workers to quickly chat using instant messaging; easily conduct a video call; or review a document simultaneously on a shared desktop or a personal notebook.

And to simplify team collaboration, Intel IT expanded equipment so that workers can easily conduct audio and video conferences; chat by web cam; connect via social networking; or access shared content repositories and web sites for easier document sharing.

Practical Application: The Technology

To meet the goals for both personal and team collaboration, Intel created "Smart Space" environments that are designed to integrate people, devices, and places. The aim was to facilitate natural and seamless collaboration.

Each approach is powered by a two-tiered solution that includes a hardware-assisted infrastructure for larger group collaboration and software-based solutions that are running on mobile devices and optimized for individual use. Two examples include the mobile phone booth and the collaboration cart:

- **Mobile Phone Booth** – This is a touch-based AIO PC based on the Intel® Core™ i5 processor with Intel vPro™ technology, which is designed for small conference rooms. Workers can easily connect it to existing immersive video rooms using high-quality audio and video. This device is also a simple yet cost-effective way for Intel to extend its video capabilities, and it allows workers to use the electronic whiteboard with touch.

- **Mobile All-in-One Lab Cart** – Similar to the technology carts in use at many schools today, Intel's mobile lab carts are designed specifically for lab use. Workers can easily move the carts around from room to room and get great visuals with a pan-tilt-zoom (PTZ) camera that has remote directional and zoom control.

Both collaboration devices include the following capabilities:

- A 23-inch AIO PC running a locked-down, appliance-type interface. The CPU can handle high-quality and high-rate video. The minimum processor is an Intel Core i5 processor with Intel vPro technology.[4]

- Integrated user interface framework with a plug-in architecture that allows the use of the existing supplier back end with existing or altered supplier front-end software.

- Intel Active Management Technology (Intel AMT)[5] with KVM Remote Control, which allows remote capabilities such as power control, fixes, and support.

Videoconferencing Cuts Costs

In one year alone, videoconferencing saved Intel more than $26M in travel expenses and 57K travel hours and employee time spent.[§]

[§] *Enabling Global Collaboration with Intel®-Based Infrastructure.* IT@Intel (January 2011).

The Results: Cost Savings, Happier Employees

The savings Intel realizes over the course of one year with just videoconferencing is powerful, especially as employees become more dispersed and travel costs continue to rise.

Equally important, the collaboration tools have proven to contribute significantly to employee job satisfaction. Intel workers report that seeing their colleagues' faces and interacting with them in real time not only increases productivity, but it makes their jobs more enjoyable. Workers are able to connect personally and more easily stay within the flow of work no matter where they are.

With two-thirds of employees across Intel geographically dispersed, these tools have become an integral part of the workday. In one week alone, employees send 2 million instant messages, log 15 million audio minutes, and engage in 165K collaboration sessions via their computers.[6] Moreover, the collaboration tools have allowed Intel to expand its reach to customers around the world, regardless of location.

The Vision: More Change Ahead

As technologies continue to evolve and work styles continue to change, the way people collaborate will invariably change as well. In the immediate future, Intel plans to reduce its remaining landlines and related costs since employees are increasingly using their PCs for calls and videoconferencing. Instead, there are plans to investigate and potentially deploy other advancements in mobile telephony.

Technologies are beginning to offer even stronger integration with software, such as click-to-dial capabilities and the ability to seamlessly transfer a call to a cell phone. Moreover, many newer laptops based on the latest Intel Core vPro processor are certified for Microsoft Lync software, offering business-class videoconferencing and powerful collaboration tools that include high-quality microphones and cameras.

Delivering a Seamless Experience with a Rich Client Platform

Together with its industry partners, Intel continues to be a thought leader in optimizing the collaboration experience for today's mobile workforce. From interactive whiteboards and powerful collaboration software to a high-speed wireless network and the right adapters, all of these modern tools help create the foundation for a seamless experience.

When you deploy these powerful tools across the organization, you can empower your distributed workforce to improve decision making, simplify tasks, and ultimately increase business productivity.

And by starting with the foundation of a rich client computing platform based on the latest Intel Core vPro processor, you can support the collaboration experience even further. Combined with the latest mobile form factors, you can deliver the flexibility your workers want with the powerful technologies and built-in security features that your business requires.

