INDUSTRY DEVELOPMENTS AND MODELS

i-ERP (Intelligent ERP): The New Backbone for Digital Transformation

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IDC OPINION

Digital technologies are impacting all aspects of business and society, changing our workplace, culture, and way of life significantly. New digitally based business models enable enhanced experiences and innovation, unlocking the value of information. The best-performing companies are ahead of their peers on their digital transformation journey. "The strength of global frontier firms reflects their capacity to 'innovate' and to optimally combine technological, organizational and human capital in production processes throughout global value chains (GVCs) and *harness the power of digitalization* to rapidly diffuse and replicate ideas" (see *The Future of Productivity,* OECD, 2015). Yet this journey is not smooth, as companies face an innovation impasse. Decades old systems of record, built in a pre-digital era, run most businesses using outdated business assumptions and models. These systems are brittle, cobbled together, and hard to retrofit to meet the needs of today's businesses to compete in a highly competitive, digital business environment. And given their outdated assumptions and design, they cannot support the requirements to transform the current labor force to take on redefined, digital information-centric roles. This is not a sustainable situation. The time is long overdue for the replacement of today's systems of record with new systems of intelligence, which retain the core "system of record" capabilities while layering in new autonomic and predictive intelligence assets. This transformation is fast occurring at the platform tier across the spectrum of core software applications, including marketing automation, service and support, commerce, and sales, but the pace is most pronounced in the ERP application suite. IDC calls this enhanced ERP portfolio "intelligent ERP," or "i-ERP," and it will run tomorrow's businesses in an increasingly digital world:

- These intelligent systems will leverage machine learning (ML) on massive data sets to enable innovative products and services and higher employee productivity, so as to maximize return on information assets.
- i-ERP will utilize cloud deployment because of the demanding infrastructure requirements to manage massive, heterogeneous data sets accessible in time to support tight decision windows.
- From a process perspective, i-ERP systems, via machine learning and predictive analytics, will be capable of learning from exceptions and adapting business rules, allowing users to discover insights, better predict and plan for outcomes, recommend next best steps, and automate processes.
- Users will see the difference in this new generation of applications as the user experience (UX) begins to incorporate assistive, collaborative conversational styles (with a mobile-first design) driven by advances in natural language processing (NLP) and machine learning.

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IN THIS STUDY

This study provides a framework based on three dimensions for understanding this movement to i-ERP and for assessing the progress of vendors to realize the promise of i-ERP and intelligent systems.

SITUATION OVERVIEW

The use of machine learning and natural language processing is about to have a broad impact on enterprise applications. There are clear signs that this move to incorporate intelligence will be the next wave of enterprise applications.

We are already seeing a flurry of announcements by the leading application suppliers on their intention to incorporate machine learning in their applications in order to deliver intelligent applications or systems of intelligence. For example:

- **SAP:** At SAPPHIRE NOW in May 2016, CEO Bill McDermott described SAP's strategy in delivering S/4HANA to be a "system of intelligence." Then at SuccessConnect 2016, SAP announced that SuccessFactors would be incorporating machine learning to help detect and eliminate bias in the talent life cycle.
- **Salesforce.com:** Salesforce.com preannounced Einstein as "AI for CRM" to be the highlight of this fall's Dreamforce, which follows the company's acquisition of cognitive/artificial intelligence (AI) and data discovery companies over the past several years including RelateIQ, MetaMind, and BeyondCore.
- **IBM:** IBM introduced IBM Kenexa Talent Insights (powered by Watson), which uses cognitive technologies from Watson to deliver predictive insights for HCM, by understanding the user's context to tap into relevant data sets.
- **Oracle:** The Oracle Applications User Experience team has been touting "smart user experience" as the future of enterprise applications, with likely updates on the strategy upcoming at Oracle OpenWorld 2016.
- **Microsoft:** Earlier this year, Microsoft announced the integration of Dynamics CRM with Azure Recommendation API using the machine learning services to drive advice to users.
- **Workday:** The first Insight applications were released in 2014, and last year, Workday started a venture fund to invest in start-ups in machine learning.

