In parallel, Accenture launched its first Technology Vision for Oracle. The report demonstrated how Accenture and Oracle see eye to eye on how to help accelerate the digital directions of the biggest companies. The document applied the lens of Accenture's and Oracle's deep expertise to show how our combined approach mapped to the six technology vectors described in the Technology Vision 2014 report.

Flash forward one year and let’s see what’s changed. In 2015, the big question is no longer about digital transformation. It is now about what business leaders will do with their digital advantage—and how they can and will stretch their boundaries to achieve advantage. The Technology Vision 2015 report reveals that pioneering enterprises are doing far more than just flexing their digital muscles—a few instances of cloud here, some analytics there. In aggregate, they are creating a hyper-connected world where companies, consumers and even everyday objects have instant capabilities to act and interact with each other digitally across the globe. Putting it another way, they are mastering the shift from “me” to “we,” giving life to the new “We Economy”.

In the Accenture Technology Vision 2014 report, the big news was that big companies were embracing digital transformation wholesale. After more than a decade of watching the technology upstarts call all the plays, the large players realized that their deep pockets and massive scale were potent advantages to help them reclaim the digital high ground in their industries—and in the minds of their customers.
As you’ll see in this year’s Technology Vision for Oracle, Accenture and Oracle understand the “We Economy” very well. In keeping with our approach last year, we have built our story on the five key chapters in the latest Technology Vision report. In the pages to come, you’ll see how, together, Accenture and Oracle are applying their unique strengths to enable organizations to confidently gain momentum in the digital age, and to work effectively across company and industry boundaries in the We Economy. Crucially, we stay rooted in the reality that most organizations still live in an ERP world, where rip-and-replace is not an option. But we continually provide practical paths for digital transformation out of the traditional ERP realm.

Specifically, this year’s Technology Vision for Oracle notes that leading businesses are using hardware at the edge—where digital and physical worlds intersect—to get closer to their customers as a differentiator and as a way to enter new markets. Here, Oracle’s “simplifying IT” philosophy, amply implemented by Accenture, effectively counters the rising complexity that happens as hardware moves to the edge. In another chapter, we examine how Accenture and Oracle are enabling the intelligent enterprise with database technology, cloud computing and software intelligence.

A third chapter explores development of technology-based industry platforms that will increasingly create new kinds of products, value, and differentiation for buyers and sellers across the entire supply chain. Then, the report shines the spotlight on the rapid shift toward the personalization of everything—what Accenture calls the “Internet of Me”—and looks at Accenture’s and Oracle’s responses with customer experience solutions.

And in a final chapter, the report puts the future workforce under the microscope, demonstrating how Accenture and Oracle can help the growing number of companies that are getting ready for a time when humans and intelligent machines share workspace, learning from each other.

Next year the story will be different again, reflecting the breakneck pace of change in the digital era. Already, 62 percent of organizations polled in Accenture’s Technology Vision 2015 survey are investing in digital technologies, and 35 percent are comprehensively investing in digital as part of their overall business strategy. The survey revealed that more and more enterprises now see themselves connected to a digital fabric that has the potential to touch all aspects of their business, their customer relationships, and the world around them.

Accenture and Oracle will be there to support them on the next stage of that exciting journey.
Wingmen for the We Economy

It takes a strong bond and common vision for companies to collaborate successfully year after year. We know that first-hand: Accenture has been delivering Oracle-based solutions in almost every industry for more than 23 years now, and can claim one of the strongest strategic alliances in the global IT-services sector.

What makes the Accenture half of this alliance so strong is its global reach, deep insights, proven experience, and industrialized delivery capabilities. With more than 52,000 Oracle-skilled professionals worldwide, Accenture is uniquely qualified to provide strategy, implementation, upgrade, and application-outsourcing solutions across the entire Oracle suite of products. This suite includes products such as Oracle Cloud Applications (SaaS), Cloud Platforms (PaaS), Oracle E-Business Suite, Oracle’s PeopleSoft, JD Edwards, Oracle Retail, Siebel, Oracle Fusion Middleware and Oracle Engineered Systems.