Real-Time Whiteboard Capabilities

When your employees are working with a rich client mobile device, such as a laptop, 2 in 1, or Ultrabook™ system, they can easily join a conference room meeting virtually—whether they're connecting from an off-site location or simply sitting at their desks. By combining integrated video capabilities, Internet access, and online meeting software, workers can see and hear everyone in the conference room, and even make live edits to the electronic whiteboard.

These same high-performing mobile devices can also serve as a virtual meeting space between two or more coworkers at different company locations. They can share their desktops to brainstorm, edit, and collaborate in real time.
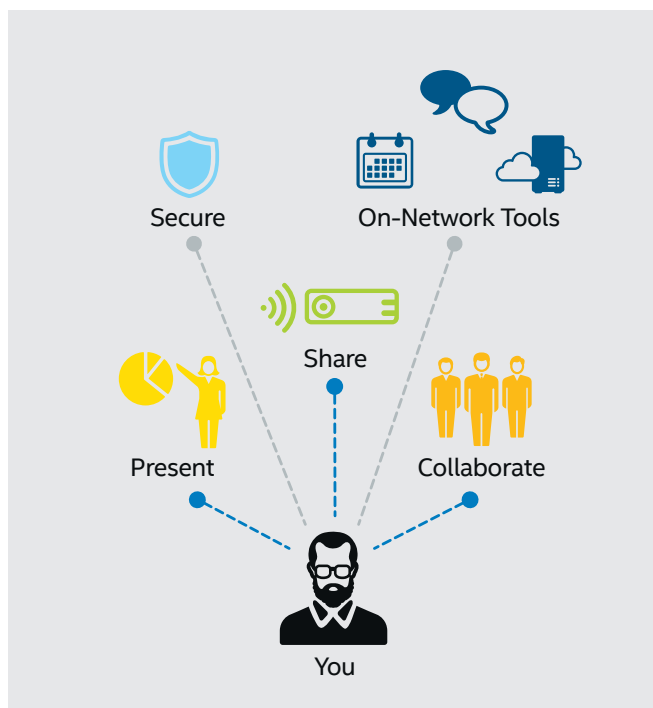
Intel® Pro Wireless Display Technology

With Intel® Pro Wireless Display technology,[2] you can achieve more secure wireless projection and make it even easier to share work. By adding an adapter to your existing conference room projectors, displays, or monitors, you enable workers to seamlessly project work from their mobile devices with the latest Intel Core vPro processor inside. And with a more secure connection, workers can rest assured that they're projecting only in the conference room they intended.

Moving forward, Intel will continue investigating the opportunities to expand these technologies with wireless docking and wireless charging capabilities. In other words, a workplace without wires will soon become a reality.

Integrated Audio and Video

Intel has made great strides in optimizing both the audio and video experiences on the latest devices. Workers can enjoy seamless, clear exchanges with the following improvements:

- Audio quality of Voice Over Internet Protocol (VoIP) calls is now better than using a standard phone line.

- Dual-array microphones are designed to cut down on background noise.

- New 3-D camera capabilities now include the option for HD video.

Built-In Security Features and Remote Manageability

The latest Intel Core vPro processor technology is designed to help address the critical security issues of today's enterprise, from threat management and data protection to identity and access issues.

- Powerful, built-in security features[7] deliver added protection for mobile workers working off-site on a mobile device.

- Embedded encryption technologies help protect data exchanges for dispersed workers with hardware-based acceleration for faster encryption that won't slow system performance.[8]

- The remote management capabilities of Intel AMT[5] give you the ability to remotely access and control devices across multiple locations, as well as resolve issues through all states of operation, including reboot.

- Remote remediation tools let you work easily behind the scenes, without impacting user productivity.

Next Steps

Intel is continuing to work with its ecosystem partners to expand these capabilities and enable new collaboration solutions across technologies and tools. From wireless docking and charging to the latest HD audio and video features, the experience will only improve. As work styles continue to evolve, so will the modern solutions that make that work possible.

Today, IT is in the unique position to move the business forward by implementing these new collaboration technologies and devices across the organization, whether workers are in or outside of the office. And with the power of a rich client platform, you can support a fully interactive, seamless experience, whether it's for a large global team, a smaller meeting, or a one-on-one session. You'll also have the peace of mind of built-in security features[7] that are designed to protect your data and devices from any location.

