Microsoft Dynamics

RoleTailored Design

White Paper

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Microsoft Corporation

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INTRODUCTION

You don't need to be a Greek philosopher to agree with the adage that the only constant is change. In these unpredictable times, businesses of all sizes and in all industries are faced with unprecedented challenges. The companies that will be best able to thrive are those that have the agility to take advantage of new opportunities as they arise, the foresight to remain competitive amid rapidly shifting market dynamics, and the acumen to realize long-term strategies through effective short-term action.

Businesses therefore cannot afford to invest in IT systems that hamper their ability to succeed amid change. Business software can and should be a critical enabler, facilitating decisions, proactively driving change into practice, while increasing the productivity of the people who use it. Why then is this not always the case? The reality is that business software is often a rigid tool, reactively detecting problems instead of identifying emerging trends. Costly to implement, too complex to modify, extremely difficult to use — it hinders the ability of companies to be nimble.

Microsoft Dynamics is committed to creating software that changes all of that, delivering instead on the promise of enabling a dynamic business — helping people be more productive, gain better insight and control over their business processes, and proactively embrace connections with others in their ecosystem. Indeed, we view people, process and ecosystem as the pillars of a dynamics business, and we design our business software so that it can energize these pillars by providing immediate value, delivering much-needed simplicity and a steady stream of innovative technology and functionality.

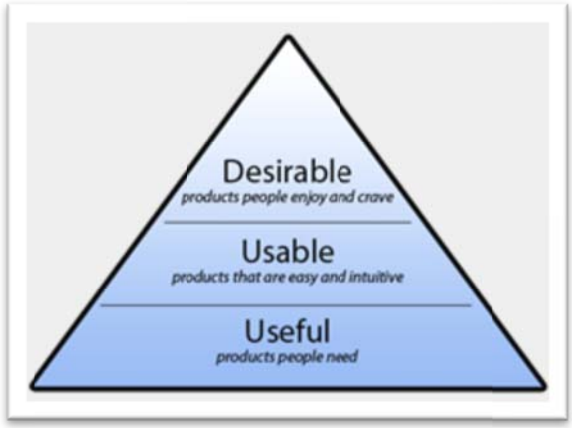
One strategy for delivering on this promise is our approach to RoleTailored design — designing for scenarios that put people first and center, and not designing for features and technology. In this paper we will explore the components of RoleTailored design and describe our vision for the future. We will show you how this principle is manifested in our products today, what the benefits are for people using our software, and how this approach extends beyond just product development into other aspects of the product lifecycle. First, let's understand exactly what RoleTailored design means.

WHAT IS ROLETAILORED DESIGN?

RoleTailored design is the key strategy behind the development of Microsoft Dynamics applications, and our adherence to the principles of that design strategy is the driving force for our User Experience team. This is a team that views as its mission creating software that people can love. It may sound crazy to insinuate that someone can love their business applications. But everyone can relate to the experience of having a certain product that is imbued with a sense of specialness — often because the performance of that product exceeds your expectations. By understanding the attributes of products that elicit a positive emotional response, we believe we can increase the desirability of our business applications software, leading to higher job satisfaction and thereby greater productivity. If looking at this phenomenon in terms of business applications, it would be important to ask what the expectations of a business application are and how this has changed over time. One place to start would be with an understanding of how business applications began.

In the early days, business applications emerged as a mechanism for audit and control. The systems were a vehicle to record transactions with financial impact, forming the basis to manage books and audit historical activity. Because the central purpose was to drive the business process, these products were focused on utility; little attention was paid to the user experience because there was not a clear understanding of its importance. In that sense those early applications were useful, meaning they performed the function required of them. However, they were not very intuitive and performing tasks could be extremely tedious and complex, making them quite difficult to use. This relegated the operation of business applications to a relatively small number of people within an organization.

Business applications developed over time to include more robust functionality beyond the work of accountants. Although this included all the various departments of an organization, there continued to be low numbers of employees licensed to use the applications and even smaller amounts actually utilizing them. A study from AMR Research (Shepard, 2005) found that only 15 percent of employees have licensed enterprise resource planning (ERP) seats and only about half of those licensed actually use the system. That means about 92 percent of the employees in these companies are receiving no direct benefit at all from their business applications investment.



USEFUL, USABLE, DESIRABLE

If the promise of business applications is to make employees more productive, then how do the companies that develop those tools address this endemic issue? The answer, we believe, lies in delivering compelling user experiences. Business applications must move beyond being useful; they must be usable in that people who need to work within the context of an application need to be able to figure out how it works, and in a perfect world they need to be desirable, meaning that the people who must look at the screens of a business application sometimes for eight hours a day must find enjoyment in what they can accomplish there.

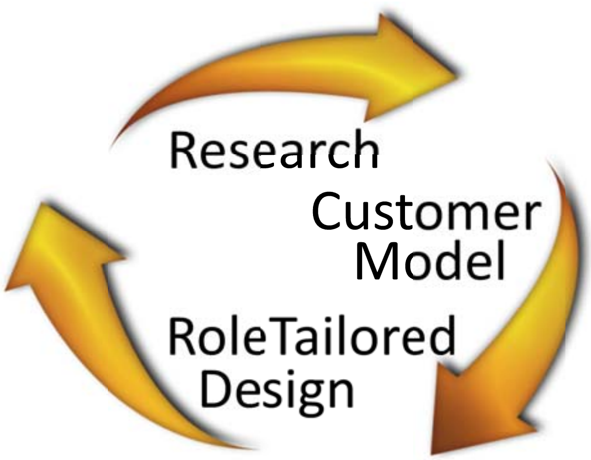
In their 2002 book “Creating Breakthrough Products,” Jonathan Cagan and Craig Vogel (Cagan, 2002) coined the phrase “useful, usable and desirable.” Delivering on all three of these promises is now generally accepted by the user experience world as the approach that can deliver great user experiences. As we have seen, early business application software mostly focused on usefulness; that was the key differentiator at the time. But, we have also seen the downfall of such a limited design perspective. Furthermore, with the rapid proliferation of Internet use, those who consume technology have come to recognize and respond to good usability. Internet pages that are not usable aren’t used — it is that straightforward. In parallel, companies creating software have recognized the increasing savvy of their users. Therefore, the need for applications to be usable or intuitive has become the focus of their design efforts. As people expect products to be usable, easy and intuitive, we see creating desirable products as the way to drive increased productivity. At the heart of this shift toward desirability is a move toward enabling people to be more proactive.

