

Best Practices in User-Centered IT

Our user-centered approach to delivering IT services has resulted in process, service, and design enhancements across Intel, improving employee productivity and business velocity.

Executive Overview

Intel IT has adopted a user-centered approach to delivering IT services that enables us to optimize our IT solutions, improve employee productivity, and increase business velocity. Our user-centered approach involves proactively engaging and partnering with Intel employees and business groups to learn about their needs for information, technology, and services, as well as desired experience. This partnership is helping us to develop IT solutions that provide flexibility and choice, as well as support employee workflows.

To strengthen this partnership, Intel IT made a fundamental shift in our approach over the last several years to focus and prioritize customer outcomes. How we work, what we do, and what results we are driving to, are all based on aligning to the goals and needs of our internal customers—Intel employees and business groups. We are engaging with them in new ways, inviting them to play a stronger role in technology direction, evaluation, adoption, and services development.

We have developed a variety of practices that improve our understanding and communication with our internal customers, including:

- Conducting annual user segmentation research to help us better target IT solutions and services to specific employee groups
- Inviting business groups and employees to participate in IT pilot studies and early adopter programs to improve and stabilize solutions before full deployment

- Conducting surveys to measure customer satisfaction with existing IT products and services and identify new innovation areas most important to Intel employees and business groups
- Providing greater employee choice and flexibility to employees by offering more enterprise options for primary computing devices
- Establishing and supporting bring-your-own-device (BYOD) and PC programs, resulting in a productivity gain of about 7 million hours over the last three years

Our user-centered approach to delivering IT services has resulted in process, service, and design enhancements across Intel IT, improving employee productivity and business velocity. By gaining greater understanding and developing stronger partnerships with our business customers and Intel employees, we are better able to achieve our mission to grow Intel's business through information technology.

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BACKGROUND

Over the last several years, Intel IT has seen the IT landscape dramatically change and grow in complexity. With the increasing influence of consumerization, IT is no longer the sole determiner of what devices, platforms, methods of connectivity, and services employees use. Just as user-centered design seeks to optimize a product around the needs of users, Intel IT's user-centered approach to delivering IT services seeks to learn from research and user engagement. Understanding employee needs for information, technology, and services, as well as their desired experience, forms the foundation for our decisions. The partnership between Intel IT and our internal customers— Intel employees and business groups— empowers everyone. The results of this partnership boost productivity and organizational velocity.

An Evolving Business Environment and Ever-changing IT Landscape

The increasing speed of business and the abundance of technology options have created a challenging environment for IT. While consumerization and multiple usage models and platforms add to the complexity of the IT landscape, IT strategy can no longer be centered on providing a specific platform or a set of devices. Instead, our solutions must focus on increasing business velocity and employee productivity, and improving customer-based outcomes and customer satisfaction.

To achieve these goals, Intel IT is focused on providing an integrated and optimized user experience across a variety of devices. Intel IT has moved away from the single or "one-size-fits-all" model for our solutions to a multi-layered or tiered approach—one that emphasizes right fit and right design for the job. We call this user-centered IT.

Consumerization of IT brings expectations from our business groups and employees that are shifting traditional roles, causing Intel IT to evolve toward a different decision making and communications model with our internal customers. A major component for addressing new computing models, new expectations, and new behaviors is a willingness to change how we approach decision making in the IT environment. Intel business groups and employees now play a stronger role in technology direction, evaluation, adoption, and services development.

A True Partnership Develops from Prioritization of User Needs

With a changing workplace, Intel IT knew we had to keep ahead of employee and business group demands and establish ourselves as a partner in productivity. To achieve this partnership, a few years ago we began a fundamental shift to creating our user-centered approach to delivering IT services. This has translated to a renewed approach to provisioning of services, the design and measurement of systems, and most importantly, how we engage with employees and business groups.

We started the process by rethinking and even renaming our organizational structures as part of a multi-year service transformation initiative. Previously organized largely by function—such as architecture, engineering, and operations—we created new service teams, assigning our IT employees distinct roles and implementing standard processes. Each IT service delivers a customer-driven outcome and is grouped as a portfolio with other services that share a common purpose. For example, our PC Client Services team is now organized into a portfolio of services to help every Intel employee be as productive as possible. These services include support and deployment of PCs and software, smartphones, tablets, printing, and other capabilities that help employees do their jobs. As part of our focus on customer-

driven outcomes, IT service team job roles now strongly emphasize learning from and listening to our internal customers.