The consistent thread here is that enterprise applications companies are touting machine learning as a key way to provide a differentiated, assistive user experience. These are, for the most part, statements of objectives. We can expect the delivery of product to be phased in over the next 1–5 years and beyond.

Clearly we are in the early days of this transformation of applications. And, as such, we can expect new disruptive entrants to enter the market, armed with expertise on the application of machine learning to business processes. Works Applications Ltd., headquartered in Tokyo, is a good example. Though founded in 1996, its "AI WORKS" is a new ERP "system of knowledge," which is cloud based and comes with a repository ("treasure chest") of best practice processes. It is focused on increasing speed in getting business tasks done, with learning, predictive, and natural language processing capabilities to understand user intentions — for improving data quality on input and for delivering information in context to a user.

It is fair to say that this next generation of enterprise applications will be known as "intelligent systems," including "i-ERP." They will be distinguished by innovations at multiple levels: user experience, business process, and data.

Successful adoption of this new style of applications depends on whether the technology will help advance business goals. Simply stated, the business goal of ERP applications is threefold:

- Drive cost reduction and process efficiency across the organization (e.g., by cutting inventory levels of cost per transaction).
- Enable or drive organizational agility (e.g., by allowing the organization more easily to scale up or down its business units and to acquire or divest units faster and cheaper).
- Identify new revenue streams and help the organization quickly mine these streams.

What differentiates the new i-ERP from the prior ERP generation can be summarized as follows:

- **ERP applications** are the systems designed to automate and optimize business processes, collecting data about the various aspects of the business including administrative details, transactions, and operations. These processes manage resources including some or all of the following: people, finances, capital, materials, suppliers, manufacturing, supply chains, customers, products, projects, contracts, orders, and facilities. The software can be specific to a particular industry or designed to be more broadly applied to a group of industries.
- An **ERP suite or a set of ERP applications** can be deployed to manage up to the entire enterprise while meeting business or organizational objectives, integrated via a common user interface (UI) accessing a common (logical or physical) data set with common definitions to coordinate end-to-end processes.
- **i-ERP applications** are ERP applications or suites that use machine learning and advanced analytics built on a large, curated data set to forecast, track, learn, route, analyze, predict, report, and manage these resources and business processes. They feature an assistive and conversational user experience, by automating a set of high-volume repeatable tasks and augmenting (via human-machine interaction) the performance of less frequent, more novel tasks. They are capable of processing, analyzing, and acting on massive volumes of data in real time, using in-memory computing (IMC) technologies. As a system that learns, an i-ERP application must allow for ongoing reconfiguration to enable process refinements and user experience adaptation.

i-ERP applications incorporate the four pillars of the 3rd Platform. The deployment target will be public *cloud* first, given the demanding infrastructure requirements, though private and hybrid environments will need to be supported as well. Process logic will be driven by advanced analytics, especially cognitive and machine learning, operating on *Big Data* sets. The user experience paradigm is *mobile* first and supports collaborative and *social* means to get business processes done. Figure 1 shows the 3rd Platform pillars and the innovation accelerators driving digital transformation.

FIGURE 1

3rd Platform and Innovation Accelerators

Source: IDC, 2016

In an effort to provide a consistent way to look at these new applications, we propose a framework calling attention to the three dimensions of i-ERP and next-generation enterprise applications. As shown in Figure 2, i-ERP is distinguished by advances at the process, data, and user interface levels:

- **User experience dimension:** Assistive and conversational
- **Process dimension:** Breadth of automation, augmentation, and redefinition
- **Data dimension:** Curated data sets and in-context access