Indeed, the true potential of business applications lies in their ability to change from the backward looking view on work already performed to a platform that enables all roles in the business to drive the most effective decisions and find the optimal path forward: to shift from a place where people record the work they've just completed to a tool that helps them deeply engage and figure out the most important thing to do next, arming them with the best knowledge to approach that task. The key to moving from reactivity to proactivity lies in a deep understanding of the way people work that can inform the development of tools to enhance productivity. Microsoft Dynamics, through RoleTailored design, makes a business more dynamic by empowering and enabling the productivity of its people. Fitting software to a user's role — that is how people do their work — and arming them with business intelligence to drive better decisions is how Microsoft Dynamics helps drive productivity.

CONTINUOUS CYCLE OF INNOVATION

How does RoleTailored Design actually make its way into the product? Through what we call the cycle of innovation. Let's take a look.

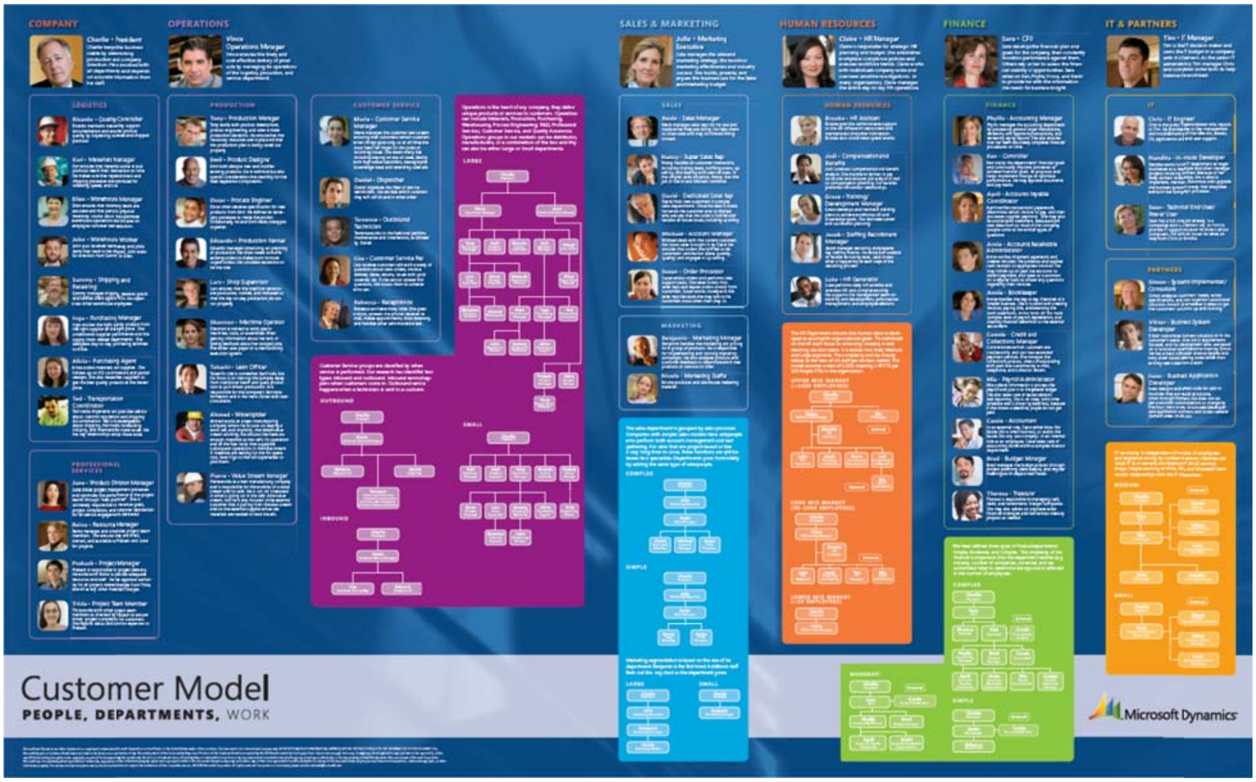
Any consumer goods product manager worth their salt will tell you if you want to be successful, you need to understand your customer. That applies equally well to business applications. And that is why to deliver on the promise of desirable products, the Microsoft Dynamics User Experience team employs a continuous cycle of innovation grounded in extensive research. Much of that research focuses on understanding our current and potential customers. Who are the people who will potentially use our software products? What work do they do? Where do they sit within their organizational structure? Who are they working with both within and outside their organizations? What are the different types of technology they use to get their jobs done? What are their pain points? What do they most enjoy? What information would make their jobs easier and their work more effective? To see an overview of the many different research techniques employed by our user experience researchers, take a look at the sidebar below.



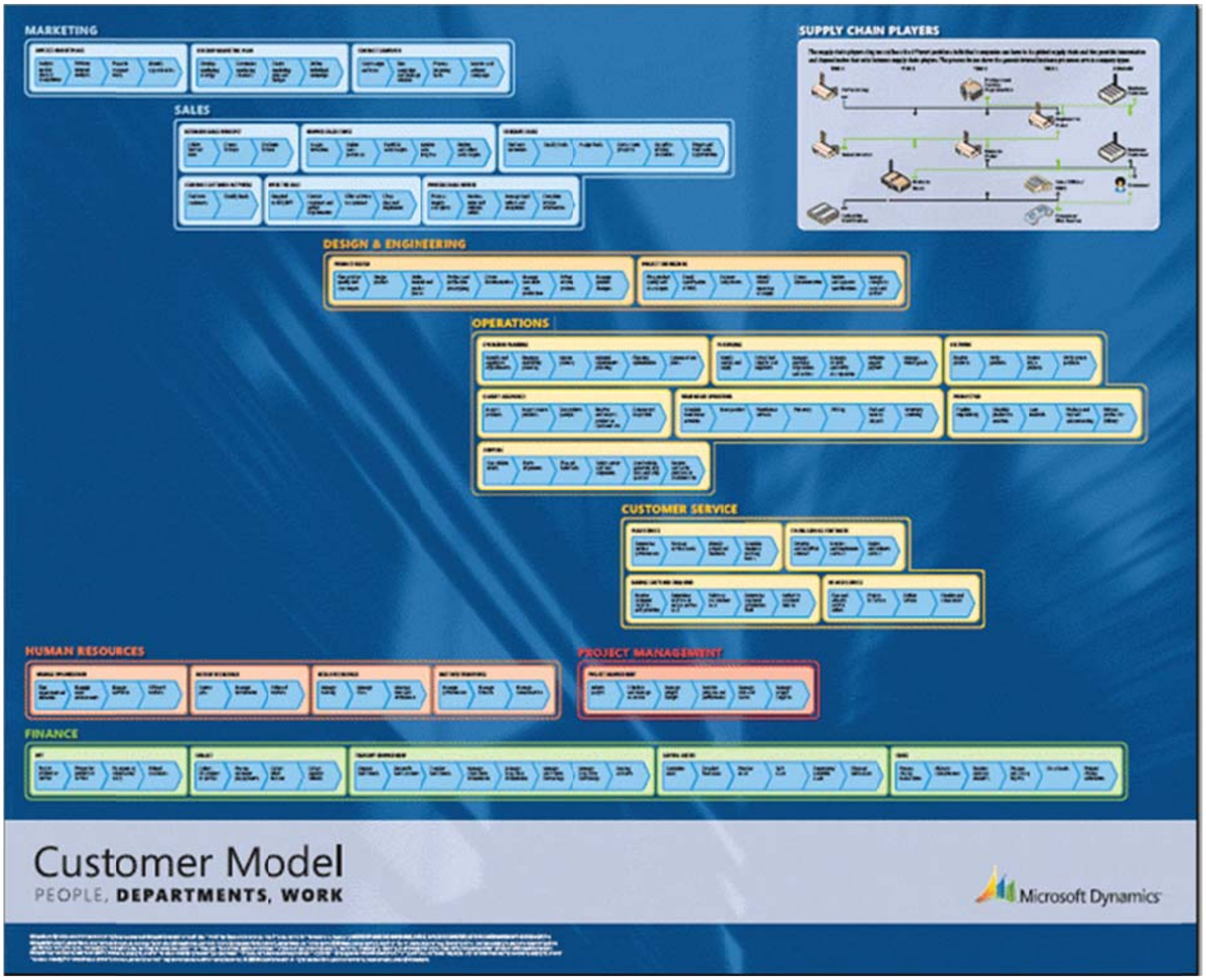
After thousands of hours of interviews and data, the results of this research are distilled into what we refer to as our Customer Model — our view of the people who use our products, the various roles they embody in the organization and the work that they do.

