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The Makings of a Great ERP User Experience

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The Makings of a Great User Experience

During the course of a year, TEC performs numerous in-depth reviews of ERP and other systems to develop product certification reports and industry reports, and to keep up with the latest trends. As the product comparison chart in the recent TEC 2015 ERP for Discrete Manufacturing Buyer's Guide shows, it is evident that all ERP vendors provide robust functional capabilities or partner with best-of-breed solutions to fill functional gaps. But one area where solution providers are differentiating themselves is how they deliver on user interface, thereby shaping a user's experience within the system. In this report we'll break down some of the best and must-have user experience elements, talk about advancements in user experience, and look at future directions in this area in ERP systems.

User Experience Elements

Modern ERP systems have adopted several core user experience elements. Disappearing from system user interfaces are the long nested menus of transaction codes for getting a user to the information they need. We now see data grids (based on Microsoft Excel), graphical reporting, and system search taking over as the paradigm for information access. And when it comes to actually getting the day-to-day job done, transaction screens are more appealing and personalizable than they used to be. The user experience elements and features discussed below represent some of the best of what we've recently witnessed.

Excel-like Data Grids

One primary user experience element being employed by ERP providers is what we call an Excel-like data grid. These grids have the look and feel of a spreadsheet and are used for accessing tabular data across the system. Why Excel? Because it's the most-used business intelligence (BI) tool in the world, according to Eron Kelly, general manager of SQL Server Marketing at Microsoft (as quoted in a recent post on CIO's Web site). Kelly notes that "one-in-seven human beings on the planet have Excel."

The data grids allow users to sort, filter, group, and perform common mathematical operation like sums, averages, etc. The columns on the grids can be resized, moved, added, or changed based on the user's unique needs. And of course, the data from one of these screens can usually be downloaded to Excel in a click or two.

Probably the biggest advantage to these user configurable data grids is that they enable self-service data access and report development. Virtually any ERP user in an organization who knows how to use Excel can now create customized reports to get at key information across the system, without needing to ask the IT department for a custom report.

After a user sets up a grid to match his or her individual needs, the grid setup can be saved by the user for future use. This saved setup can also be sent to other users across the department or company. Some ERP providers also allow for saving and categorizing these custom-developed views into a library.

Different vendors have developed slightly different takes on the data grid objects. Microsoft calls these data grids "list pages" and has published one of the most extensive publicly available sets of user experience guidelines for its ERP products. Detailed user experience guidelines for Microsoft Dynamics AX 2012 can be found here. Below is a view of a list page in Microsoft Dyanamics AX (figure 1):

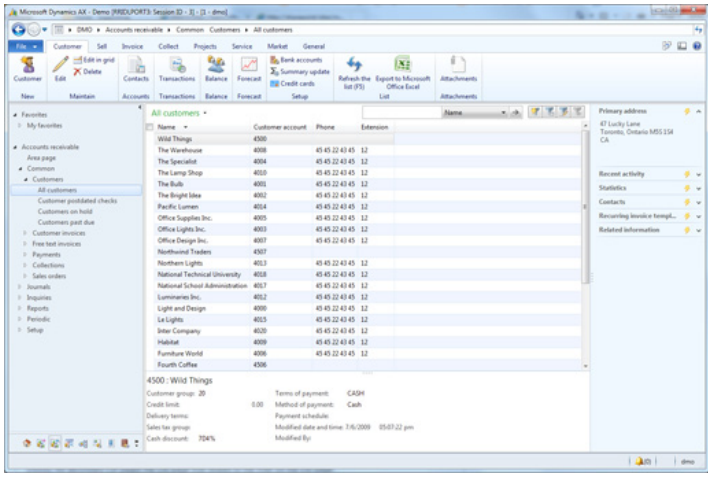


Figure 1. Microsoft Dynamics list page

The majority of ERP manufacturing solution vendors have adopted the data grid as one of the primary ways to access information. We see Infor exploiting the same list view of data in Infor LN. The screenshot below shows the Infor LN list view (figure 2), which illustrates how a user is able to customize various components of the user experience, including the display of fields within a data grid, or what Infor calls a form.