From the Oracle side comes delivery of the full technology stack as a platform. Oracle is unique in owning IP in each layer of the stack—applications, middleware, and hardware. Since it owns the source code, Oracle can optimize its hardware around its software—an advantage that brings substantial benefits for clients. The most important benefit is that now this is all available in the cloud, as a service—a big step forward in efficiency and effectiveness.

But it’s about much more than hardware and software. Accenture has results to show for its blend of innovative methodologies, tools, and accelerators that enable rapid implementation of solutions that are sustainable, affordable, and predictable, while mitigating risk. Backed by the research and development strengths of the Accenture Technology Labs, we demonstrate our innovation by providing strong points of view, leading practices, and assets that are unique and highly differentiated across industry, function, and technology.

Central to the strategic nature of the Accenture-Oracle relationship is each side’s commitment to investing in significant resources to address their joint customer needs. Examples include: the Accenture Oracle Business Group, a joint initiative launched in 2015 to deliver industry-specific solutions built on the Oracle Cloud to help clients realize the benefits of the cloud faster and with reduced risk; the Accenture Foundation Platform for Oracle Cloud, a comprehensive offering with industry verticals for Oracle’s Cloud Applications and Platform; and the Accenture Innovation Center for Oracle Engineered Systems, which lets clients “try before they buy” by assessing proof-of-concept demonstrations.
CHAPTER 1

The Outcome Economy: The hardware foundations to give customers what they really want

Julian Dontcheff
Accenture EMEA Oracle Engineered Systems lead
Decades ago, Harvard University marketing professor Theodore “Ted” Levitt was said to have told his students that people didn’t want quarter-inch drill bits; they wanted quarter-inch holes.

Levitt was ahead of his time in depicting what’s now referred to as the “outcome economy,” where digital businesses increasingly sell solutions and results, not just products and services. Accenture, in its Technology Vision 2015 report, says the outcome economy is defined by companies’ ability to create value by delivering solutions that lead to quantifiable results.

Of course, marketers have long talked about selling solutions rather than products. But the outcome economy has been elusive because it has been tough to deeply, continually discern what customers want. Today, it is feasible thanks to increasingly intelligent hardware. Leading businesses are using hardware at the edge—where digital and physical worlds intersect—to get closer to their customers as a differentiator and as a way to enter new markets.

Oracle and Accenture have what organizations need to succeed in the outcome economy. Oracle’s “simplifying IT” philosophy, amply implemented by Accenture, counters the rising complexity that happens as hardware moves to the edge. Oracle’s sheer reach turns that philosophy into practicality. At least half of the world’s data runs on Oracle databases, and the company already has almost 41 percent of the global market for integrated stacks, according to research firm IDC.
We'll dig deeper into that point in a moment. But what exactly is meant by "hardware"? In this context, the definition extends even beyond the Internet of Things (IoT)—a field in which Accenture is pioneering new insights for enterprises worldwide. Hardware now includes a myriad of devices ranging from wearables to smart buildings. In Accenture's latest Technology Vision survey, 64 percent of respondents said their company was using or experimenting with emerging channels such as smart objects (parking meters, smart appliances, robots, etc.), connected TVs (68 percent), and connected cars (59 percent) to engage customers.

The levels of insight and control that are the hallmarks of the outcome economy can happen when hardware is integrated with existing capabilities. Cloud-based analytics and visualization technologies, along with sensors and greater computing capability at the network's edge, are critical too. As intelligence moves rapidly toward the edge, it builds a bridge of data-rich feedback loops that span the "last mile" between customers and businesses.

Dealing with all that data

As all that increasingly smart hardware moves to the edge, it adds enormous complexity to IT operations. Not only are there more "moving parts" but there is vastly more data in play.

First, the facts: the digital universe is doubling in size every two years, reaching 44 trillion gigabytes by 2020, according to one study. YouTube users upload 48 hours of new video every minute. In 2020—just five years away—data production will be 44 times greater than in 2009, notes other research. The torrent of data is putting a strain on IT infrastructure. Fully 55 percent of respondents report a slowdown in the performance of their IT systems and 47 percent cite data security problems, according to a global survey from Avanade, the Accenture-Microsoft joint venture.