THE CUSTOMER MODEL

The Customer Model shown here in poster form details the personas (see Phyllis — Accounting Manager) and roles that make up the various departments across an organization. You can see what probable organizational charts look like depending on the size of the organization and complexity of the business processes as well as how the organization size affects the actual jobs or roles that the personas are accountable for.



Another component of the Customer Model is what we call the Work Model, which details the high-level business process flows within the various departments of an organization as well as where there are potential interrelationships with supply-chain partners.



The Microsoft Dynamics Customer Model is the "true north" for development of our business applications, making all our efforts at design "RoleTailored," meaning they meet the unique needs of the particular person in the role that will employ the functionality that we are building. To that end, each product specification document created details a work scenario from the point of view of the person who will be using that piece of functionality. In engineering meetings, it sometimes seems that the persona are alive in the room, as our designers become so protective of that persona's experience that they will say things like, "You can't do it that way, Phyllis won't be happy!"

The Customer Model also helps us prioritize features. It is easier to decide what's in and what's out when you have a clear understanding of the users' goals and the work they are performing. You can also deliver better software if you have a focus on their needs when you are deciding how to implement a feature. To get an idea of the depth behind each persona, let's take a closer look at Phyllis, the accounting manager. In the sidebar we have detailed her demographics so we can get an idea of the typical person who is hired for this position, as well as an introduction from her. This is very important as it gives us a sense of her voice. In addition, we detail what her typical daily schedule is, as well as capture her relationships within the company, what her typical interactions with those people entail, her psychographics that include information on the technologies she uses, what her attitude toward them is, and what her work style and learning style are.

All this information lends itself to creating functionality that is easy for her to recognize and adopt. And we go into the pain points she feels in each role she plays within the organization. Just to give you an idea of the wealth of information we gather in this process, take a look at just some of the roles that a typical Phyllis will play: manage accounting staff and accounting processes, financial watchdog, business analyst, project accounting manager, GL manager/owner, risk assessment manager, and the list goes on from there.

Phyllis' Demographics

- bachelor of arts in accounting
- 49 years old, 17 years in the company
- Most of what I know is because I have been with the company for so long.

Introduction

Hi, my name is Phyllis. I manage the day-to-day, detail-oriented work of doing the accounting for the company. In my group, we're all very comfortable with numbers and being exact. It stresses me out when I have to leave work to the next day. Doing things right the first time saves time in the long run I always say. I've been here so long, I now act as a historical reference for the company.

I spend a fair amount of my time solving internal problems such as finding missing data, correcting invoice errors, answering staff questions, and getting answers from other departments that don't get me what I need in a timely manner.

I enjoy the fact that our new ERP system has sped up many processes and allows for quicker manipulation of the data when required. I have to generate a lot of reports, but I do find it difficult when I am asked seemingly simple questions about our financials by upper management, and I can't figure out how to make customized reports to answer their questions. That's when I call the IT guy to have him help me out.

I have to make sure billing, the billing rules and jobs are set up right in the system. I am somewhat technically savvy with our ERP system, so I do a lot of stuff that's not super technical. I work with the IT guy on the super technical stuff.