The transformation of our IT landscape served as a catalyst for other changes, including increased research, communication, and interaction with Intel employees and business groups to better understand their needs. For example, our job rotations program embeds Intel IT employees into business groups. In 2012, over 120 IT employees completed job rotations, resulting in process, service, and design improvements across Intel. From the experiences they had during job rotations, IT employees brought back keen observations on the usability and functionality of our IT services that they would not otherwise have gained, and they developed relationships with our internal customers that could assist in development of future IT services.

Similarly, a team of IT user experience experts conduct in-depth research with specific groups, studying what technology they use, how they interact, and what tasks they perform. Through these interactions, we gain insights to help us design optimized IT solutions that boost employee and business productivity. For example, our improvements on Intel's purchase order (PO) system show how deeper customer knowledge is creating business value. Intel's employees generate over 200,000 POs per year. By watching how they interacted with the system, we discovered ways to streamline the process by consolidating eight different systems into one, and ultimately reduced the time to create POs by more than 50 percent.

By gaining a greater understanding of and developing stronger partnerships with our business customers and Intel employees, we are better able to achieve our mission to grow Intel's business through information technology. As we continue to evolve our user-centered approach to delivering IT services, we have achieved significant business value for Intel and have established best practices.

BEST PRACTICES IN UNDERSTANDING USERS

Focusing on what our internal customers need means re-orienting ourselves on how we engage with them, what choices we offer, and how we guide them in making those choices. We have developed a variety of ways to improve our understanding of our internal customers and our communication with them.

A Multi-faceted Approach

Intel IT takes a multi-faceted approach to user-centered IT by encouraging stronger internal customer participation in the technology evaluation process. We base decisions on proof of concept (PoC) results and employee segmentation research, listen to early adopters and technical review teams, and engage with our internal customers at multiple steps along a deployment process, including design and post-rollout of IT solutions.

For example, before we deploy new technology to all Intel employees, we first engage smaller business groups in early testing. By getting feedback from employees working in these business groups, we gain a better understanding of how the technology is used and discover if there is anything that would limit its usability. This process lets us address any issues before deployment and allows us to improve our solution designs.

In our user-centered IT environment, a free flow of communication, ideas, and innovative thinking is supported throughout the organizational structure. We encourage Intel employees to contribute ideas concerning the efficiency and quality of IT solutions and services by participating in the evaluation process. This participation includes taking part in surveys, talking to support teams, or giving feedback in person, in forums, and through a global enterprise-wide social computing environment. Although action may

A Partner in Productivity

Consumer devices and technologies continuously shape employees' expectations about work and collaboration. At Intel, we have embraced this consumerization as a way to improve employee productivity, and we continue to expand our successful bring-your-own-device (BYOD) program through ongoing communication with Intel employees. As a result, we have seen a positive impact in employee productivity and satisfaction.

To support consumerization, we proactively inform employees of the security and functionality that devices must have to be used in the corporate environment. By taking this approach, we can better educate employees about which technologies and devices work best in the enterprise, while protecting the enterprise and data.

As our BYOD program continues to grow, it increasingly encompasses a broader range of devices and applications. We now have over 23,000 devices in the program, a 38-percent increase from 2011. As a result of the BYOD program, employees report they are saving an average of 57 minutes daily. This savings equates to a productivity gain of about 7 million hours over the last three years. (See Figure 1.)

Consumerization of IT

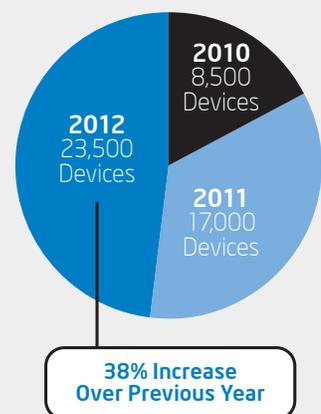


Figure 1. The Intel IT bring-your-own-device (BYOD) program has grown over the last three years, resulting in significant increase in productivity for Intel employees.

