



Gaining a Competitive Advantage through User Experience Design

To help deliver a long-term competitive advantage for Intel, Intel IT incorporated the tenets of user experience design (UED) into our products and services. Because compelling user experiences are more efficient, more effective, and more desirable, they deliver greater business value, enabling us to contribute to organizational objectives as a strategic business partner.

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Executive Summary

To provide compelling user experiences that add long-term value to Intel's bottom line, Intel IT incorporated the tenets of user experience design (UED) into our products and services. Because compelling user experiences are more efficient, more effective, and more desirable, they deliver greater business value, helping us become a strategic business partner to deliver a competitive advantage for Intel.

As technology becomes increasingly standardized, IT organizations that provide compelling user experiences by understanding how to support employees' rapidly changing work practices will create a competitive advantage and impact their companies' bottom lines.

In most organizations today, IT is viewed as a cost center. One result of this perspective is an exclusive focus on total cost of ownership (TCO). While this is a necessary IT management practice, to broaden this view, IT must demonstrate the impact it has on the profitability of the company it supports by becoming a strategic partner that contributes toward organizational objectives and enables a competitive advantage.

Intel IT implemented a three-stage process to help realize a vision of delivering a competitive advantage through compelling user experiences.

- **Stage One:** Linking IT to the bottom line
- **Stage Two:** Developing a user experience design program
- **Stage Three:** Using an IT user experience Capability Maturity Framework

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Business Challenge

In most organizations today, IT is viewed as a cost center. One result of this perspective is a sustained focus on total cost of ownership (TCO). While this is an acceptable and often necessary approach to IT management, used in isolation, it does nothing to demonstrate the impact IT has on the profitability of the company it supports. When a department is viewed solely as a cost center, budgets are squeezed year over year as competition continually erodes budgetary resources. As a result, it is difficult for IT organizations to enable the long-term competitive advantage senior management demands.

How can IT move from being perceived as a cost center to a strategic partner that contributes to organizational objectives and enables a competitive advantage for the organization?

Corporations operate in a complex mix of markets on a global scale that is altering at ever increasing speed. Users have never been so sophisticated or demanding with respect to the IT services they require in this highly competitive environment. As technology becomes increasingly standardized, IT organizations that provide compelling user experiences by understanding how to support employees' rapidly changing work practices will create a competitive advantage and impact their companies' bottom lines. In short, because compelling user experiences are more efficient, more effective, and more desirable, they deliver greater business value.

Intel IT has established programs over the past six years that address these issues. We introduced our IT business management practices in *Managing IT for Business Value*

from Intel Press. In this paper, we discuss three essential stages to realizing the goal of delivering a competitive advantage through compelling user experiences.

- **Stage One:** Linking IT to the bottom line
- **Stage Two:** Developing a user experience design program
- **Stage Three:** Using an IT user experience Capability Maturity Framework

Stage One: Linking IT to the Bottom Line

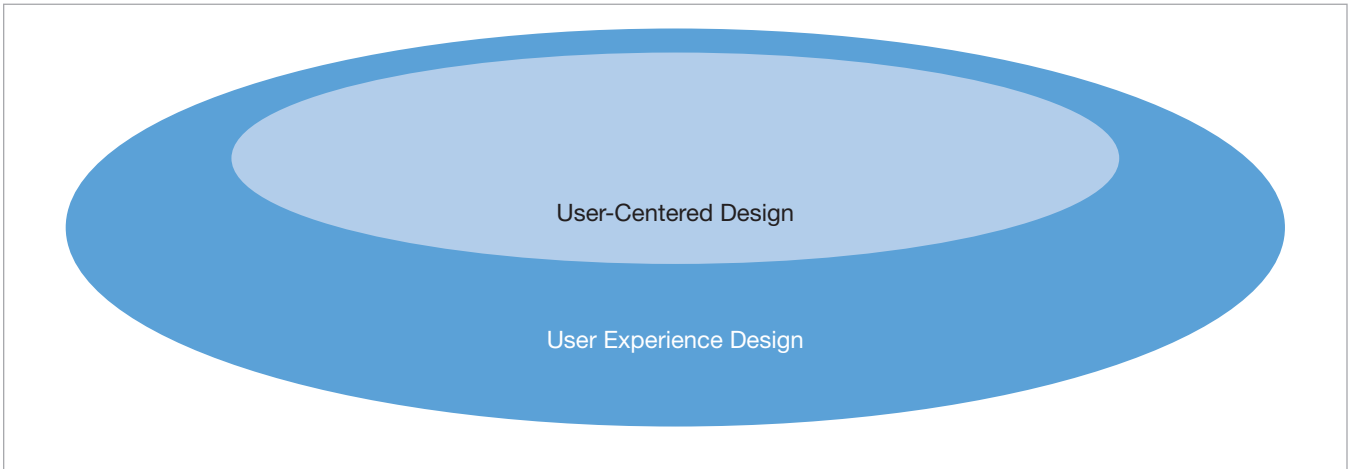
Intel IT created and runs an IT Business Value (ITBV) program, details of which we published in the white paper "How Intel Measures the Business Value of Technology" (<http://www.intel.com/it>). Creating an ITBV program forced us to do two critical things:

- Define IT value using the vocabulary and language of our customers and end users.
- Link IT success to the impact on Intel's bottom line.

To achieve these ends, the ITBV program had several key components:

- A common language of business value (business value dials) developed in partnership with customers and end users
- A common approach to measuring business value and determining return on investment (ROI)
- Tracking of the total value delivered in a business value portfolio

Figure 1. Relationship between UCD and UED



Stage One was critical to demonstrating that IT is not a cost center, because it:

- Helped us develop strategic partnerships with our customers.
- Showed that IT assists in achieving organizational objectives and understands how to deliver solutions that impact customers' bottom lines, as they themselves defined it.
- Helped IT continuously understand and identify the value of projects—which allows business value to be the driving force in funding decisions.

This was the first step in changing IT culture from a tech-centric to a user-centric focus.

Stage Two: Developing a User Experience Design Program

In Stage Two, we implemented a user experience design (UED) program to continue transitioning from tech-centric to user-centric thinking. Our UED program focuses on designing, developing, and measuring the user experience we deliver and manage. This stage signaled a culture shift in how we thought about supporting our end users.

What is User Experience Design?

UED has its roots in user-centered design (UCD), a philosophy that places the end user at the center of all design activities. UCD and other related areas (such as human factors engineering, human-computer interaction,

interaction design, usability engineering, and so on) all seek to humanize our interaction with technology. Figure 1 shows the relationship between UCD and UED.

UCD generally focuses on usability: graphics and other design elements serve to facilitate and enhance the end user's interaction with a product or service. UED is a process that extends the UCD philosophy to incorporate all aspects of the end user's interaction—even those that might seem intangible. Experience begins with an awareness of the product or service and includes each aspect of the interaction to achieve goals.

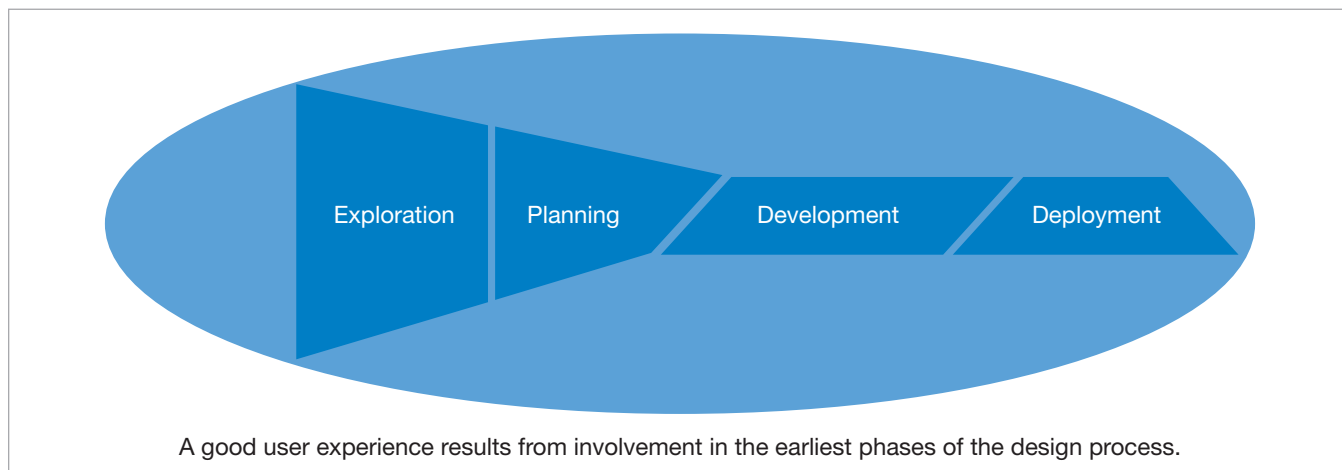
Common definitions of UED usually include at least these five vectors of experience, which are discussed in more detail on page 5.