In order to solve these soaring business problems, companies need not just new hardware and software but intelligent storage and hardware. For IT leaders, the key is to think (and act) in terms of converged architecture—essentially, in terms of a platform approach to infrastructure that dramatically improves infrastructure performance, amplifying storage capacity and the ability to process more data. Leading companies are already moving fast in this direction: 88 percent of enterprises already have or are planning to implement a converged infrastructure, according to Forrester Consulting.

Oracle is in the forefront of this push with its pre-integrated Engineered Systems—a suite of solutions that help reduce the cost and complexity of IT infrastructure while increasing productivity, performance and stability. Oracle's mantra is "simplifying IT"—a strategic directive that emphasizes simplified systems design, where software and hardware are integrated and validated to work together—everything applications and databases, operating systems, servers, networking, storage systems, and backup, virtualization, and management software.

That said, there is room for Engineered Systems to accelerate data movement within the enterprise—to effectively play a bigger role in controlling data traffic. This role would require seamless integration with existing Oracle appliances and easy integration with third-party systems. One way to implement
this may be to deploy specialized preinstalled nodes for handling data traffic and processing of Oracle products; for example, there might be a node to control the batch execution of an Oracle Retail deployment.

Accenture, one of Oracle’s most strategic partners for Engineered Systems, with more than 52,000 Oracle-skilled consultants worldwide, amplifies the impact of these solutions—for instance, with tools to help accelerate implementation, such as Oracle Exadata data Migration Toolkit and Accenture Foundation Platform for Oracle. Accenture’s disciplined approach, implemented by Exadata-certified professionals, helps ensure data and application migration.

One of the world’s largest hotel and resort companies bears witness to Accenture’s approach. The hospitality chain saw a fivefold boost in ETL jobs and reporting activities as a result of Accenture’s implementation of an Exadata solution. Its data warehouse database was not originally designed for large data warehouse loads, or to support a large-scale CRM application. Its initial database design was for a single instance of the CRM database. As the business grew over time, the database evolved into a 25-terabyte data warehouse. Hardware had to be added periodically to meet the demand on the database. The database resource requirement was always high, causing big delays in delivering as the business expected.

Accenture’s Exadata implementation was able to meet the availability, scalability, and throughput requirements. Exadata provided the capability to consolidate databases hosted across multiple servers and made it possible to provide more up-to-date reports to support decision-making. The hospitality provider was able to consolidate, hosting databases on fewer servers to ease management, maintenance, and patching for future releases. The database with Exadata was highly available and scalable. All of this equates to an enhanced level of service for the company’s guests, which is driving loyalty to new heights.

Similarly, a leading European telecommunications provider has been able to enhance customer experience by streamlining its billing and revenue management (BRM) processes, while minimizing costs. Accenture has helped the provider upgrade its current billing system to Oracle BRM 7.5 on top of Oracle’s Exadata platform. Close partnership with Oracle is ensuring adherence to best practices and achieving challenging milestones.

The proof-of-concept phase is now complete. In collaboration with Oracle, Accenture completed the BRM upgrade and migration in under three months. The migration of the BRM DB onto the Oracle Exadata platform has produced a 547 percent improvement in billing performance and a 331 percent step-up in invoicing performance, among other gains. While these are eye-catching increases from a performance perspective, it is the business gains that are truly exceptional. Invoicing now happens sooner and faster, accelerating revenue collection.
At the same time, Accenture gives organizations the confidence that their use of Engineered Systems can deliver results. Before investing in the Oracle solutions, many companies take advantage of the Accenture Innovation Center for Oracle Engineered Systems to test their workloads, accelerating enterprise application deployment, strengthening analytics capabilities, and improving overall performance. This Innovation Center is more than just a test lab: it gives enterprises access to the world’s largest concentration of Oracle implementation talent. The payoff: faster time to value—a crucial plus in the white-hot outcome economy.

The Innovation Center helped a large heating, ventilating and air conditioning company achieve bigger gains in operating efficiency and effectiveness. Having reached the performance limits of its hardware for a business intelligence (BI) reporting application, the HVAC company wanted to test Oracle Exalytics In-Memory Machine to determine if it could meet its growing business demands.

Working in collaboration with the Accenture Enkitec Group at the Innovation Center, the company tested its 35 most troublesome queries across 100GB of data. The initial proof of concept showed a 1,400 percent performance improvement. There was more to come. Applying its extensive knowledge of Oracle software and Exalytics, the Accenture team was able to multiply performance by a factor of 63x. As a result, the company deployed less equipment, reducing its costs while better supporting its growing BI demands.