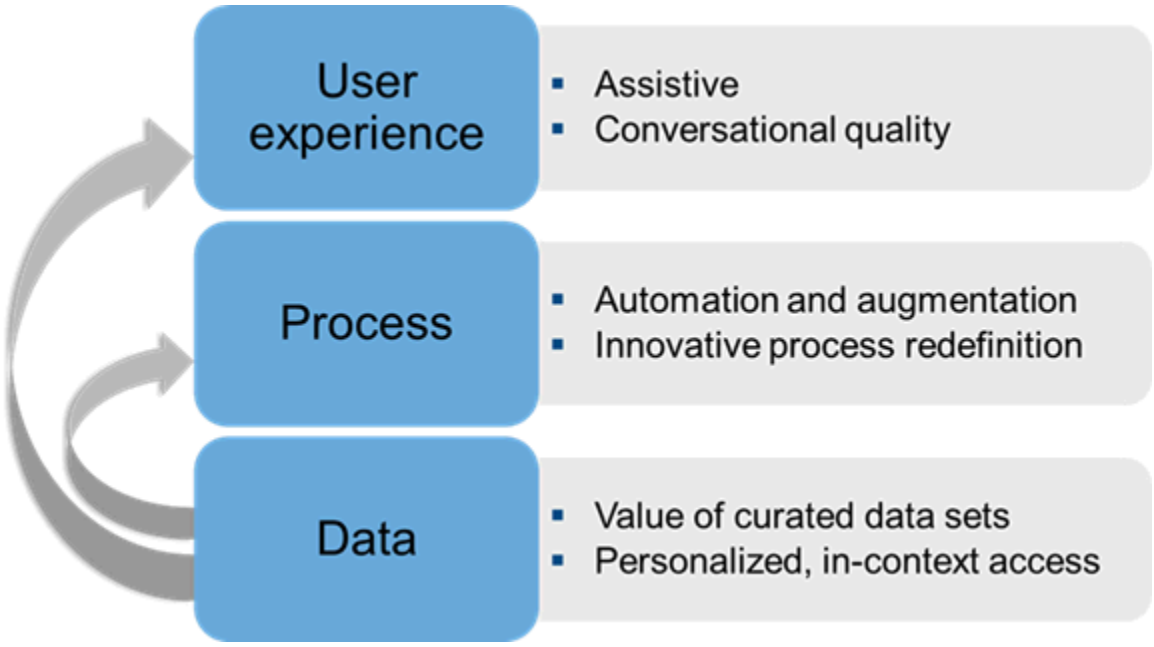
An i-ERP system is driven by data and the insights drawn from the data. These insights impact the way work gets done (the process level) and also what information gets presented to the users, depending on an understanding of their context and what they need in that context. There is ongoing refinement of the processes and ongoing improvement to the user experience as the system learns and applies the knowledge gained. This common data/analytics platform impacts each i-ERP application or a set (or suite) of such applications.

To understand the centrality of data in driving i-ERP, Figure 2 shows feedback arrows from data to process and from data to user experience.

There are many claims in the apps marketplace for "intelligent apps" and they are all over the map, focusing on selected aspects of one or two dimensions. But i-ERP apps should be assessed on the combination of the aforementioned three dimensions. Ultimately, buyers will reward vendors that bring these combination of factors together in delivered products that are configurable based on ongoing learning and then applying that learning to improve processes and the quality of the user experience.

FIGURE 2

Three Dimensions of i-ERP



Source: IDC, 2016

The User Experience Dimension: Assistive and Conversational

The client/server era ERP substituted a graphical user interface in place of the old green screen that was a viewport on a mainframe back end. A breakthrough in the new generation of i-ERP will be a user experience that is assistive via a conversational style.

Assistive User Experience

The digital assistants of the mobile world (like Apple's Siri) will be specialized to help users navigate through their increasingly digital- and data-centric roles. Think of Microsoft's Cortana, Google's digital assistant, IPsoft's Amelia, IBM's Watson, Wipro's Holmes, and many others. There are multiple elements that go into the delivery of this type of experience, namely:

- Predictive analytics help assess the options at a particular point in time and advise on the next best action to take. This might be the next customer a sales rep should call and what offer to make.
- Machine learning identifies weak signals that can lead to significant events requiring action. These signals are monitored and human agents can be alerted via this type of interface. An assistive UI enables an inexperienced employee (such as a junior inside sales rep) to understand which signals are important and recommends the next best action to take in response.
- The assistive user interface enables personalized access to information in the context of the work activities (see the section on In-Context, Personalized Data Access).