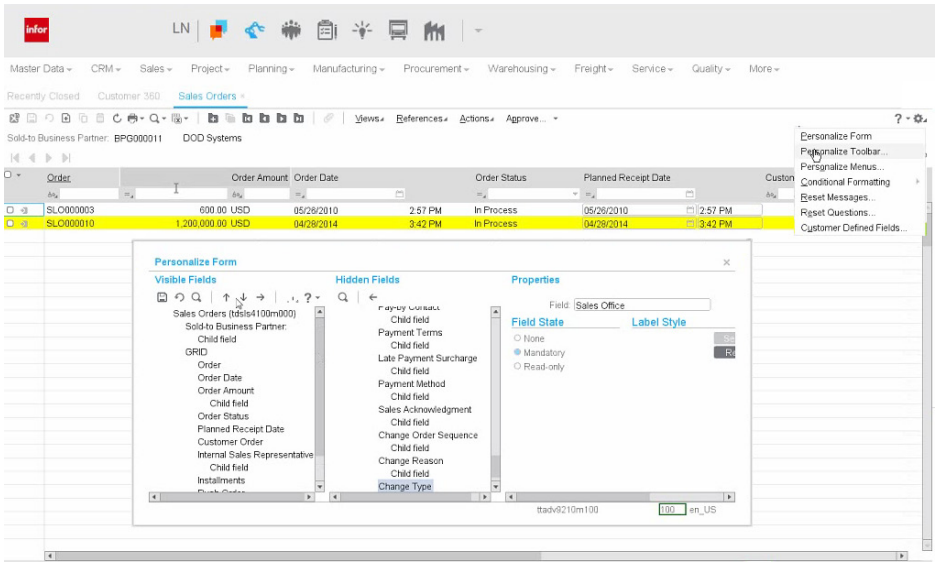


Figure 2. Infor LN list view

These data grids will normally be pre-built on top of the major data entities in the system (e.g., sales orders, purchase orders, warehouses, etc.). The grids then allow the user to drill down directly to the source transactions of the data.

Pervasive and Embedded BI—Reports, Charts, and KPIs

One way vendors are differentiating their solutions is by delivering a rich set of charts, key performance indicators (KPIs), and reports that let users visualize the information and quickly drill into the system and take action. ERP providers now deliver a wealth of BI capabilities to the end user, out of the box. If the solution provider doesn't have a rich set of BI user experience elements, the buyer should think about looking elsewhere.

From any of these elements—charts, KPIs, health meters, etc.—the ERP solution allows the user to drill down to the source of the data. And similar to the data grids, these user experience elements should be modifiable by anyone with a basic understanding of the system and knowledge of Microsoft Excel—users shouldn't have to put in a request to the IT department to be able to modify a graph on their screen. The figure below shows an example of a NetSuite executive dashboard (figure 3). These dashboards are no longer only for the C-suite, but should be available to everyone across the organization to manage their aspect of the business.

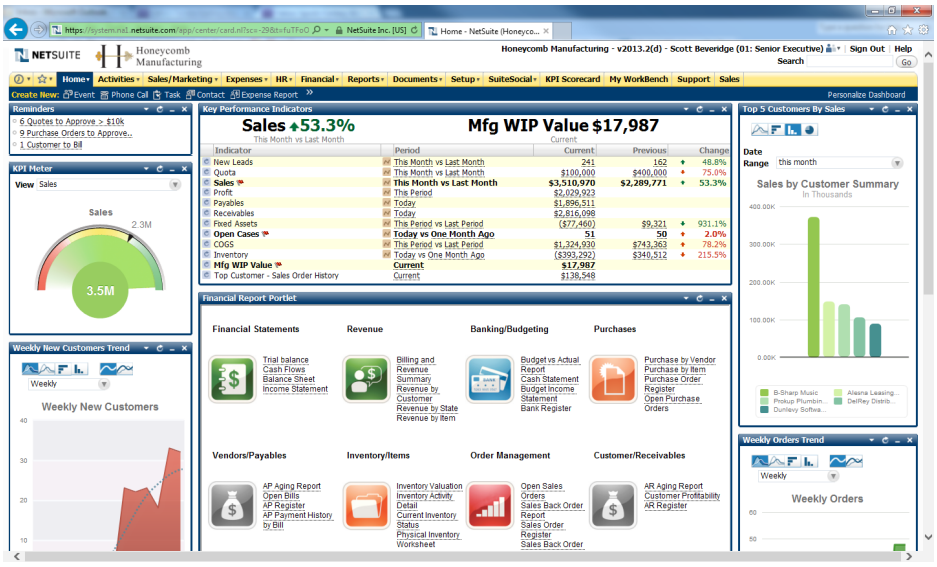


Figure 3. NetSuite executive dashboard

Some ERP vendors will leverage and embed one of the top BI tools, such as IBM's Cognos or SAP's Crystal Reports. But many ERP vendors choose to develop their own tools for reporting, charting, and data analysis. This is for a couple of reasons: One is that vendors have found that using a third-party tool limits the ability to create a truly unified user experience. Another reason is that the great advances in tool development have made it possible for vendors to develop tools without having to invest extensively in internal research and development (R&D).