- Marketing and brand awareness
- Order, delivery, and install
- Product or service use
- Training and support
- Removal

User Experience Design within Intel IT

Within Intel IT, we recognized that we had ease-of-use issues with deployed IT products. These issues showed up in support calls, quality indicators, and surveys from end users. A development team with a visionary program manager recognized the need to get help from a "usability professional" to correct the issues.

Figure 2. Designing a good user experience



With support from key senior managers, our UCD initiative grew from a summer intern to a fully staffed team managed by senior UCD professionals. It didn't happen overnight: we have invested six years into the group to establish processes and procedures and to raise awareness of the need for UCD throughout the IT organization. Senior members of this team played a key role in creating the ITBV program, as they have the skills and training to address employee productivity as it related to IT solutions.

The next step in the evolution of our UCD effort was establishing the UED program. The program focuses on these key elements:

- Developing standard metrics for user experience with products and services
- Developing metrics for the overall experience IT delivers and manages
- Delivering a consistent user experience through extending processes and guidelines
- Making user experience a core element of our products and services

User Experience Design in IT solutions

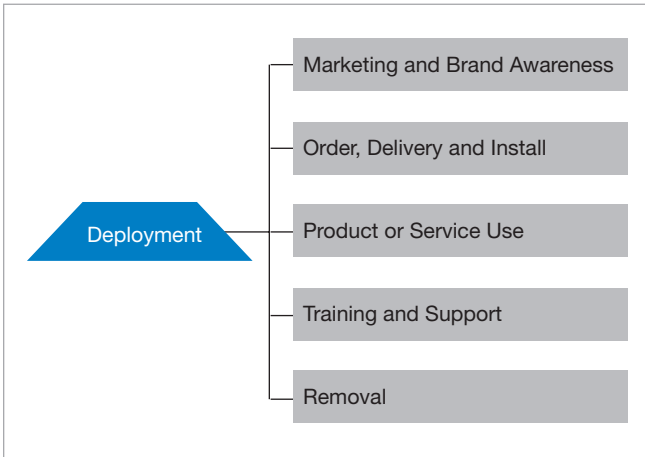
It is critical to understand that for customers to have a good user experience with an IT solution, important UED activities must be performed during all stages of design and development (see Figure 2). In effect, the user experience must be built into an IT solution using a multi-disciplinary team that represents all the vectors of the experience.

Considering User Experience from the Start

Many IT organizations think they are the best judge of what the customer needs from IT. Sometimes, they deploy solutions that do not integrate well into the customer's business processes and the customer perceives them as extra work. These organizations are not user-centric—and a user-centric view is critical to getting the maximum business value from an IT solution.

IT delivers the greatest business value when it understands what end users need to do to accomplish work-related activities that are linked to their business objectives, and then designs a user experience that directly supports those objectives. The solution must be designed to bridge the gap between the end user and their business objectives from the very start.

Figure 3. Five vectors of user experience



The user's first experience with an IT solution occurs at deployment. Users will not encounter every aspect of the experience at that time; the experience unfolds through multiple interactions. Figure 3 shows the vectors of experience that users encounter once a solution is deployed.

Another way to envision the goal of the UED program is shown in Figures 4 and 5. Figure 4 depicts a generic IT organization with each support group deploying products or services, and each managing or not managing the IT user experience that results. In this case the user's experience with IT is fractured; it is unlikely that it will be a singular, cohesive, compelling user experience.