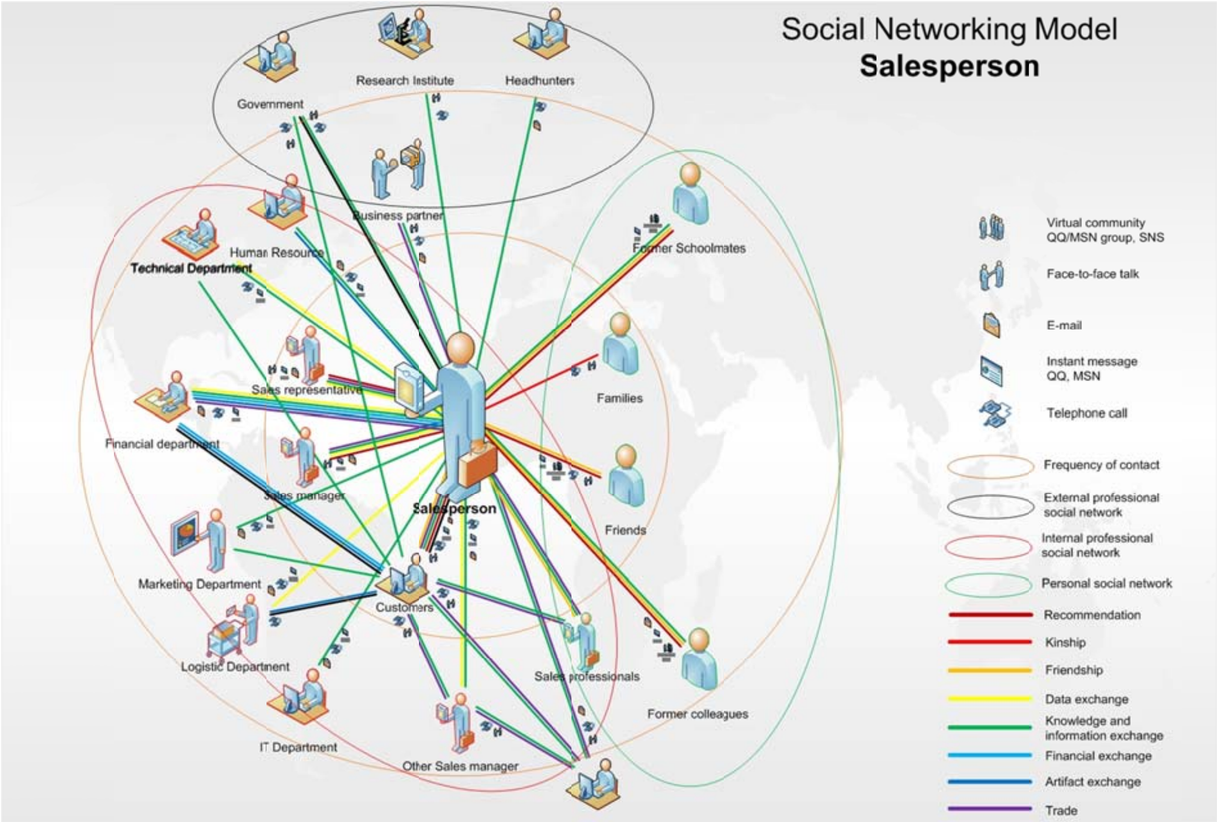
In my free time, I like to relax by gardening and reading biographies. I value my time off and don't feel badly about leaving on time at the end of the day. Even so, I still am annoyed when I have to leave things undone at the end of the day. During period end closing, I try to be prepared ahead of time so that no one needs to work late, but something always come up. When auditors are here, I need to be readily available to answer questions, although the auditors are supposed to work with the controller or CFO (depending on the size of the finance department). My staff is cross-trained well enough so we can cover for each other for vacations and sick days.

IT'S NOT JUST FUN AND GAMES …

Recently, competitors of Microsoft Dynamics have announced that the applications they are currently developing will be more "fun." Though that may sound more attractive than what they have to offer today, if your only goal is fun, then you are still pursuing a one-size-fits-all approach. The Phyllis example provides a perfect demonstration of why universal "fun" should not be the goal. Although plenty of people in the organization could thrive on more fun — salespeople come to mind — Phyllis would be concerned if she and her employees in particular were focusing on fun and not on an adherence to the process she has put in place.

CH-, CH-, CH-, CHANGES …

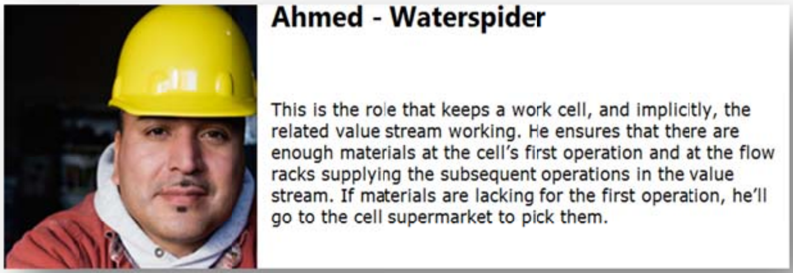
As part of the continuous cycle of innovation, ongoing research leads to further refinement of the Customer Model, making it a constant work in progress. As the world of work changes, the need for ongoing research grows. One example of a new area that we have actively been researching is the social networking phenomenon that is sweeping our work and personal worlds — continuing to blur the lines between social and professional lives. It is important to understand how people both within and also between organizations are connecting with each other. What technologies and services are they using? How frequently? What people are they connecting to, and what is the nature of that relationship? Here is an example of a social networking model for a salesperson such as Nancy.



By understanding not only the increasing complexity of relationships that this persona is engaged in but the types of information exchanged and preferred method of contact, we can facilitate her communications where necessary to help her increase her work productivity.

INDUSTRY SPECIFICITY

As the Customer Model continues to develop over time, we have begun to incorporate roles that pertain to certain industries and, in some cases, develop entirely new Customer Model representations for a specific industry. Here we see examples of these additions to the Customer Model as a result of focusing on lean manufacturing and public sector, respectively.



One of the interesting aspects of lean manufacturing is the many odd-sounding words that make up the lean lexicon, for instance the position titled waterspider. Often confused with a simple material handler, the truth is far from it; the waterspider needs to be thoroughly familiar with the materials, tools and methods of the process they are supporting, and some say this position is a "rite of passage" to becoming a supervisor. The waterspider is an honored and critical role in making continuous flow and a smoothly functioning lean system a reality. Ahmed, the waterspider, is a new persona and role that has been added to the Customer Model in our effort to incorporate the personas related to lean manufacturing. Understanding this persona is vital in being able to understand how best to build a user interface that is useful to him.

And here we can see the mock-up for a Customer Model poster that is specific to the public sector. There is so much that is different about a public sector organization that it warrants its own approach. For instance, in lieu of a marketing department, these organizations are more likely to have a department focused on public information and outreach.

RESEARCH

As noted above, many research methods are used to elicit the different insights we use to understand what is required of our software. Some are broadly used by user experience researchers; others are methods that we have developed in-house in our efforts to continue to push the boundaries of the types of data that can be elicited and taken into consideration when creating solutions. Please see the sidebar for descriptions of some of the methods we employ. Meanwhile, let's look more closely at one of the methods we have developed that specifically addresses the issue of desirability. This method is used to elicit the emotional reaction to our software in a quantitative fashion — an aspect of usability that was previously considered only able to be explored from a qualitative point of view.

FEELIT — CRACKING THE CODE ON DESIRABILITY

You've heard that negative first impressions are difficult to overcome. What if you could control those impressions so that they are rare or never negative at all? That is the ultimate goal of the FeelIT research methodology. The way it works is feedback and opinions are gathered from research participants regarding their impressions of the appearance or what is often referred to as the look and feel of a software application. The results are used to inform the visual design by helping identify the negative aspects of the design so that they can be modified or even removed, while keeping, even accentuating, the positive.