Table 1. Examples of possible personas

Role	Who this includes
Segment #1	Technologists who specialize in creating hardware
Segment #2	Employees who work in the factory or support manufacturing operations
Segment #3	Employees in sales, marketing, finance and other roles across Intel
Segment #4	Employees who are new to the company, usually less than 18 months
Segment #5	Technologists who focus on software development
Segment #6	Administrative staff

not be taken on all recommendations, we follow up on suggestions, ideas, and research, to support an ongoing open dialog with our internal customers.

Figure 2 shows many of the ways in which our internal customers are at the center of our computing and IT strategy.

USING PERSONAS TO BETTER UNDERSTAND EMPLOYEE NEEDS

In order to provide solutions that meet our internal customers’ needs, it is paramount to gain a clear understanding of who they are, how they work, what technology they use, how they typically communicate, and what issues they often face. Intel IT partners with several groups, including Human Resources and the Human Factors Engineering group, to segment Intel employees based on typical workflows and technology needs.

We’ve learned that one size doesn’t fit all. By segmenting Intel employee roles into archetypal personas (see Table 1), we can

better understand and deliver the types of hardware and software they need to perform their jobs effectively. This approach allows us to provide personalized options without having to support individual solutions. For greatest flexibility, we offer options for primary devices based on personas, and then we supplement that with the bring-your-own-device (BYOD) program (see sidebar on the previous page) to more fully address employee needs and desires.

We use segmentation research to improve and better target our IT solutions and services. For example, we use our findings to determine the optimal PC refresh cycle for different employee groups. While our standard refresh cycle provides employees with a new PC every two to four years, some groups are on a faster track than others within that range based on their work needs. Our refresh strategy is to offer employees in sales a new primary computing device every two years, engineering employees every three years, and office workers every four years.

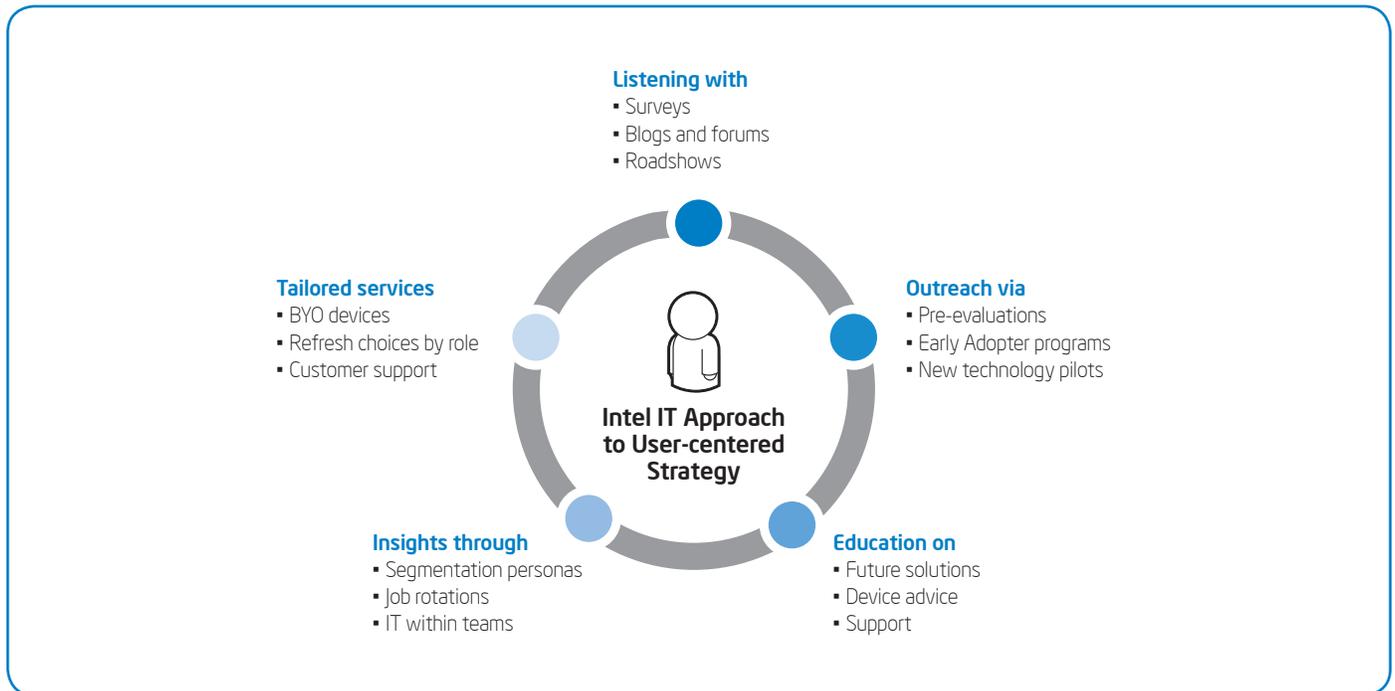


Figure 2. Placing our internal customers at the center of a strategy for communications, design, and choice requires a multi-faceted approach.