Figure 4. Unmanaged IT user experience

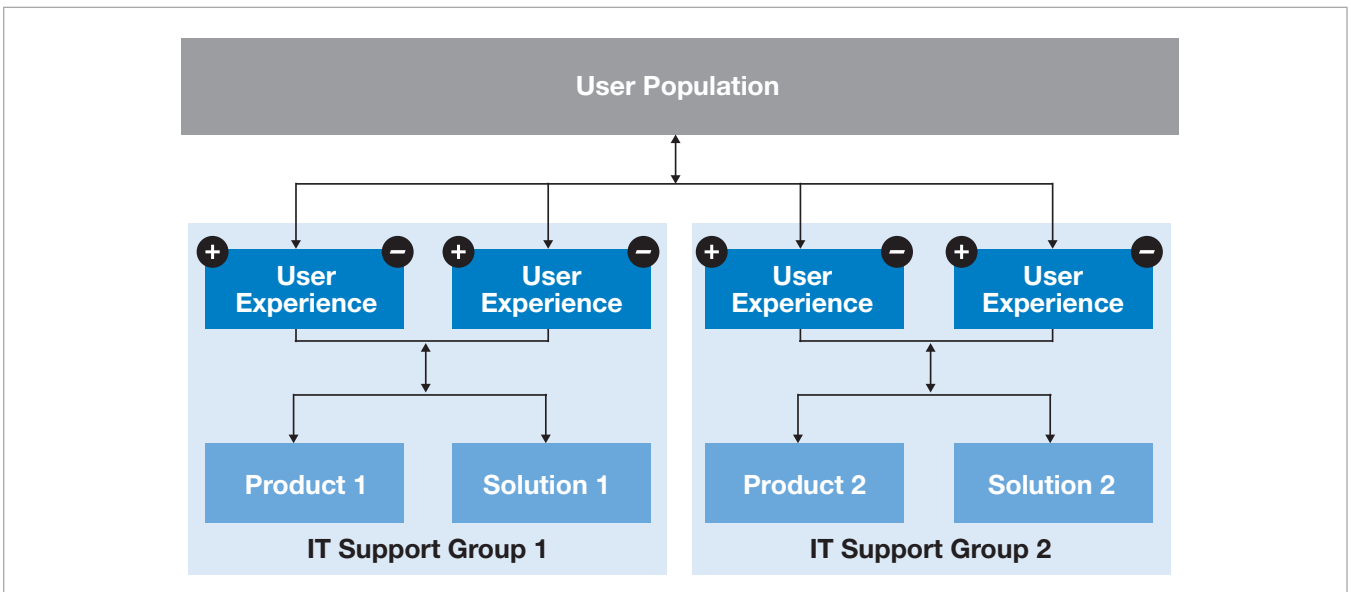


Figure 5. Managed IT user experience

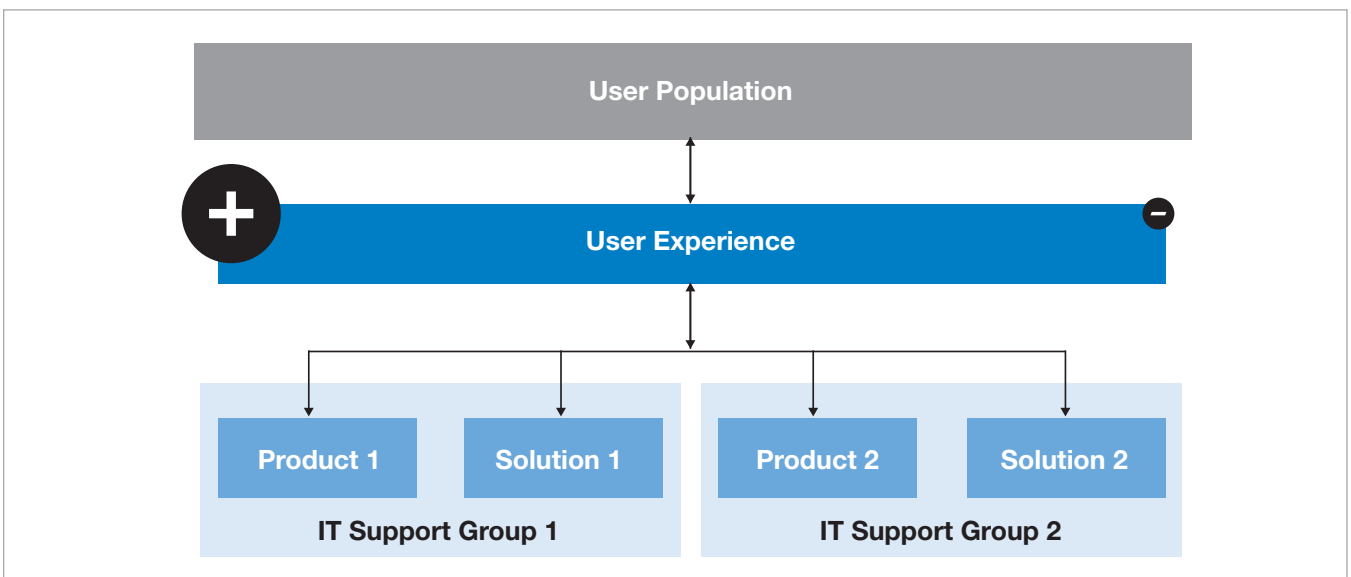


Figure 5 shows the desired state, in which IT delivers a user experience that is managed across all support groups. In this case, the user's experience with IT is consistent across the entire IT organization. To achieve this state, the user's experience with IT has to be designed, deployed, and managed. It is important to note that this is much more than delivering consistent interfaces or standards applied to internal Web sites. Consistent user interfaces may influence the user experience, but they do not and cannot define it.

Stage Three: Using an IT User Experience Capability Maturity Framework

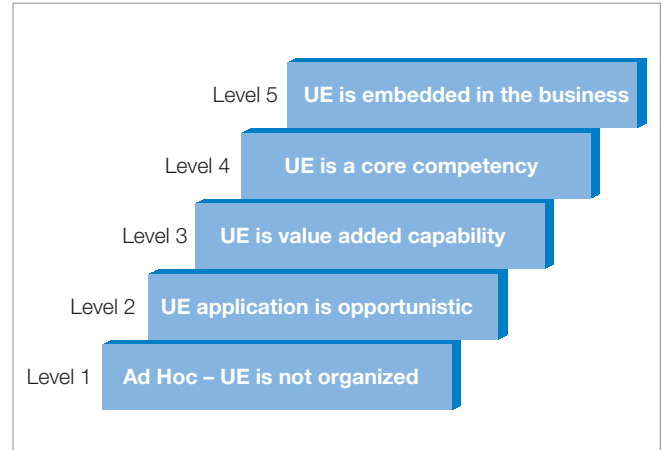
In order to continually grow our skills and abilities, we needed to understand how capable we are at engaging in UED. Measuring the user experience we deliver and manage allows us to understand how well we are doing, but doesn't answer how capable we are at UED. With this concern in mind, we began developing the IT user experience (UE) Capability Maturity Framework¹ (CMF), as shown in Figure 6.

The IT UE CMF is a formal approach to assessing an IT organization's capability to engage in user experience design. It is based on International Organization for Standardization (ISO) specifications for human-system interaction and a solid foundation of existing work in Usability Maturity Models by researchers such as J. Earthy and T. Jokela.²

We found that many existing approaches tend to focus solely on UCD, with an emphasis on how well a product team engages in the process, and have an implicit assumption that a product is already selected.

The IT UE CMF extends this previous work to take the entire experience into account and to evaluate how well the organization does in selecting the right IT solutions to enable a compelling user experience. An underlying assumption of this model is that the business value created increases as IT organizations progress through the framework. Demonstrating