Microsoft Dynamics User Experience Team research methods include:

- *Desirability studies*. We use images as a catalyst to understand emotional reactions to our software design.
- *Usability Lab studies*. Participants complete a task without guidance. Through observation, nonleading questions and "thinking-aloud," we learn how a user approaches the task then modify design based on that feedback.
- *Cognitive walk-throughs*. Reviewers step through a user interface so that we can evaluate its inherent "learnability."
- *Card sorts*. Participants organize description cards into piles they feel belong together and generate names, labels or descriptions for the piles in an effort to understand conceptual models so we can appropriately design the presentation of information in the software.
- *Affinity diagrams*. This exercise helps us identify key processes, activities, task flow and associated pain points within a particular user task or feature.
- *Guided interviews*. Using open-ended, conversational questions, we probe into a user's actions or experiences to gather qualitative insights.
- *Participatory design*. Similar to the guided interview, participants are asked to identify tasks or actions that they find difficult to perform, then collaborate with designers to re-work pain points.
- *Experiential learning*. These self-guided activities are "hands-on learning," which helps attendees identify their learning and behavioral styles at work.
- *Contextual inquiry*. We observe people while they work and ask a few goal-directed questions to determine their tasks and goals and a basic understanding of their problems and frustrations.
- *Focus groups*. These groups deliver qualitative feedback via first impressions.
- *Surveys*. If a discussion is not required, surveys — via phone, Web or e-mail — allow us to get answers from dozens to thousands of users, across geographic regions and markets, quickly and inexpensively.

FeelIT started as a project in which the User Experience team collaborated with two thesis students from IT University of Copenhagen. Their initial focus was to create photos that a majority of research respondents would associate with the same concept or word. Images are used to represent a person's thoughts or feelings because it allows participants to respond to a visual stimulus in a visual manner, using that part of their brain. This is especially important since the participants are not visual designers and may not have a tendency to think visually.

During the session, participants are shown business application screens for about five seconds each. This very short presentation is based on the "rapid cognition" theories such as thin slicing: the ability of our unconscious mind to find patterns in situations and behavior based on very narrow slices of experience. Thin slicing was most recently popularized by Malcolm Gladwell in his book "Blink." The goal is to make sure that participants do not overthink what they see. In fact, people need very little time (two to six seconds) to form a first impression of something (or someone). Canadian researchers even claim that 50 milliseconds is enough time to elicit like/dislike reactions to websites! Showing images for a very short period of time (five seconds or less) allows respondents to give high-level conclusions without additional evaluation and deliberation.

Once they have viewed the software screen, participants are instructed to pick up to five images from the set of 25 in the FeelIT tool that they feel reflect their thoughts, opinions and feelings on the visual design aspect of the screenshots presented to them. Then, they write down why they picked the images, if it is negative or positive, and provide examples from the screens. The important part is the explanation. The image they picked is just an aid for participants to get to the explanation.

The next step describes the process of getting to a quantitative review. Once all responses are gathered, the themes and subthemes from the raw data are identified. Some examples of positive themes include the following comments: organized, clean, comfortable, looks easy to use and light, connected feel, attractive, appears logical and precise, sense of harmony and peace, professional, looks like fun, aggressive and powerful, and familiar look. Then those themes are mapped to visual design concepts. From there, an analysis is done to score those concepts. Then feedback is given to the design team to help them understand which concepts are working and which are not positively received. The result is business applications that are optimized for a desirable visible response — the key to a great first impression!

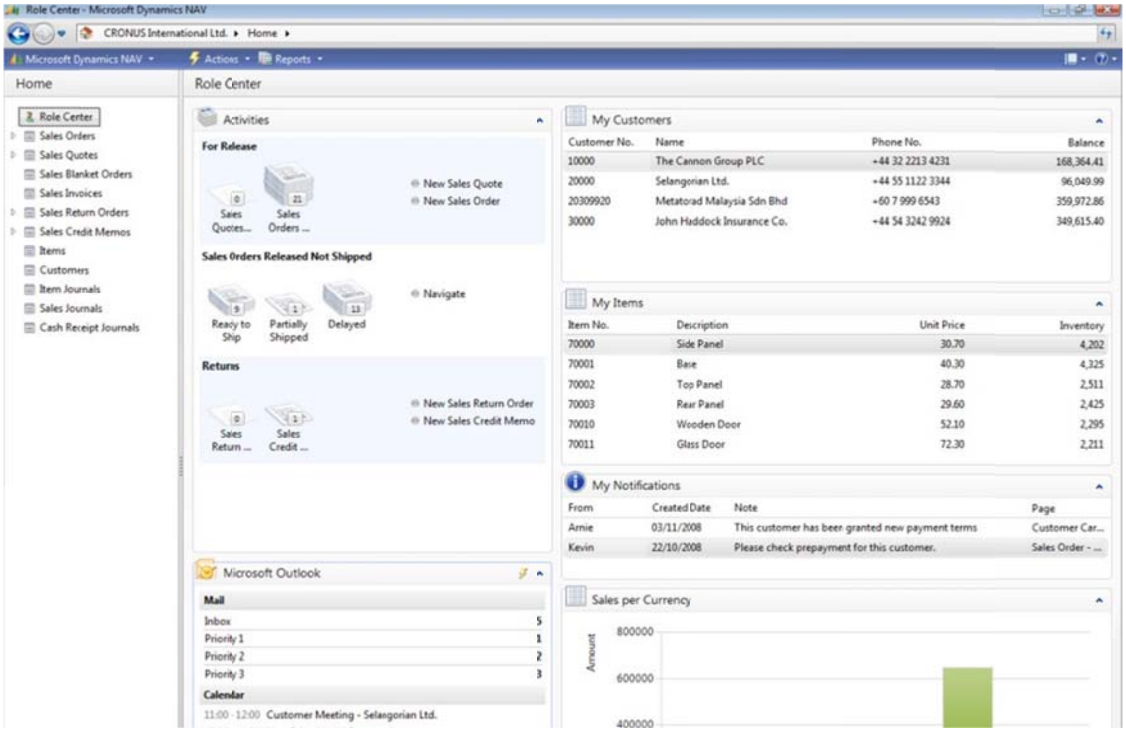
Now that you have an understanding of how seriously we value customer research and how that research gets distilled into the Microsoft Dynamics Customer Model, let's take a look at how this important work is reflected in the product today.

ROLETAILORED DESIGN

When a person logs into a Microsoft Dynamics application, the page that launches is called their Role Center. This is the ultimate embodiment of the RoleTailored design strategy — a page that reflects this person's unique role in the organization, based on the information distilled from the customer model, giving the user definitive command of the application. With simplicity, the Role Center cuts through the clutter often seen in business application screens to provide a clear overview of tasks, a visual sense of workload, and alerts to issues that require the user's attention. It also features single-click access to the places in the application that they need and use the most.