**Strengthening the foundations of the outcome economy**

One of the very specific ways in which Oracle is responding to the tsunami of data is with its Hybrid Columnar Compression (HCC) technology. Running on Oracle Exadata Database Machine, one of the leading Engineered Systems solutions, HCC helps enable higher levels of data compression and provides enterprises with larger cost savings and performance improvements. Average storage savings can range from 10x to 15x depending on which HCC level is implemented. With such savings, IT managers can defer purchases of new storage for several years. For example, a 100 TB database achieving 10x storage savings would utilize only 10 TB of physical storage.

Furthermore, there is little room for data loss in the fast-paced outcome economy, and less and less tolerance for lengthy back-ups. Database protection and rapid back-up become increasingly important. Oracle’s newest Engineered System, the Zero Data Loss Recovery Appliance, protects thousands of databases and provide continuous real-time backup from system memory, so data can be recovered up to the last sub-second. It helps IT managers get much closer to the goal of continuous availability and gives them confidence that back-ups can be validated safely and quickly.

Oracle’s “simplifying IT” philosophy, amply implemented by Accenture, counters the rising complexity that happens as hardware moves to the edge.
Concurrently, Oracle is pressing ahead with Java. Among North American and European platform software decision-makers, 54 percent of business applications are Java-based. Java remains a very relevant choice for software vendors to develop tools, utilities, and platforms such as BPM, CEP, IaaS, and elastic caching platforms (ECP). It can reduce costs, drive innovation, and improve application services as the programming language of choice for IoT, enterprise architecture, and cloud computing. Indeed, Oracle’s latest adaptations of Java make it a tool for faster expansion of the outcome economy: it is geared to developing applications for embedded devices or the IoT and connected devices in general. In line with Oracle’s integrated approach, Java runs faster on Oracle’s T5 SPARC processor, because the chip was designed that way.

**Conclusion**

The outcome economy upends long-held notions of how superior products and services are defined. Hardware at the edge is a competency that business leaders must strive to attain, no matter the industry.

This new capability in hardware can not only add another layer of insights, but can also help businesses better understand the context in which their customers are operating. But it can also add enormous complexity and further torrents of data.

However, the rapid expansion of the outcome economy can only happen when there are solid IT infrastructure foundations with which to handle the vast surge of data that is inevitable as intelligence moves to the edge. And that expansion can be spurred by using programming tools, such as Java, that are geared to making it easier to develop applications for a new world of connected devices.

**KEY QUESTIONS TO ASK**

The following questions are typical of what CIOs and managers of infrastructure management should be asking now:

- Should our Java applications run on in-house built systems or on systems engineered and integrated for Java applications?
- Does the code for our critical business insights need to be rewritten to take advantage of new technologies?
- To what extent can the data center scale up, given the exponential increase of data year after year?
- Do our business requirements mean we are better off with flash, in-memory computing, or Infiniband networks?
- Have we looked at how we can better utilize the lower layers of the architecture, such as the database layer, to perform faster for less than half the cost, while providing better business value?
Intelligent Enterprise: Big data + smarter systems = better business

Nick Collins
Accenture Oracle Big Data lead
The smart enterprise is rapidly becoming a reality. Quite suddenly, we are entering an era of software intelligence—a time in which applications and tools take on more human-like capabilities, driving better informed decisions, freeing up managers for more strategic tasks, and even propelling innovation throughout the enterprise.

Of course, for years researchers have been making progress in areas such as machine learning and cognitive computing. But these technologies have only recently become viable for wide use—the consequence of today’s mix of vast amounts of data, cheap storage, tremendously scalable computing, and advanced data science.

Together, Accenture and Oracle are working to help enable the intelligent enterprise. While Oracle’s relational database technology remains key to achieving business goals, its principal product for handling massive amounts of both structured and unstructured data is the Oracle Big Data Appliance (BDA). For its part, Accenture’s proven capabilities in cloud computing, and across the digital realm at large, can benefit businesses intent on realizing the vision of the exceptionally intelligent organization whose competitive edge comes from its pervasive use of data to drive decisions.