One great feature that some products are now providing is what is being called embedded BI. When a user is looking at, say, a customer, a window on the screen shows any number of charts, such as the number of quotes received and converted for the customer, or the customer's accounts receivable (AR) days outstanding vs. the average AR days outstanding. This embedded BI capability is another great way to bring key information to the user experience.

On the BI front, a number of vendors are also providing a significant amount of online analytical processing (OLAP) services out of the box. These may be part of the standard solution or offered as a separate add-on to the solution. These OLAP data cubes can be graphed, diced, sliced, and analyzed just like the base ERP transaction data. The reporting discussed above is delivered primarily for the online transaction processing (OLTP) data in the ERP system. (A discussion of the differences between transactional OLTP reporting vs. OLAP reporting is beyond the scope of this report.)

ERP vendors have always delivered full sets of standard reports with their ERP systems. The common reports were always available either as a list of reports grouped by area and/or accessible from the transaction screen that the user was working in. The data grid capabilities described above go a long way toward reducing the huge catalog of standard reports that were delivered with a system. Yet, every vendor still needs to provide a strong suite of well-developed standard reports.

Information Retrieval—Search, Autocomplete, and Lookups

ERP systems are great at storing large volumes of structured and unstructured data, but accessing that data remains problematic. The user experience elements discussed above—the Excel-like data grids and graphical BI tools—have made the data within ERP systems more accessible, but users still need other ways to search through a system. ERP vendors are now adopting common Web paradigms for information retrieval.

The Web has forever changed the way we search for information. People expect to be able to easily search across a corporate ERP system to get the information they need in the same way they search the Web. Most ERP providers can deliver on a simple search that will display all information stored in the system related to a user's search. For example, a global search bar allows a user to search for, say, a customer by simply entering the customer's name in the search bar and hitting enter. The system will display all information related to that customer while ensuring proper security is enforced on the information retrieved.

However, the problem with the simple Web-like search employed by most ERP providers is that it will simply display all the transactions and documents on that customer in some predefined sort order. But, if that customer is commonly party to hundreds of electronic transactions (purchase orders, shipments, invoices, debits, and credits), then the simple search across the system quickly becomes useless. ERP providers are currently developing better search algorithms employing faceted, direct, or combined information retrieval techniques.

Other information retrieval techniques adopted from the Web include automatically filling in field information and keeping breadcrumbs of work performed by the user. The autocomplete or autofill is used when a user is searching for or entering data. The user can start typing, for example, the name of the customer and the system automatically fills in the rest of the customer name when it already exists in the system. This feature alone can save staff a significant number of keystrokes, thus improving business productivity.

Structured information retrieval is a tried and true method where a user can look up an object (product, customer, or other database object) by searching any number of criteria about that object. The user is able to call up a search box that lets the user define more

refined (and even more complex) search criteria to retrieve the object she or he is searching for. This type of information retrieval is still needed in ERP systems today, but the Web paradigm is becoming prevalent. For example, when entering customer information for an order, rather than having to complete a series of fixed fields (for name, telephone number, zip code, etc.), it is useful to be able to type just one of these elements and have the system identify the matches for this set of criteria.

Social ERP

It's no secret that social networking has dramatically changed the way people work and interact. Facebook's latest statistics list 829 million daily active users on average and 654 million mobile daily active users on average as of June 2014. Though some vendors were slow to get on the social bandwagon, the majority of ERP solution providers now weave social networking capabilities into their solutions. TEC looked into how social ERP is transforming the way people work in a two-part series of articles titled "Social ERP Emerges, Transforms the Way People Work," Part 1 and Part 2.

The integration of social networking tools with an ERP system can enable better communication and increase productivity beyond email's capabilities. With social networking communication tracking and storage, the data is stored within the context of people's work, so the information can be better cataloged and organized for later use than is currently possible in an email-centric environment (which is still the norm for many organizations). The biggest ERP software players all have solutions to help you go social—SAP Jam, Microsoft Yammer, Infor Ming.le, NetSuite SuiteSocial, IBM Connections, Salesforce Chatter, Jive, Deltek Kona, and others.

One thing to keep in mind is that an organization seeking to go social should look for an enterprise social networking solution that supports the greater social needs of the organization. In other words, the social networking tool shouldn't be only an arm of the ERP solution; it needs to become part of the organization's corporate culture. Adoption still lags for a number of reasons, but the shift in workforce composition from baby boomers to millennials will be a major factor in shifting organizations over to social networking platforms. An example of a team working on a project in Deltek's enterprise social tool Kona is shown in the figure below.