Figure 6. IT user experience Capability Maturity Framework



how capable an IT organization is at UED is central to the overall effort of delivering compelling user experiences that result in competitive advantages.

Conclusion

In driving this vision, we achieved the following:

- Established an IT Business Value program to systematically link IT to the bottom line.
- Established a user-centered design group to focus on deploying more usable IT solutions.
- Established a user experience design program to take UCD to the next level in this evolution.
- Began developing the IT user experience Capability Maturity Framework to understand how capable we are at engaging in UED activity.

IT organizations must demonstrate their bottom-line impact as they continue to battle for budgetary resources, and must help enable a competitive advantage by expanding their focus from what is dictated by TCO to also include delivering compelling IT user experiences. As companies realize the business value in optimizing the user experience, they will look to IT to deliver on this front.

¹ The Capability Maturity Framework is adapted from the Capability Maturity Model* for software development from the Software Engineering Institute at Carnegie Mellon University.

² Earthy, J. (1998). "Usability Maturity Model: Human Centredness Scale." INUSE Project deliverable D5.1.4(s). Version 1.2. London, Lloyd's Register, 71 Fenchurch St, London, EC3M 4BS.

Jokela, T. (2001). "Assessment of user-centred design processes as a basis for improvement action. An experimental study in industrial settings." Oulu, Oulu University Press.

Author

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Acronyms

| | |
|-------------|--|
| CMF | Capability Maturity Framework |
| TCO | total cost of ownership |
| ISO | International Organization for Standardization |
| ITBV | IT business value |
| ROI | return on investment |
| UCD | user-centered design |
| UE | user experience |
| UED | user experience design |

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