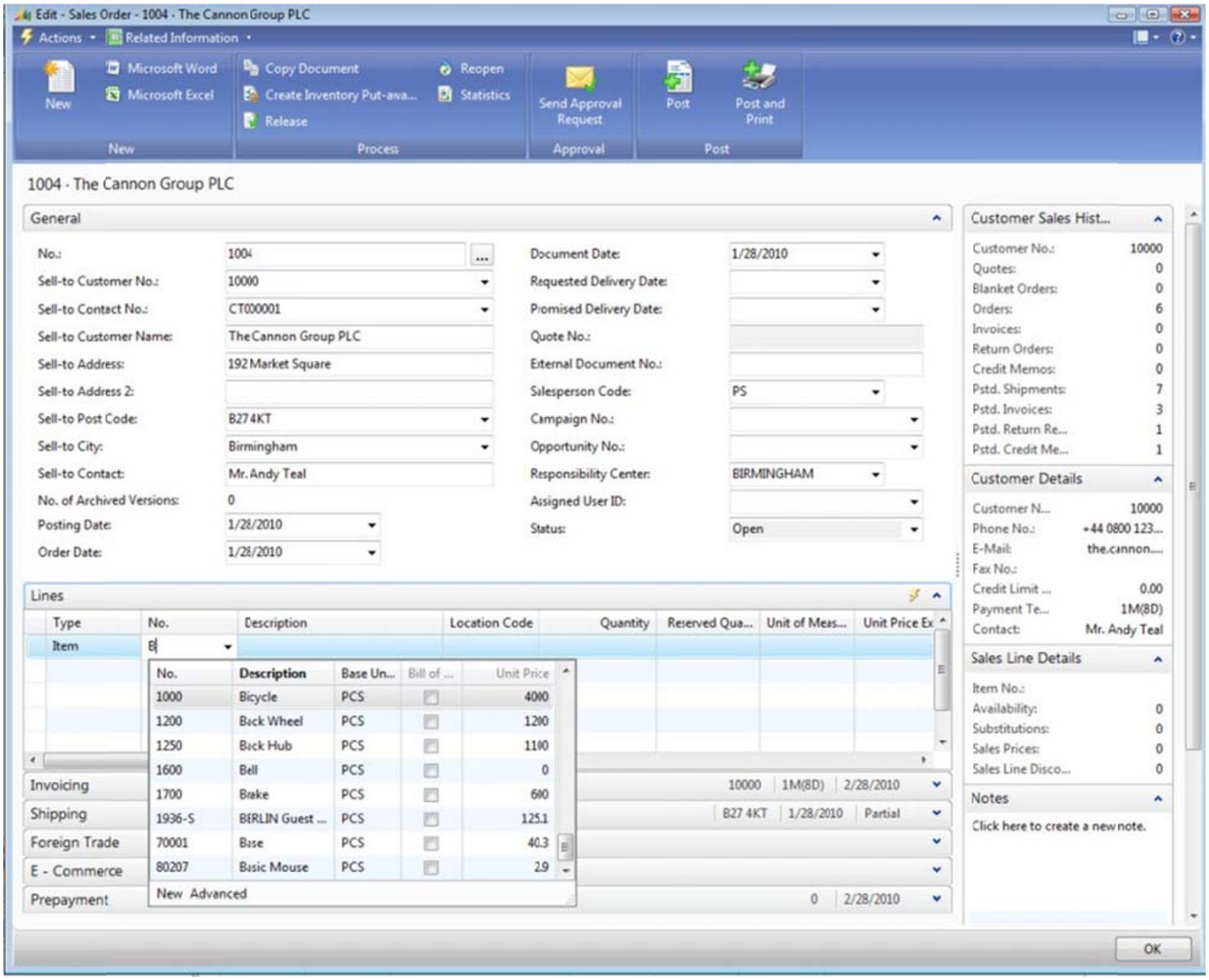
ROLE CENTERS AND BEYOND

Here is an example of a Role Center for Susan, the sales order processor — you can see how the user interface is organized to not only reflect the work that she needs to do but to give her an immediate indication upon logging in as to where she stands for the day. Because Susan is an order processor, it is important to her to know the status of her orders, where they are in the shipping process, as well as what may be coming back in the door — all the information that she can view at a glance in her Activities part.



There, her document cues — a visual metaphor that mimics a stack of paper — give her an instant read on what is in progress, as well as what may need her immediate attention. She also has links to Actions to create new quotes, orders, etc. This information is complemented with the notifications portion of her Role Center where alerts can be surfaced to keep her on top of actions she may need to take. Because Susan usually spends her day in the Microsoft Dynamics client, Microsoft Outlook is surfaced here so she can view her inbox without having to switch context.

As Susan moves beyond her Role Center to dig deeper into her business application, in this case, to complete a sales order, there are other aspects of RoleTailored design to observe. The Action Pane across the top of the screen provides single-click access to actions or commands that are most relevant for the task at hand. Users familiar with Microsoft Office will immediately recognize its similarity to the Fluent user interface or Ribbon as it is often called. This design increases the discoverability of context-appropriate actions. It is features like this that capitalize on metaphors that users are already familiar with that make Microsoft Dynamics easy to learn and adopt, saving training time and costs.



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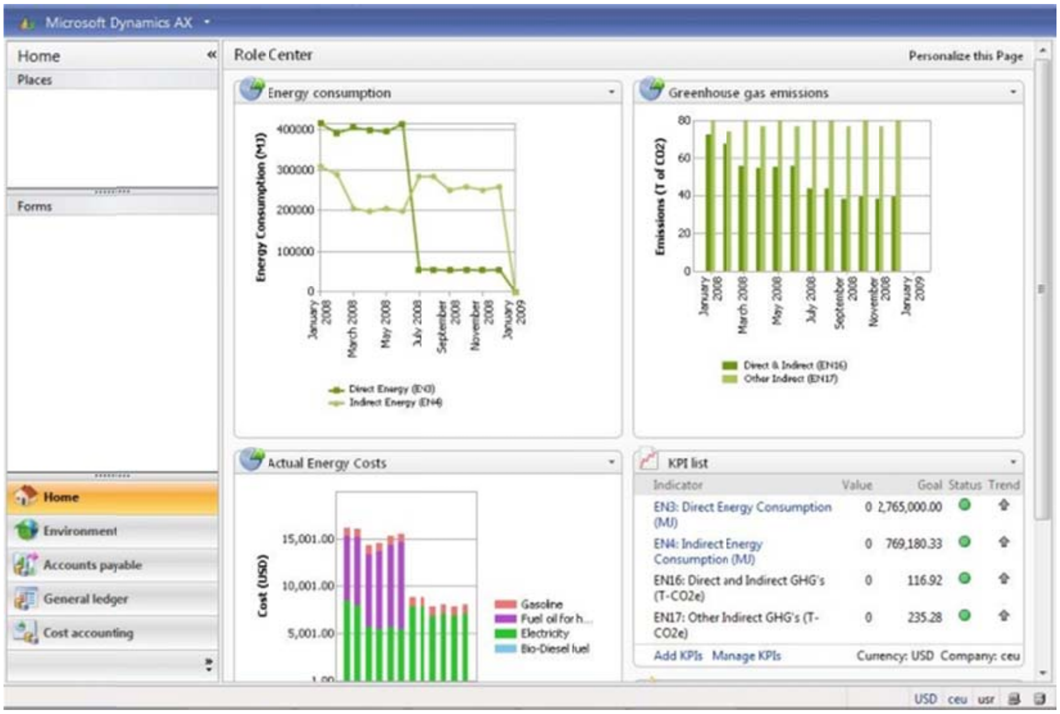
Another feature on this screen is the FastTabs. FastTabs group and organize complex information into simple, manageable clusters. They are designed to display the content summary of several tabs at the same time while providing the ability to modify information as needed. Created to replace the use of tabs, this feature displays the most essential information, as opposed to hiding information until selected. And they can be completely personalized so users can choose to feature details deemed most important to them in their day-to-day job.

