IT@Intel Brief

Intel IT
2-in-1 Devices
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Factory Mobile Computing Proves Enterprise Value of 2-in-1 Devices

- Increases use of touch technology through a unique form factor
- Provides a lightweight, smaller device for tough environments
- Boosts productivity by offering both laptop and tablet capabilities
- Reduces total ownership cost by combining two devices into a single unit

Intel IT is deploying 2-in-1 combination laptop and tablet devices to help satisfy a growing demand for mobile and touch-enabled computing. Our analysis and feedback from employees show that 2-in-1 devices in the enterprise can increase job satisfaction through improved productivity and efficiency, while producing significant time and cost savings (see Figure 1).

As a result, we are accelerating deployment of 2-in-1 devices through the corporate PC refresh cycle. In addition to standard laptop PC benefits, 2-in-1 device deployment focuses on those environments where touch technology has proven advantages and where employees can benefit from the device's flexible form factor.

A recent Intel IT study of the 2-in-1 device within the Technology Manufacturing Group (TMG) produced overall favorable usability ratings. The study also demonstrated that the combination laptop and tablet addresses several previously unmet use cases in TMG's challenging workspaces, where the 2-in-1 device is destined to become vital for engineers and technicians.

2-in-1 Devices Offer Flexibility and Performance

Tablet-like Capabilities
- Designed for touch interaction
- Instant-on/quick resume
- Apps ecosystem
- Lightweight, thin design and long battery life

Laptop-like Capabilities
- Full PC performance and productivity
- Support for PC applications and key usages
- Multiple input options such as touch, stylus, onscreen typing, or a detachable keyboard
- Multitasking environment

Figure 1. The 2-in-1 mobile device offers performance and flexibility suitable for use in many of Intel's varied work environments.

Staying Current on Mobile Devices

Intel IT regularly evaluates innovations in computing platforms to determine their suitability and benefit to the overall business. Mobile computing's rapid evolution has prompted dozens of internal surveys, proof-of-concept studies, and use cases that have helped us determine the feasibility of using mobile devices across the company's work disciplines and environments.

These evaluations have been broad in scope. For example, the evaluations have examined differences between consumer-class and enterprise-class devices, as well as the usability and financial impact of allowing bring-your-own mobile computer platforms.

We remain committed to standardized computing platforms based on Intel® architecture, specifically those that increase employee mobility and productivity while reducing total cost of ownership.

Mobile Technology Benefits

About 80 percent of Intel employees currently use mobile computing devices in the workplace. Most of these devices are traditional laptop PCs that offer powerful processing and fast performance but can be cumbersome in some of Intel's environments. To address the situation, we recently began providing Intel® architecture–based tablets in our factory workspaces. For technicians, these tablets have been shared devices, while engineers generally have had laptops as their primary devices. Our overriding objective has been to provide the mobile devices best suited to specific use cases and workspaces.

While the smaller and lighter touch-enabled tablet has advantages in many cases, for employees requiring both a traditional notebook and a tablet experience, the additional device increases the total device cost per employee. As an alternative, 2-in-1 devices offer a new level of device flexibility for satisfying the requirements of diverse use cases. A recent Intel IT decision to standardize on Microsoft Windows* 8 for both laptops and tablets has further broadened the appeal of 2-in-1 devices. The results of this standardization include improved training and device compatibility for laptops, tablets, and 2-in-1 devices across the enterprise, more efficient maintenance, and strengthened security.

In our factories, moving to 2-in-1 devices means technicians can access a more flexible and powerful 2-in-1 device, and engineers can obtain a more multi-use replacement for their traditional laptops. For both technicians and engineers, the 2-in-1 device has proved to be more advanced and flexible than their predecessor devices, with greater potential for increased productivity.

Flexibility in 2-in-1 devices also extends to processors. We have found that 2-in-1 devices with Intel® Core™ processors provide the performance in both the laptop and tablet components that many enterprise applications require. Devices with Intel® Atom™ processors are suitable when less powerful processing and RAM are required, which is often the case in our assembly factories. These processors also provide better battery life.

Productivity, performance, and form-factor considerations have driven the selection of 2-in-1 devices for TMG. Recent evaluations and proof of concepts indicate that enterprise-level 2-in-1 devices satisfy many of our usability concerns.

Expanding Usage of 2-in-1 Devices

Both mobile computing and touch technologies are vital in Intel's varied manufacturing workspaces. As part of Intel's multi-year effort to adopt lean manufacturing processes, we have determined that mobile devices can increase productivity and organizational velocity—while still meeting workflow and safety requirements—in our factories, clean rooms, and construction sites.

Our studies confirm repeatedly that "one size does not fit all" regarding computing devices in our manufacturing environments. In some workspaces, such as clean rooms, laptops are cumbersome and require keyboard entry, while lighter, touch-enabled tablets are easier to use. In other situations, such as when performing data analysis, the keyboard entry, software compatibility, and increased power make the laptop the preferred device. In TMG, some users regularly work in more than one type of environment.

To deliver touch-based solutions and applications in the factory, Intel IT is facilitating faster application-development capabilities by providing application developers with 2-in-1 devices. Meanwhile, several TMG legacy applications are being updated with touch technology.