Machine learning and advanced predictive analytics help assess the likely outcomes of alternative actions when faced with a decision such as the next best action to take with a supplier or a customer. Assistive interfaces frame a decision to be made, indicate potential responses (based on an analysis of data from prior situations resembling the current one), predict the expected outcome, and recommend/prescribe an action likely to lead to an optimal result.

Conversational Interface

The application of natural language processing has advanced to the extent that automated question and answer (Q&A) systems are gaining wide use in environments such as call centers. Advances in natural language generation are a key enabler. This was a natural area for IBM's Watson technology to be applied, given its initial demonstration in the question and answer game *Jeopardy.* That demonstration was impressive given the need to disambiguate terms (such as whether a "bank" is a river bank or a financial bank) and to understand slang, puns, and other more sophisticated word usage. Further developments, not shown in this demonstration, provided speech recognition — doing speech to text and text to speech in ever more accurate ways.

But success in answering questions — even success in hearing questions and speaking answers — is not the same as participating in a conversation. There are a whole range of additional methods required. You need to listen and respond, not just with an answer, since a question may not have been asked. And it's important to understand the context to know what to offer that will seem relevant and helpful rather than off base. Furthermore, understanding speech or even text requires a way to detect emotional force — irony and sarcasm are especially difficult.

However, there is significant progress in this field that will make the user experience more and more like a conversation — considering users' context, location, habits, and other factors, providing a user experience that anticipates a user's needs and goals. This is where digital assistants are headed.

There are three ways in which smart user experiences can have a positive and significant impact on our professional and personal lives: through automation, by offering advice, and by enhancing exploration and discovery.

i-ERP Metric 1: Assistive and Conversational UX Quality

An i-ERP system should provide a user experience that involves interacting with a digital assistant in a conversational style. The assistance should be proactive, bringing information and recommendations on the next best action to the attention of the user based on up to real-time process context. The assistance should also be responsive, helping users find information relevant to a decision. And the interaction should be conversational, not limited to question and answer. A fully conversational interface is as yet an unrealized goal, but the quality of the experience should be measured by the progress down the continuum from Q&A to conversation — the ultimate goal of the user experience.

The Process Dimension: Breadth of Automation, Augmentation, and Redefinition

Moving Beyond Automation of Routine Tasks

Computer automation of knowledge work starts with repetitive, routine tasks. This type of automation is achieved by the application of rules and traditional programmatic techniques. These techniques work well when the steps required to achieve the task can be described, making it possible to use procedural programming languages to mimic the steps a human agent would take — leading to full automation of the human activity. This has already been accomplished for many clerical activities — formerly the exclusive work domain of knowledge workers.

Now the use of machine learning and NLP puts a broader set of tasks in play for automation, especially tasks that necessarily involve decisions. This observation has been pointed out in a number of recent studies, most notably the 2013 Oxford University study by Frey and Osborne. That study projected that 47% of U.S. jobs could be displaced by a combination of extended automation and offshore outsourcing. This theme is continued in another study issued this summer ("Where machines could replace humans — and where they can't (yet)" — Michael Chui, James Manyika, and Mehdi Miremadi, *McKinsey Quarterly,* July 2016).

Arthur Samuel in 1959 defined machine learning as a "field of study that gives computers the ability to learn without being explicitly programmed" (source: Wikipedia). MIT labor economist David Autor, who has written extensively on task and job automation and its economic impact, cites a 1966 work by philosopher Michael Polanyi where Polanyi stated "we know more than we can tell" (see *The Tacit Dimension*). This is the basis for Polanyi's definition of tacit knowledge — that is, we know how to do something, but we can't systematically describe our method for performing the task. Hence such tasks are not automatable by traditional programmatic methods that specify an ordered set of instructions. However, a learning system (powered by ML and NLP methods) may be applied to automate some tacit knowledge tasks that resist a step-by-step description. The result is either full automation or augmentation (i.e., a combination of machine-aided human agents that can improve on the performance of human agents alone).

Combining Machine Automation and Augmentation

Machine learning relies on pattern recognition by processing a large data set at a scale that is beyond human capability. This capability can be applied for process automation and augmentation in many domains.