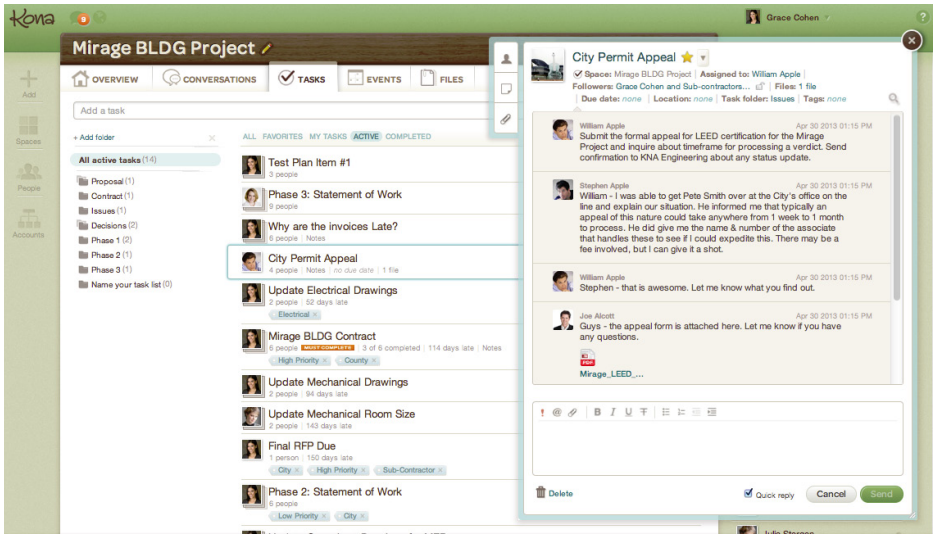


Figure 4. Deltek Kona enterprise social tool

Personalization, Customization, and a Little Color

A better user experience also means being able to customize and personalize the experience to allow the individual user to make his or her experience better. Let the user change the colors palettes that they are working in every day, or let them use their team colors if they want to.

Color is also a great way to highlight information that needs action or attention. Streetlight colors are universally understood, and most ERP solutions now let users flag objects as green, yellow, or red to visually indicate actions that need to be taken. Some solutions will give individuals color options; for example, if a user doesn't want to use harsh green, yellow, and red, he or she can choose to use other shades, such as lime, butter, and rose.

Most ERP systems allow either a system administrator or individual users to customize the screen fields that will be visible. This customization can be done on the Excel grids described above or on system transaction screens. Allowing users to change their experience to see only what they need to see, and in accord with their individual preferences, is another way to increase the productivity of each user.

Mobile and Wearable

It's no secret that mobile devices of various forms (phone, phablet, tablets, and wearables) are now being used more than ever. However, a recent survey by Epicor indicated that although 65% of organizations see mobile access to ERP as important, only 25% access the ERP system through a mobile device. Tablet and larger phablet users can access and manage ERP information via the user experience components described above as long as the ERP front end has been designed to support common browsers. Many ERP providers have moved the front end to HTML5 to support any browser and any device. Some of the user interface components we've discussed are fairly easily tweaked to allow automatic adjustments for screen size, scrolling, and tapping functions (to select icons or links) for larger mobile formats.

Vendors are doing significant work on how to best deliver ERP application information to wearable devices. Smartwatches and optical head-mounted displays like Google Glass are garnering a significant amount of attention. The IFS Labs team (an innovation division of IFS) is working on tools for smartwatches in response to customer requests for improving processes like invoicing and workflow approval (figure 5). With the impending launch of the Apple Watch, we expect to see significant efforts going into wearables.

Figure 5. IFS Labs Samsung Gear proof of concept

But using phones or wearables to enter or update detailed data in an ERP system is far on the horizon. ERP vendors are rolling out a number of point solution applications to perform low-complexity operations such as purchase order approval, time sheet approval, or work order execution on the shop floor. Customer relationship management (CRM) functions such as entering contact details are currently being rolled out by vendors. For the most part, these screens look like we have taken a step back.

Some new paradigms need to be developed to make it possible to get complicated work done with a small form factor. Voice recognition, automatic zooming on a database object to show details, or new interaction methods such as the double-blink on a wearable are examples of adjustments to the user interface on smaller form factors. The increasing availability of 3D cameras is also bringing gesture recognition (popularized in the gaming world) into the enterprise application space.