Testing in Manufacturing Environments

Since mid-2013 more than 1,500 TMG employees, including engineers, technicians, and nonfactory TMG workers, have been using 2-in-1 devices. The specific 2-in-1 device has an attached tablet that is adjustable to different positions in relation to the PC keyboard. Because the 2-in-1 device functions as a single unit, users can access either the laptop or tablet on demand.

We recently conducted an IT usability survey to determine how this particular 2-in-1 device fits the needs of employees in both Assembly and Test Manufacturing, and Factory and Sort Manufacturing. The survey asked mandatory questions to determine the following:

- Do the capabilities of the 2-in-1 device meet employee work requirements?
- Is the 2-in-1 device easy for employees to operate?
- Can employees easily update and correct their data entry using the device?

Several optional, open-ended questions pertained to the specific 2-in-1 device model that the employees have been using. We wanted to determine how this 2-in-1 device model compared with the employees' previous laptop computers, how much employees used the tablet component, and how important employees consider the tablet functions.

Among the survey's findings were the following:

- Two-thirds of TMG employees were satisfied with the 2-in-1 device.
- The remaining one-third preferred a different device, such as a sole laptop or desktop PC.
- Technicians and engineers viewed the 2-in-1 device more favorably than nonmanufacturing employees. Technicians gave the device a score of 81 out of a possible 100, engineers gave it a score of 71, and nonfactory employees gave it a score of 69.
- The importance of the tablet function was not tied to the amount of use, but to the type of use. For example, a technician may use the tablet only occasionally for viewing on-the-job repair procedures or entering data while standing, but considers those times to be very important.
- Employees who considered the tablet function the most important still wanted the laptop component, rather than just the tablet, available to them.

What Users in the Technology Manufacturing Group (TMG) Say about 2-in-1 Devices

Here are several comments that TMG employees offered as part of our recent IT usability survey related to 2-in-1 devices:

- "The tablet's smaller size makes it superior for working in cramped spaces or busy places." – TMG technician
- "I also very much like the revolve feature. There are times when I just need to read through emails or contracts and converting to a tablet and reading pages rotated to a 'letter display' is much more enjoyable and comfortable on the train ride home." – TMG construction project engineer
- "Allows me to make the best use of the touch screen and really helps me work with greater flexibility and comfort." – TMG logistics analyst
- "It's easy to switch between laptop and tablet mode." – TMG field customer quality engineer
- "The tablet is important for reading real-time procedures and specs while performing maintenance." – TMG technician
- "It helps auditing configuration of tools in the fab. In tablet mode, you can refer to an image or document while walking around the tool." – FSM process engineer
- "The small size is very comfortable. I actually replaced my paper notebook with it." – TMG equipment engineer
- "I like the 2-in-1 experience of switching back and forth between tablet and traditional notebook modes." – TMG reliability engineer
- "The tablet function is great for working at home or in the fab." – TMG process engineer
- "Flipping the screen around to a notebook is great for when we get kicked out of a conference room and have to take the meeting to the hall. I still have easy access to my computer!" – TMG engineering manager

The optional questions also provided useful nuances. For example, because of the attached tablet, the device's laptop screen and keyboard are smaller than on a standard laptop. Some TMG users said the smaller device size was a benefit. Others considered the smaller screen and keyboard difficult to work with when away from their office docking station and large monitors.

Next Steps

Increasing the number of TMG applications that can effectively use touch technology is critical to expanding the efficiencies associated with 2-in-1 devices and Intel® architecture-based tablets. We are working with application developers to produce new touch-enabled solutions while updating other legacy software to include touch capabilities. This approach is the key to future adoption and productivity gains.

We also are identifying more use cases for 2-in-1 devices across the enterprise and will continue to accelerate deployment to more employees through the corporate PC refresh cycle. Meanwhile, we are expanding training on these devices to reinforce optimum use.

Because our usability surveys provide valuable direction related to 2-in-1 devices, we are extending the surveys to several thousand additional employees during the coming months to gain more insight into the use of mobile technology.

Over the next year we expect to increase both the number of 2-in-1 model offerings and the overall numbers of 2-in-1s deployed, to meet the needs of current and emerging use cases.

Conclusion

The 2-in-1 device is destined to become a critical device for engineers and technicians in TMG. In the coming months, we plan to increase deployment of new device models throughout our manufacturing operations.

Increasing the use of 2-in-1 devices among engineers and technicians promotes efficient processes and increased job satisfaction through improved productivity. Concurrently, the device offers significant time and cost savings in those areas where it is used.

Combining the enterprise-level laptop and tablet provides a powerful incentive to expand touch technology in a number of applications so we can achieve optimum use of this unique form factor in a variety of manufacturing and office work environments.

Related Information

Visit www.intel.com/IT to find content on related topics:

- "Accelerating Our Path to Multi-Platform Benefits"
- "Deploying Tablets Safely in Manufacturing to Boost Productivity"
- "Evaluating Ultrabook™ Devices for the Enterprise"
- "Improving Facility Operations with Intel® Architecture-based Tablets"

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