Consider the source-to-settle process. Typically, 20% of the spend is focused on 80% of the suppliers. There are many transactions, but the total monetary value of each is low to the overall total, and there are many potential suppliers for the goods, so the supply risk is also low. *Automating* the end-to-end process (from sourcing to contracting) for these routine, low-risk transactions (via the application of machine learning and natural language processing) frees skilled personnel to focus on spend and suppliers with higher supply risk and financial cost, thus managing relationships with the most critical and key suppliers. For these less routine processes, machine learning *augments* the sourcing process by monitoring signals that could lead to a supply disruption, advising personnel on available corrective actions and alternatives. The entire source-to-settle process (both routine and nonroutine cases) is implemented via a combination of automation and augmentation.

Another broad set of cases involves exception handling in process areas such as claims adjudication. Aided by machine learning, more types of exceptions can be handled in a fully automated manner. Others can be managed via machine recommendations to be considered by human agents/managers. The line between the range of business tasks amenable to automation and/or augmentation changes over time. Advances in machine learning puts more tacit knowledge tasks in play for full automation or partial automation combined with machine-aided augmentation. An i-ERP system should be built on a machine learning foundation that accesses a rich data set, enabling automation and augmentation opportunities. Such an intelligent system, powered by ML and NLP methods, expands the range of full- or partial-task automation over time via the application of machine learning and natural language processing analytical methods.

(For more on task augmentation, see *Cognitive Collaboration: Augmenting the Way We Work*, IDC #US41577916, July 2016.)

Intelligent Process Redefinition

The application of machine learning to enable task automation is not just a "lift and shift" from manual to machine-based processing with the same work tasks shifting from a human agent to a machine. Intelligent systems also are driving a reconsideration of innovative, more effective ways to get tasks done using machine intelligence. This is a new opportunity for process redefinition.

Given today's increasingly digital world, such a process redefinition is overdue. Most ERP systems running large organizations today date from the 1990s when client/server application architectures (precloud) were coming into wide use. The definition of processes implemented by the applications were based on business scholarship of that time. The best example is SAP and the influence of Prof. A.-W. Scheer's work — for example, his book *Business Process Engineering,* which became the basis for the R/3 reference model.

Today, business networks provide new ways to get things done (such as recruitment of employees, customers, or suppliers leveraging data from network activity or learning of what drives customers based on their social behavior). This is a redefinition of business processes and the work required to accomplish them.

With machine learning putting more nonroutine tasks in play for automation or augmentation, there is an opportunity to innovate and reinvent how to perform a business process in a way that provides higher return and more personalized products and services. The result will be a redefinition of much of knowledge work, enabling new use cases. IDC tracks many of these emerging use cases across major industries in the cognitive systems spending guide (see **www.idc.com/getdoc.jsp?containerId=IDC_P33198**).

Another aspect of process redefinition is that i-ERP systems should also allow for adjustments in the cases of severe geopolitical and financial events. Prediction of such events would fall outside the scope of such an intelligent system, but an intelligent system should be able to monitor and analyze social data to provide an early warning of an event's impact. i-ERP should enable organizations to revise plans, make mass changes to policies (e.g., credit), and restructure reporting lines or business processes when key events such as Brexit or an oil price slide occur. Such functionality could be provided via simulation or scenario analysis tools or even a safe mode where the impact of these events and potential responses can be tried and tested.

i-ERP Metric 2: Process — Breadth of Automation, Augmentation, and Redefinition

As ML and NLP technologies develop, more decision-oriented tasks come in play for automation. Examples are tasks such as claims adjudication, fraud detection and investigation, and supplier selection and evaluation. The capabilities of a specific i-ERP system (from a process perspective) are assessed by the range and quality of task automation and augmentation versus what is possible at a given point in time. But i-ERP should not just be a "lift and shift" operation from human labor to machines. New ways to get business done in the digital age must be on the table. Assessing the process quality of the application also considers creative process enhancement or process redefinition. This includes the use of business networks and the addition of new monitoring and predictive/prescriptive capabilities.