We have also used information gathered from segmentation to improve technical support services. As a result, over the past three years, our Technical Support Desk cut the time to resolve problems in half, enabling us to reduce support staff by 52 percent. We have improved service efficiency by gaining a deeper understanding of user experience and making strategic changes to our technical support workflows.

We observed that 10 percent of IT support calls came from administrative assistants, even though this job role accounts for only 1 percent of the employee population. Because administrative assistants can play a key role in helping many other employees, improving our service to this group affects productivity across a larger employee population. To improve support, we now provide expedited service levels, tailored support channels, and staff specifically trained to meet their unique needs. Administrative assistants also receive special attention with tailored audiocasts, dedicated communication channels, inclusion in early testing, and advance training on new technology. These and other enhancements have contributed to achieving 95 percent overall customer satisfaction in 2012.

We've been performing annual segmentation research since 2009 and we continue to hone our practices. We perform this research annually because new needs and groups develop over time. In addition to the segmentation study that encompasses all of our employees, we also perform smaller studies to achieve greater depth and understanding on specific groups that are growing rapidly or evolving with new workflows.

Focusing on Our Customers through Inviting, Listening, and Informing

Our user-centered orientation and partnership with business forms the basis for a tailored approach to communication, education, and services. Effective two-way communication with our audience enables positive and

proactive communication with our internal customers, so they view Intel IT as a valuable, trusted resource that will help them achieve their goals.

We use a variety of methods to gather feedback about employees' needs. Delivering IT support to our employees, like technology solutions, is no longer a "one-size-fits-all" scenario. Employees take different approaches to gathering the information they need about the tools they use to get their jobs done. Some employees prefer searching for answers, others want direct support, and still others find podcasts or videos helpful. As a result, we use a range of tools to educate and inform employees about technology and receive support.

We use general employee communication channels as well as purpose-built ones. Employees can consult an IT portal page as well as the IT section within our enterprise social media platform. Together they provide self-help support, service information, training, answers to most commonly asked support questions, and direct links to common transactions. Multiple IT support options include local help desks, 24-hour phone support, online support, and online chat. Intel IT's services newsletter also provides tips and tricks for all employees.

Table 2 outlines some of the ways we engage and communicate with our internal customers, which helps us improve our IT solutions and services and build deeper, more collaborative relationships.

Our approach involves three main types of activities:

- **Inviting** employees to participate in technology evaluations and pilots
- **Listening** to employees through surveys and actively seeking opinions through enterprise social media
- **Informing** employees about ways to make them more productive and aware of IT services and options

Innovation with Mobility in Mind

Intel employees use multiple devices throughout their workday. Tailoring solutions and services to users' needs involves taking numerous approaches to productivity and usability that span across a multi-device use model.

For example, in anticipation of users' needs, we evaluated the use of Windows* 8 in Ultrabook™ devices and tablets, as well as other new input methods such as gesture, voice, and touch. We are also developing a broad set of business applications designed for mobile form factors to increase productivity. Applications such as instant messaging capabilities and a speed dialer for one-click access to Intel conference calls help employees collaborate and save time while on-the-go. Other applications currently in use help employees register for an Intel event, access internal wikis, collaborate through social media tools, and approve purchasing requests.

For improved productivity and flexibility, employees must be able to securely access corporate applications and services that are optimized for their devices. Through user experience research, we identified use cases for this multi-device usage model, and we are currently conducting pilots of several time-saving services, which include the following:

- **An instant conferencing application.** This solution reduces the number of steps necessary to initiate or join audio, video, or data conferences from mobile devices.
- **A business travel locator application.** This tool provides location-based services to help employees at unfamiliar campuses find available Intel conference rooms, printers, colleagues' desks, restrooms, and other locations.⁵

⁵ See "Digital Personal Assistant for the Enterprise," January 2013 and "Getting a Headstart on Location-based Services in the Enterprise," January 2013.