And together, Accenture and Oracle are working to persuade business and technology leaders that they should view software intelligence not as a pilot or a one-off project, but as a commercial core capability—something that not only can elevate operational excellence throughout the organization, but also can power innovation.
At more and more companies, leadership teams that get the connection between data proliferation and software intelligence don’t need much persuading. They can cite the studies showing that companies with a data-driven culture are three times more likely to rate themselves as substantially ahead of their peers in financial performance. The race for the truly intelligent enterprise has begun.

Factors enabling software intelligence

It’s important to look more closely at the factors that are fostering this unprecedented opportunity. The demand for better solutions is there because digital complexity is soaring: 50 percent of CIOs say their chief concerns are solution complexity and integration difficulties. According to 91 percent of respondents to Accenture’s Technology Vision 2015 survey, software intelligence will be critical to simplifying IT.

Technology trends are pointed in the right directions too. Data storage costs continue to plummet, and processing power advances by leaps and bounds, largely due to the availability of cloud services. In each of those realms, Oracle and Accenture are providing solutions that lay stronger foundations for the intelligence enterprise.

Concurrently, data science is advancing rapidly. Leaps in deep learning and cognitive-computing technologies are driving enterprise adoption. Advances in more human-like qualities, such as speech and image recognition and reasoning capabilities, are enabling companies to answer unclear, undefined questions better and faster than ever.

The big data connection—and the data struggle

But the biggest factor by far is the sheer growth in data volumes. Over the past year, respondents to Accenture’s Tech Vision survey say the volume of data managed by their organizations grew by an average of 55 percent. By 2020, predicts market research firm IDC, roughly 10 percent of the data in the digital universe will come from 32 billion connected devices—more than twice as many as there are now. At the same time, IDC measures Oracle’s share of the database market at 50 percent today.

The consequence: every company in every industry can now access astounding amounts of data that allow software to increase its intelligence significantly. That data may be used indirectly, by humans analyzing the data to understand the rules, pathways, and “intelligence” that are then manually put in place inside application engines. It may also be leveraged directly, as adaptive algorithms learn from continual streams of data, modifying their behavior automatically over time based on massive input.

Machines are uniquely able to capitalize on the scale of big data so that statistical algorithms can improve their accuracy and discover entirely new associations among the data—associations that might not have been possible to hypothesize. Having more data usually beats using a better algorithm, and this enables big data to catapult the performance of even relatively simple algorithms to new heights of intelligence.

However, the fact is that most enterprises are struggling to fully utilize their data. They wrestle not only with the volume of data now available
to them, but also with the many complexities of identifying, capturing, categorizing, analyzing, and sharing it throughout the data supply chain. Only 28 percent of businesses believe that they are generating strategic value from the data they collect.¹¹

Solutions that can ease data headaches

This is where Oracle and Accenture can make a difference. Oracle Big Data Appliance provides a modular, flexible, fault-tolerant, enterprise-ready platform that can scale with an organization’s data needs, from a six-node starter rack all the way to a multi-rack cluster, with each node communicating via a high-performance and highly available 40-gigabit InfiniBand fabric.

Oracle BDA is a multi-node engineered system that runs CDH (Cloudera Distribution including Hadoop) and the Cloudera management utilities, and can also be used for Oracle NoSQL Database deployments. It is quite flexible enough to run a variety of other big data technologies, including data visualization tools such as Oracle R, and data discovery tools such as the new Oracle Big Data Discovery product, based on Endeca technology but enhanced for Hadoop and big data use.

At the same time, Oracle provides Big Data Connectors to help integrate Oracle BDA with existing Oracle relational databases. And Oracle BDA connects with Oracle Exadata via the high-performance InfiniBand switches that come standard with both products. Using Big Data SQL, an organization can then access data across its traditional Oracle relational database, Hadoop, and Oracle NoSQL Database with a single query.

Oracle BDA stands at a threshold where licensed Oracle products work hand-in-hand with trusted and supported open-source solutions designed to handle massive amounts of data to help drive innovation. To assist with automation and real-time learning, Oracle BDA can support a variety of rules engine capabilities as well as Apache Spark, an in-memory platform that now runs as part of the Cloudera Distribution on Oracle BDA. Spark Streaming can help apply rules and learn from the data on the fly via large, real-time, high-velocity data sets.