The Data Dimension: Curated Data Sets and In-Context Access

i-ERP systems crunch data, evaluate scenarios, and use problem-solving techniques to suggest resolutions to the end user. An i-ERP system is only as good as the data that can be marshalled to drive the monitoring, analysis, predictions, and recommendations:

- Curation: i-ERP systems should be curators of data that the applications require — because the value of the data set impacts the value of the application.
- Access: Assisting individuals and teams to access the data in context and up to real time is required.

Machine learning can play a role in both data curation and data access.

Curated Data Sets

Vendors can curate data for the use of their customers — for example, IBM and its acquisition of the data assets of The Weather Company to fuel cognitive models or SAP's acquisition of Concur and Ariba with their data-rich business networks. Another successful case is Oracle's Data as a Service built up from Oracle's BlueKai acquisition.

With open source machine learning and advanced analytics software gaining ground, a reliable way to establish and maintain value is to deliver the data with algorithms as a cloud service. The act of curation enables app vendors to bring industry-specific flavors to their ERP suites, by varying the data sets for specific use cases and industry-specific decisions.

Does an application vendor need to be a data curator? Since data drives i-ERP processes and user experience, the quality of the data and scope of the data is differentiating. But there are different paths to this goal. An app vendor can be a direct curator by gathering data from multiple places, relevant to the processes and UX to be supported. Or an app vendor can be an indirect curator by organizing an ecosystem or marketplace via a compelling business value proposition to participants, thus serving as an aggregator of content (i.e., a curator of curated data sets).

In-Context, Personalized Data Access

Knowledge workers take too much time to search for information. By understanding the process context, the assistive UI can suggest information that would be useful, interacting with the user to answer a question. Machine learning can access a large data set on how knowledge workers find and use information, particularly experts in a field, and help inexperienced workers gain the benefit of such lessons learned. You can see the beginnings of this capability in search engines with a vast library of what users have already typed in — so that you can see various alternatives to complete your thought. And Samsung's Galaxy series and, later, Apple iPhone added predictive text, recognizing patterns in your personal communication so that likely choices for the next word are provided.

Access to structured data has fueled a whole business intelligence industry, where an abstract semantic layer buffers the complexity of the underlying record-field structure, generating SQL in the background, enabling more business users to select records from a database. But what if a digital assistant had access to all the queries that were made on a database and could guide you to get the data you need by leveraging what it knows about the *people* who formed queries. This plays into the strength of machine learning to find patterns in large data sets — where the data here is the data on how people request data. These user access patterns in the structured data world represent an untapped resource for digital assistants (powered by machine learning). They can leverage patterns in information retrieval and query that have been observed and analyzed to deliver a personalized experience to the users for anticipating and fulfilling their information access requirements.

i-ERP Metric 3: Data — Value and Completeness of Curated Data Sets and In-Context Data Access

The value and completeness of curated data sets with respect to process coverage are key differentiators. Value depends on the combination of the data and the algorithms built on the data and their relevance to a business process. Completeness relates to the coverage of the data for the scope of processes covered by the i-ERP system. Over and above, a foundation of relevant data is the discovery of relationships within the data sets and definition of metadata to facilitate access. The goal is to provide personalized access to information in the context of the business process a user is engaged in.

FUTURE OUTLOOK

The preferred deployment platform for i-ERP applications will be the cloud, given the demanding infrastructure and data requirements. That has implications for how this marketplace will evolve:

- i-ERP application adoption will begin at the line-of-business (LOB) level. Cloud adoption has its roots in the line-of-business level, with some application areas moving to cloud sooner than others. Collaborative and sales apps markets moved to the cloud before HCM and procurement and all before finance. The same LOB-flavored trend has characterized the adoption of analytic applications (custom built or packaged), requiring an LOB champion for the project to succeed. This LOB-centric approach is confirmed by early instances of intelligent, machine learning-driven applications — appearing in CRM and HCM before finance.
- i-ERP suites will emerge, but it will take some time for the requisite functionality to emerge across the range of apps within the traditional scope of ERP. And there are limits to the process change organizations can absorb all at once. This means that the center of gravity initially for the i-ERP apps marketplace will be best-of-breed intelligent applications. And organizations will look to find the best solutions for a domain of need and then look to integrate domain-specific applications as needed to support an end-to-end process like order to cash or source to settle.
- The quality of the user experience will emerge as the major differentiator between applications. An assistive user interface is key in enabling today's knowledge workers to become the digital knowledge workers of tomorrow. And though true conversational interfaces are a future goal, the quality of the interaction will improve over time through advances in natural language processing and better understanding of the process context and the individual user's skills and needs to address a situation.
- The key enabler in i-ERP is the quality of the data. This means that the ability to deliver intelligent services based on curated data sets will be in demand. The role of value-added content providers will become more critical. i-ERP suppliers will compete either to acquire some companies and/or organize a data marketplace to include such information providers to power the intelligent applications built on these services.
- i-ERP is not monolithic, and it is not a "product." Rather, it is a highly modular collection of components sourced more likely from an ecosystem than from a single vendor, at least in its early stages. Later, as with previous ERP evolution cycles, buyer sentiment will shift from assembling and integrating "best of breed" elements to buying end-to-end suites sourced from single vendors. The software elements of i-ERP will be cloud-based by default but may contain important elements that remain on-premise indefinitely. Enterprises will create their i-ERP environments by drawing on extensive and dynamic ecosystems of software, content, and services providers.

- i-ERP represents a disruptive event in the history of ERP, creating an opportunity for new vendors to emerge. At the same time, i-ERP represents a threat to any established ERP vendor that does not respond quickly, and these vendors are at risk in becoming irrelevant and replaced by more innovative alternatives provided by either new entrants or faster-moving existing enterprise app suppliers. For end users too, this represents both an opportunity (to gain access to value-creating new technologies) and a threat (seeing a decline in value to their existing investments). At the very least, for both sides of the negotiating table, i-ERP will introduce new levels of uncertainty, forcing enterprises to make important sourcing choices on the basis of uncertain information about the future of their vendors and their vendors' offerings.
- Services also means uncertainty for the ecosystems of IT services suppliers and specialist software providers that support today's major ERP providers. Services providers and niche software publishers will be forced to reevaluate the ecosystems in which they participate, and possibly to exit some and enter others for the first time, potentially generating innovative new offerings but also creating a new layer of uncertainty — at least in the short term.

ESSENTIAL GUIDANCE

For organizations seeking help in their journey to digital transformation, look to i-ERP systems as an aid for transitioning people to adjusted roles and responsibilities:

- **People:** Consider i-ERP as an aid in redefining roles and responsibilities in advancing digital transformation. With more tasks in play for automation, the mix of tasks in a job will change, favoring those tasks that are outside the scope of automation and tasks that lend themselves to augmentation via human-machine interaction.
- **Process:** Automation of tasks need not be a "lift and shift" operation, except for the most routine, repetitive tasks — such as clerical tasks already automated before i-ERP. Rather, see this as an opportunity to redefine how work gets done, capitalizing on incorporating machine and human learning in a way not possible before.
- **Technology:** The marketing of i-ERP will continue to be ahead of delivering on the promise of cognitive/AI technology. There are advances in machine learning and natural language processing that are making a difference. Application vendors in the best position going forward are those that are investing in the latest technologies via acquisition and transforming their ecosystem to attract the best technologies to their platform.

LEARN MORE

Related Research

- *Cognitive Collaboration: Augmenting the Way We Work* (IDC #US41577916, July 2016)
- *IDC PlanScape: Implementation of Cognitive Systems* (IDC #US41477516, June 2016)
- *Worldwide Enterprise Resource Management Applications Market Shares, 2015: Cloud Gaining Momentum and Industry-Specific Applications* (IDC #US41536715, June 2016)

Synopsis

This IDC study provides a framework based on three dimensions for understanding this movement to i-ERP and for assessing the progress of vendors to realize the promise of i-ERP and intelligent systems.

"i-ERP (intelligent ERP) applications, incorporating machine learning, are set to be the next wave of ERP, supporting the digital transformation of companies at the core of their enterprise systems. Evaluating these systems relies on assessing three dimensions: an assistive and conversational user experience, extended process automation and augmentation, and curated data sets accompanied by in-context access." – Henry Morris, IDC Fellow for IDC's Worldwide Big Data, Analytics, and Cognitive Software research

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