The Fact Boxes on the right-hand side of the page are designed to provide greater context to information, specific to the entity currently in focus. With an at-a-glance view of relevant information delivered in a convenient way, Fact Boxes help provide insights and business intelligence about customer accounts, supplies, shipping status, financial status of an account, etc. You can even see a notes area where details regarding recent interactions with this entity can be observed. Now instead of having to go to a separate application to seek out business intelligence, it is a fundamental part of the user experience delivering critical insight when it is needed.

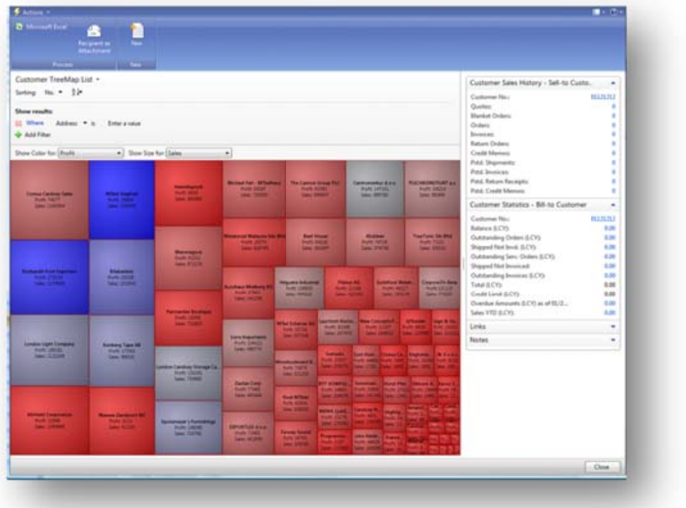
Together, all these RoleTailored concepts provide users with information at their fingertips to help them achieve their tasks quickly and efficiently. But what about individuals who might be in a less transactional role?

EMBEDDED BUSINESS INTELLIGENCE



For some roles in the organization, getting an instant read on key information is critical to the job. Role Centers can feature embedded reports, charts and key performance indicators (KPIs) directly in the application user experience, providing users with inline access to real-time information so they can make better decisions more quickly. Here we see the Role Center for the Environmental Manager detailing the critical information he needs to have at his fingertips at all times — energy consumption, greenhouse gas emissions and associated costs. Again, this represents a turning point, moving the system beyond simply capturing data toward a system that provides users with information to proactively drive their effectiveness and increase their productivity. We are also decentralizing the ability to create your own KPIs so that you can gain insight about your business and easily share that insight across the organization.

At Microsoft, we are striving to create more rich visualization features — delivering on the promise of simplicity in representing and understanding large amounts of data. Here, we have two examples: an organizational hierarchy and a tree view map of customers, which true to the notion that a picture paints a thousand words, can also help you grasp key facts about relationships and entities in a fraction of the time it would take to parse that information from a typical report. Furthermore, these visualizations can be used to navigate the data in a meaningful way to uncover insights without having to understand database structure, but by nature of having an understanding of the data. As an accelerator to productivity this change in accessibility to data, using visualization to derive insight, is quite powerful.



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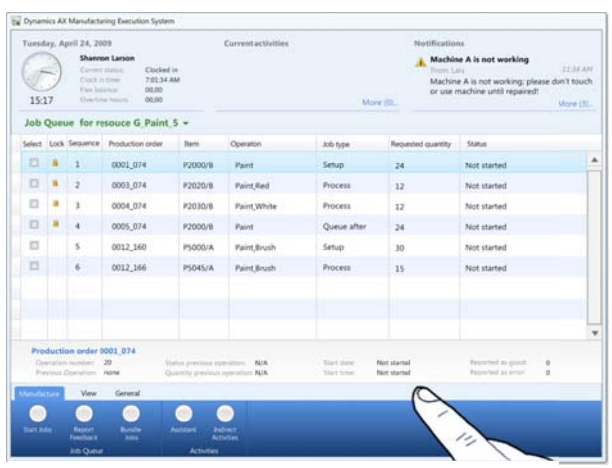
INNOVATION THAT FITS THE NEED

To get the maximum value from your software investment, the more people in your organization that can actually benefit from the software, the better. By the very nature of some jobs, getting users on the system can be more difficult than you think. Take the shop floor. This environment is not conducive to a typical keyboard and monitor setup. To be RoleTailored in that circumstance means to deliver functionality that can be used by someone who isn’t able to sit at a desk. And that’s where touch comes in handy. For Shannon the machine operator, we are developing functionality that will enable her to view and input critical data without the need for a keyboard or mouse.



PERSONALIZATION — POWER TO THE PEOPLE

One of the most important features of RoleTailored design is the ability to personalize your pages to suit your needs. This can be done by each individual, or changes may be configured by a system administrator, power user or manager to mass personalize an area of the application or a group of roles on behalf of their people, avoiding costly customizations that are difficult to upgrade. Take FastTabs for example. The information that gets pulled into the right-hand side of the tab is completely your discretion. All you need to do is tell the system through a few quick and easy steps what information you would like to promote and then you never have to open that tab to view that data — it is right there for you on your task page.

Now you have an idea of the ways that RoleTailored design elements actually land on your desktop, as well as an inkling of the power that you have to personalize your unique experience. How are people reacting to what we've delivered?