By laying the foundation for an immersive collaborative experience, you not only connect your dispersed workforce and make it easier to get the job done better, but you can streamline workflows across your business. And by doing so, you can change the way that your organization turns information into action.

Additional Resources

What's Next in the Near Future of Work
Watch this video to see the latest technologies in action, from wireless capabilities and touch-screen collaboration to a digital assistant and facial recognition.
www-ssl.intel.com/content/www/us/en/enterprise-mobility/secure-network-vermeer-my-assistant-video.html

The Future of Knowledge Work
Get the latest insights on the changing nature of the work environment and the ever-increasing impact of technology in the very near future.
intel.com/content/www/us/en/it-leadership/future-of-knowledge-work-place-transformation-paper.html

Transforming the Workplace
Get Intel's insights on innovation, technology, and the journey to the transformed workplace.
intel.com/content/www/us/en/enterprise-mobility/workplace-transformation-white-paper.html

Mobile Computing Collaboration on 4th Gen Intel® Core™ Processor
Watch how a globally dispersed team armed with 4th generation Intel Core vPro processor-based computing devices can collaborate and respond quickly and efficiently to the task at hand.
intel.com/content/www/us/en/processors/vpro/mobile-computing-collaboration-4th-gen-vpro-video.html

Inside IT: Transforming Sales Productivity with Social Collaboration
Listen to this podcast to learn how Intel IT partnered with the company's Sales and Marketing team to create a social collaboration platform in order to keep up with the velocity of business.
intel.la/content/www/xl/es/it-management/intel-it-best-practices/inside-it-transforming-sales-productivity-with-social-collaboration-podcast.html

Intel® Pro Wireless Display: Built for Business
Watch this video to explore the features and benefits of Intel® Pro Wireless Display (Intel® Pro WiDi), and find out how it can deliver a more secure wireless display solution for your business network.
intel.com/content/www/us/en/architecture-and-technology/intel-pro-wireless-display-video.html

Evaluating Intel® Pro Wireless Display for Enterprise Use
Find out how Intel IT and Intel's product development team have collaborated on Intel® Pro Wireless Display to define feature requirements and implement them in a user-friendly product.
intel.com/content/www/us/en/it-management/intel-it-best-practices/evaluating-intel-pro-wireless-display-for-enterprise-use-paper.html?wapkw=evaluating+intel%C2%AE+pro+widi+technology+for+enterprise+use

Endnotes

1. *Enterprise Collaboration Strategy.* CDW (December 2013).
2. No computer system can provide absolute security under all conditions. Intel® Pro Wireless Display Network Security features require a system with an Intel processor with Intel vPro technology. 1080p and Blu-ray or other protected content playback only available on select Intel processor-based systems with built-in visuals enabled, a compatible Intel® WiDi adapter and media player, and supporting Intel® WiDi software and graphics driver installed. Consult your device manufacturer. For more information, see intel.com/go/widi.
3. *Increasing the Business Value of Mobility.* IT@Intel (December 2008).
4. Intel vPro technology is sophisticated and requires setup and activation. Availability of features and results will depend upon the setup and configuration of your hardware, software, and IT environment. To learn more, visit intel.com/technology/vpro.
5. Intel® AMT should be used by a knowledgeable IT administrator and requires enabled systems, software, activation, and connection to a corporate network. Intel AMT functionality on mobile systems may be limited in some situations. Results will depend on your specific implementation. Learn more by visiting Intel® Active Management Technology.
6. IT@Intel (September 2014).
7. No computer system can provide absolute security. Requires an enabled Intel processor, enabled chipset, and enabled firmware and/or software optimized to use the technologies. Consult your system manufacturer and/or software vendor for more information.
8. No computer system can be absolutely secure. Requires an enabled Intel processor, as well as a system and software designed to use the technology. Check with your manufacturer or retailer.

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The *Modern Collaborative Technologies* planning guide is brought to you by the Intel® IT Center. The Intel IT Center is designed to provide IT professionals with straightforward, fluff-free information to help them implement strategic projects on their agenda, including virtualization, data center design, big data, cloud, and client and infrastructure security. Visit the Intel IT Center for:

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