Table 2. Examples of how Intel IT engages with employees to improve solutions, services, and customer experience

Category	Method	Implementation Approach
Inviting	New technology pilots	Employees are invited to participate in IT pilots and provide feedback on new IT solutions being considered for implementation in the enterprise.
	Early adopter programs	Employees eager for the latest technology solutions can sign up to be early adopters.
Listening	Annual survey	We conduct an annual survey to measure employee satisfaction with IT products and services and to help identify areas most important to employees.
	Enterprise social media platform	Individuals supporting IT tools and services reach out to a diverse set of employees, often seeking their input for troubleshooting and issue resolution. The platform is also used as a core tool for pilot program self-help.
	Topic-specific surveys	We use surveys and blog conversations to determine what is important to employees.
Informing	Employee newsletter	We educate employees, as well as monitor and address their feedback, through an internal bi-weekly newsletter called "Digital Edge" with articles on technology topics.
	Technical support forums	Technology forums and comment boxes provide a way to post real-time announcements about products and services, respond to employee questions, and provide greater details or related information.
	Device and service selection tools	We help employees learn what BYO devices and features can be used at Intel before they make a purchase by providing a comparison matrix (see Table 3, on the next page).
	Roadshows	We set up booths in cafeterias or conduct virtual online events where employees can learn about new technology and other IT solutions directly from Intel IT experts.
	Audiocasts	Internal audiocasts are created every 10 weeks for administrative assistants. Specific product audiocasts are also delivered as needed.
	Wikis	IT training produces educational content and distributes it through internal wikis.

EXAMPLES OF INVITING, LISTENING, AND INFORMING ACTIVITIES

Our early adopter program is an example of **inviting** Intel employees to participate. For example, we invited employees to participate in Microsoft Windows* 7, Windows 8, and the Ultrabook™ device PoC and pilot programs. This enabled early adopters to test the new technology in their daily workflows. The results provided valuable feedback to IT, which helped us make the solutions and services more stable for general users who adopt the technology later.

Our bring-your-own PC stipend evaluation¹ is an example of **listening** to Intel employees. We conducted a worldwide survey and a blog conversation with employees to determine their priorities on factors related to offering a stipend-funded program for employees to purchase their own primary

business PC. Although the ultimate result of this evaluation showed the proposed program was not cost-effective for Intel, the information we gathered on employee PC priorities helped guide our decision to fast-track access to business Ultrabook devices for mobile users as a standard offering instead of proceeding with the stipend plan.²

Intel IT’s audiocasts are a key communication method that includes both listening to and **informing** employees to build trust and relationships with them. For example, we produce audiocasts for specific audiences, such as the ones for administrative assistants every 10 weeks, or on specific topics, such as mobile devices. The live audiocasts can also be downloaded later as podcasts.

Supporting consumerization with our BYOD program and our small form factor roadmap is another example of informing employees.

Having many choices requires help in making the right decision and in resolving issues. For example, Intel IT communicates to employees through various internal methods and on our small form factor web page about what personal devices will be supported in the enterprise, and what services they can expect to get on them. Table 3, on the previous page, illustrates the type of information we communicate to employees to help them make an educated decision about what personal smartphone to purchase based on their needs and the IT services we provide to those devices.³

Table 4, on the previous page, shows how we encourage employees participating in the BYO Mac, PC, and tablet programs to think about how they will use a device so they can choose the best solution for their work environment.

¹ See "BYO PC Stipend: Investigating a Stipend-funded BYO PC Supply Model," November 2012.

² See "Deploying Business Ultrabook™ Devices in the Enterprise," January 2013.

³ See "Best Practices for Enabling Employee-owned Smart Phones in the Enterprise," December 2011.