ERP Providers: User Experience To-do List

1. Develop a user experience strategy and ensure guidelines are readily available. A clear strategy, whether or not it is made public, needs to be part of the product roadmap for any ERP provider. It needs to be more than a shallow marketing headline; it needs to show in detail how the elements of the strategy will be executed across the solution.
2. Keep the user experience elements, and their definitions, in plain English. Don't try to wow us with techie terminology ("dichromatic visual parallite") or use cultural references ("Taj manhattman tile object") that carry no meaning to anybody outside of the design team who came up with it.
3. Establish consistency, and standardize across the industry. Early in the development of the personal computer software market, opening a file was performed completely differently on virtually every application. Then there was a realization that there was a need to standardize on basic operations like working with files, editing text, how to get help in a system, etc. Led by IBM, the common user access guidelines were published, and the majority of those user experience guidelines are still seen in many applications used today. Industry cooperation among players like IBM, Microsoft, and Apple may never again align as it did in the early days of the personal computer. But the players should just get together and decide on a few things: Why does a gear, grid, or pencil icon do something different in every application? With the massive proliferation of mobile apps, the situation is only getting worse, and standardization of user experience elements would be a big benefit for users and provide massive productivity gains.

User experience has become an important differentiator for ERP systems, and should be given proper consideration by organizations seeking an ERP when creating a shortlist of best-fit solutions. When assessing potential solutions, making sure that the user experience elements your company needs, such as embedded BI elements and social or mobile capabilities, are not just present but presented well, and then taking a deeper look at the user interface to ensure your users' interactions with the system will be uncomplicated and straightforward will help you come out of the selection process with an ERP system that works optimally at every level of the company.

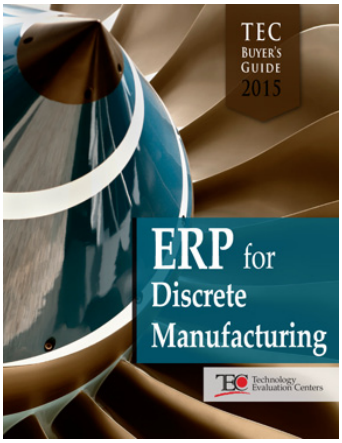
About the Author

Ted Rohm is a senior research analyst at TEC focusing on ERP manufacturing solutions. He has over 20 years of experience in large-scale selection, design, development, and implementation projects, primarily in the biotech/pharma industry.

Prior to joining TEC, Rohm worked for a number of companies including Oracle, Syntex, and Genentech (now part of The Roche Group). Rohm worked with Genentech for 13 years, starting as a senior programmer analyst responsible for building custom applications using the Oracle Tool suite in support of sales and marketing and product distribution. He then became senior manager of commercial systems, where he directed the development, deployment, and operations of enterprise-wide applications for the sales and marketing departments. Rohm was the principal systems architect during his last few years at Genentech, focusing mainly on the implementation of SAP ERP and its integration with other systems.

Rohm holds a bachelor's degree in electrical engineering from Columbia University and a bachelor's degree in physics from Allegheny College.

TEC 2015 ERP for Discrete Manufacturing Buyer's Guide



The TEC ERP for Discrete Manufacturing Buyer's Guide was developed to provide unique perspectives on the state of the enterprise resource planning (ERP) solution market for manufacturers. Discrete manufacturers face a number of business challenges in the 21st century, including the traditional challenges of planning and managing production, managing costs, and staying compliant with regulations, and newer challenges related to the ability to support customizable and complex products and global markets, and hiring qualified staff.

How are manufacturers and vendors dealing with these changing requirements for manufacturing ERP? Read on to find out. In addition to a functionality comparison of manufacturing ERP products currently on the market, the TEC 2015 ERP for Discrete Manufacturing Buyer's Guide includes the results of TEC's ERP trends survey (showing some surprising trends and stats), a discussion about how ERP vendors are differentiating themselves these days with elements enhancing user experience, and a special section dedicated to configure, price, and quote (CPQ) solutions and their growing importance to discrete manufacturers. Case studies and thought leadership from leading vendors in the discrete manufacturing ERP software space are also included as examples of recent successful ERP implementations and upgrades. Download the free guide now for TEC's expert analyst insight into manufacturing ERP trends, functionality comparisons, and vendor differentiation.

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Technology Evaluation Centers Inc.
740 St. Maurice, 4th Floor
Montreal, Quebec
Canada, H3C 1L5

Phone: +1 514-954-3665, ext. 404
Toll-free: 1-800-496-1303
Fax: +1 514-954-9739
E-mail: analyst_services@technologyevaluation.com
Web site: www.technologyevaluation.com