USER BENCHMARK: THE RESULTS ARE IN

In March and June 2008, Microsoft ran two usability benchmark tests to compare the user experience of Microsoft Dynamics NAV 5.0 classic user experience with that of the new RoleTailored user experience in Microsoft Dynamics NAV 2009. The tests provide a comparative evaluation of the two versions from a user experience perspective, establish the understandability and learnability of Microsoft Dynamics NAV 2009, and highlight its particular strengths.

To measure user experience improvements, the effort to finish a business task in Microsoft Dynamics NAV 5.0 was compared with the effort to complete that same task in Microsoft Dynamics NAV 2009. This was achieved by evaluating the time taken to complete the task, the ease of use and the user's perceived success. These comparative studies focused on task success — a factor crucial to a person's productivity.

Good news! Overall users were more successful and more satisfied with Microsoft Dynamics NAV 2009 compared with Microsoft Dynamics NAV 5.0. The obvious benefit to customers choosing Microsoft Dynamics NAV 2009 is that they can significantly reduce their training costs due to decreased learning time. New users are likely to have a very positive initial experience with the program, with increased efficiency in completing their tasks and added confidence using the RoleTailored user experience.

User experience benchmark research results:

- 40 percent increase in task completion success rate
- 23 point increase in customer satisfaction

Participant quotes describe the benefits of RoleTailored Design:

- *"Navigation is much easier!"*
- *"I can sit down at it and figure it out without being told how to do it."*
- *"I like having* (FastTabs) *and having the important information on the right."*
- *"Just the way this is set up ... I can look at the big picture."*

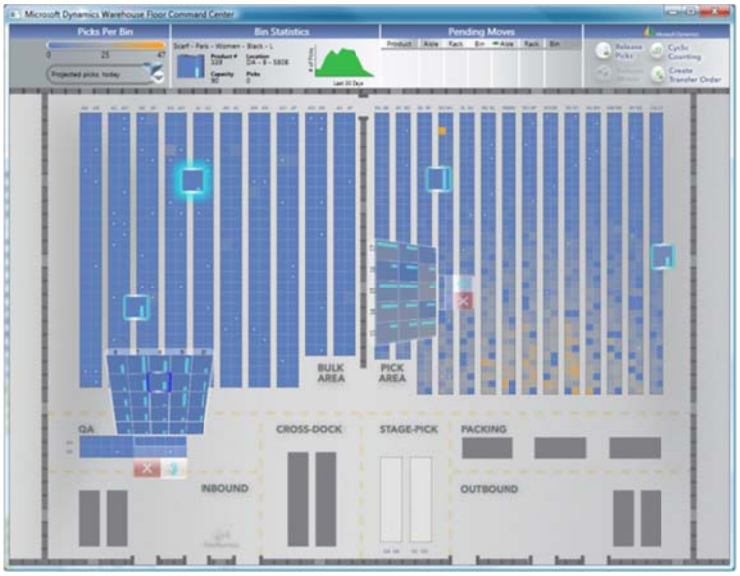
These important benchmark studies demonstrate that the Microsoft Dynamics RoleTailored user experience outperforms the classic user experience and that with no prior knowledge of the program, users were able to carry out standard tasks successfully. These studies are therefore an excellent indication that companies which invest in Microsoft Dynamics featuring RoleTailored design will experience a decrease in learning time and reduced costs. Couple this with an increase in success rates and higher customer satisfaction and you have the right solution for increasing the productivity of your people.

OUR VISION FOR THE FUTURE — IT'S PERSONAL

As we look to the future, we think it is important to continue to turn the tables on what is expected of business applications by even moving beyond role and persona, to tailor Microsoft Dynamics to the human brain. Using business applications on or off the Web, or alongside other technology products, should be a seamless experience that helps people make the most of relationships within their ecosystem. That means freeing ourselves from existing constraints — changing the paradigm of computing. We are already starting to move in that direction with touch and gesture functionality, the ability to work across three screens and the cloud, blending our professional and personal lives and moving toward an experience of ERP everywhere, thus extending business processes to more users. But we will continue to push even further.

For instance, we are working to imbue our applications with what is called "context awareness" — an attentiveness to the situation you are in. For many people, their role changes significantly depending on where they are in the financial calendar. What if your business application knows when you log in that it is the end of the quarter, it could then help you prioritize the tasks you need to complete at that particular time. Or maybe it is simply aware of your environment; for instance have you entered a conference room with a wall-sized display? What if it were able to detect disruptions of supply or urgent demand related to a natural disaster? These are aspects of context that your business applications could understand to immediately bring more relevant information to your attention.

In addition to contextual awareness, we believe we can deliver more "task-specific" user experiences across the enterprise. These might include powerful business intelligence, enabled by great data visualization, targeted to a single task. We've already begun development that will bring touch screen functionality to the experience of people working on the manufacturing floor and in the warehouse. Where else could that functionality be used to deliver breakthroughs in user experiences? There are certain tasks that require analysis of large amounts of data or that affect a complex network of factors in the business. Consider the warehouse picking example shown here.



In an ideal setup, those items that are picked most frequently would be located closest to the shipping dock to avoid making warehouse workers walk around too much, reducing their efficiency. Because the business application contains your pick history, it would be possible to analyze pick transactions by location to discover where the problems are. But because of the volume of data required, it would be an extremely tedious, complicated and inefficient analysis. Alternately, it would be possible to capture complex algorithms in code to detect these location inefficiencies, but this would likely require expensive customization to model the unique physical attributes of different warehouses. The visualization shown here takes the data that already exists and highlights hot spots, instantly informing us that an opportunity for process improvement exists. The blue spots near the dock rapidly identify possible locations where the hot spot inventory can be moved, and a graphical experience that provides drag-and-drop functionality makes the move transaction simple and easy to execute. The combination of powerful visualization and a touch-based natural user interface empowers the user to easily drive efficiencies that would previously have been extremely difficult at best.

The Microsoft Dynamics evolution will continue to drive simplicity in the user experience to move beyond where we are today to deliver an enriched, context-aware experience that embraces not only new display and input technologies, but also the new generation of users that has truly grown up online. Examples like this illustrate our commitment to pushing the envelope in this regard. By continuing to drive RoleTailored design elements into our products, we believe we can deliver on our vision of enabling the Dynamic Business — providing customer-driven advancements across Microsoft Dynamics CRM and ERP applications to empower employees so their organizations can embrace change and seize opportunities that drive enduring business success.

Microsoft Dynamics is a line of simple to learn and use ERP and CRM solutions that work with your existing technology and scale as your grow to give you long-term value. By using software and online services that work the way people and organizations work, businesses are better able to make informed decisions and adapt to rapid change. Microsoft Dynamics helps your people be more productive and your investments in existing systems last longer, while enabling your business to derive the insights necessary to respond quickly and have a competitive edge in an ever-changing world of business.

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