Table 3. Smartphone Feature Comparison Chart

Feature	OS 1	OS 2	OS 3	OS 4	OS 5
E-mail	✓	✓	✓	Additional security software may be required, depending on the supported device.	
Calendar	✓	✓	✓	✓	✓
Contacts	✓	✓	✓	✓	✓
Global Positioning System (GPS)		✓	✓	✓	✓
Wi-Fi* Allows you to connect to your home network or public Wi-Fi in airport or coffeeshop, and other areas	Varies	Varies	Varies	✓	✓
Internet Usability	Good	Varies	Varies	Best	Best
Internet Applications Examples: mapping applications, currency converters, etc.	Good	Good	Good	Better	Best
Intel Intranet Availability	Some Available	✗	✗	✗	Some Available
Business Application Availability Examples: Instant messaging, audio conferencing, etc.	More Available	Some Available	Some Available	Less Available	Some Available
Battery Life Standby or talk	Best	Good	Good	Good	Good
Global Roaming Capability	Varies by Rate Plan				
Tethering Connect your phone to your laptop and use the phone as a modem to connect to the Internet (like a wireless data card). Performance varies by phone model and service provider network speed.	✓	Varies by Country or Service Provider			

✓ available; ✗ unavailable

Table 4. Employee Bring-Your-Own Mac, PC, and Tablet Program Implementation Guide

	Server-Hosted Virtualization - Virtual Application Suite Browser-based Connection to Intel	Intel Corporate Layer Installation Special Build on Your PC	Server-Hosted Virtualization - Desktop in the Cloud Server-hosted Virtual Windows* 7 Desktop	Client-Hosted Virtualization - Type 2 Hypervisor Local Application on Your PC
Technology Implementation	Secondary Companion Tablet	Primary Compute	Primary Compute	Primary Compute
Best Use Case Scenario	<ul style="list-style-type: none"> Access to common applications, executed full screen Ability to copy and paste among virtualized applications 	<ul style="list-style-type: none"> Use standard applications and require high-speed performance 	<ul style="list-style-type: none"> Need a customizable desktop but don't want the Intel build Want to participate in both Companion Tablet and Primary programs 	<ul style="list-style-type: none"> Don't want the Intel build but want the ability to access Intel data and applications when not connected to the Internet
Works well for those enrolling in both bring-your-own Primary and Companion Tablet	✓	✗	✓	✗
I travel a lot and may have low bandwidth connections	Good	Best	Not Recommended	Better
I usually work on-campus or at home with a broadband connection	Better	Best	Better	Good
I frequently use rich media applications at work (video calls, 3D graphics, web-based training)	Not Recommended			
Offline Access	✗	✓	✗	✓

✓ available; ✗ unavailable

CONCLUSION

Intel IT's fundamental shift to user-centered IT is helping us further understand and meet our internal customers' needs. As we continue to engage with Intel employees and business groups, we are learning additional ways to tailor our tools, services, communication, and support more effectively. Our goals include becoming even more proactive in anticipating the needs and strengthening our partnership with our customers. We are using a variety of methods to encourage them to take a stronger role in technology direction, evaluation, adoption, and services development.

As we strengthen our engagement with our internal customers through open and frequent communication, we have found that they are increasingly turning to Intel IT for answers. We have grown from being seen as a service provider to a trusted advisor and partner. This collaborative approach removes barriers and enables a common path to increased productivity for Intel IT, Intel employees, and our business groups.

By inviting, listening, and informing our internal customers, Intel IT is influencing decision making and business velocity. By focusing on improving customer-based outcomes and customer satisfaction, we are delivering relevant and optimized technology

solutions and services across all of Intel's businesses. We plan to continue to fine-tune and evolve our customer understanding and relationships through research and proactive employee engagement. In-depth analysis of employee feedback, including results from our annual user survey and user segmentation research, helps us anticipate next steps and influences our IT technology roadmaps.

ACRONYMS

BYOD	bring-your-own-device
GPS	Global Positioning System
PO	purchase order
PoC	proof of concept

FOR MORE INFORMATION

Visit www.intel.com/it to find white papers on related topics:

- "Deploying Business Ultrabook™ Devices in the Enterprise"
- "Best Practices for Enabling Employee-owned Smart Phones in the Enterprise"
- "Pre-Evaluating Small Devices for Use in the Enterprise"
- "Benefits of Enabling Personal Handheld Devices in the Enterprise"
- "Maintaining Information Security while Allowing Personal Hand-Held Devices in the Enterprise"
- "Delivering Cloud-based Services in a Bring-Your-Own Environment"
- "Digital Personal Assistant for the Enterprise"
- "Getting a Headstart on Location-based Services in the Enterprise"

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