Overcoming real-world reticence about big data

To date, the corporate world has been reticent to adopt Hadoop and big data solutions. IT organizations remain wary about open-source solutions, and business executives have real concerns about support, security, and stability of those solutions. There is also reluctance to embrace engineered systems from CIOs and CTOs whose strategy is to maintain standard and uniform components for all their server and storage deployments.
For its part, Oracle is taking the approach of productizing a stock, ready-to-sell, modular, expandable big data solution. It is doing the “dirty work” of getting all these technologies to work together and deploy in a compatible fashion, with significant assistance from Cloudera. Cloudera is helping by providing a more enterprise-ready Hadoop distribution and its related management utilities. The Oracle-Cloudera partnership is important to Oracle BDA’s long-term operability—and to Oracle’s ties to the world of big data.

Enhancing traditional IT

Aside from the Oracle Big Data Appliance, for some small to medium-scale datasets, advances and capabilities in the Oracle Database itself can help with real-time data processing for advanced rules and organizational automation.

Oracle Database 12c now provides an in-memory feature, which allows a variety of workloads to perform faster and more efficiently. It can help handle largely complex queries as well as streaming and rapidly-changing datasets with greater ease by mitigating reliance on traditional disk for processing. Coupled with Oracle’s in-database analytic functions and data mining features, it can prove even more powerful for capturing intelligent insights from the data.

Oracle’s GoldenGate product, software that provides real-time data integration and data synchronizations, also pairs well with the Oracle Database to bring relational data into and out of the database at real-time speeds. GoldenGate supports a variety of non-Oracle databases as sources and targets, such as SQL Server and DB/2, and is customizable for use with Hadoop.

The augmented technologies can be more capable when they run on Oracle’s Exadata database machine. To enable organizations to put these more powerful technologies to the test, the new Accenture Innovation Center for Oracle Engineered Systems employs a “bring your own data” philosophy where users can see how their data sets will perform with Oracle tools and other products on real Oracle engineered systems including Oracle Exadata and Oracle Big Data Appliance.

The software intelligence journey

Accenture envisions software intelligence as the suite of technologies that range from rule-based programming to machine learning and cognitive computing. Already, more decisions are being made by software—and many more decisions can and should be entrusted to machines. But as software takes on more decision-making duties, it must be made smarter, too. With increased intelligence, software can also self-evolve and make novel discoveries that drive entirely new levels of innovation.

Now, more than ever, businesses must make a renewed investment in machines and their digital intelligence—to propel data-driven outcomes as well as opportunities for innovation. But how to do that? The truth is, few organizations will be capable of jumping straight to cognitive computing. Although it’s not yet necessary to have one’s own version of IBM’s Watson natural language-driven supercomputer just to compete, companies need to begin somewhere.

One way to make sense of software intelligence
technologies is to think of them in terms of a journey that starts with automation, moves into machine learning, and then extends to cognitive computing. Now is the time to start that journey in earnest, with a first step being to identify tedious, time-consuming tasks that follow consistent business processes and to prioritize those as top candidates for rule-based automation.

Oracle's current big data solutions—the Oracle BDA included—can support this journey, as can many of its traditional offerings. The new Oracle DB In-Memory Option, together with Spark and other general in-memory technologies, will allow new data models (and modeling techniques) to apply to existing data. That is, the "schema-on-read" concepts of Hadoop and triple-store inferencing can now take on a more generic form. Increasingly, we'll see the ability to build and impose a variety of models on in-memory data, leading to faster achievement of insight.

**Moving toward machine learning**

Later, companies will move into machine learning—the computational science field that encompasses modern mathematics, various statistical techniques including clustering trees, probability theory, dynamic systems, and deep learning. For many companies, this may be daunting, but now is the time to start investing—to educate talented employees, hire technical experts, and implement the necessary technologies. Forward-looking companies will identify their data assets, leverage new ones, and start exploring their existing data in search of hidden insights. They will start small and add until machine learning is pervasive throughout the enterprise.

Together, Accenture and Oracle are working to persuade leaders that they should view software intelligence not as a pilot or a one-off project, but as a commercial core capability.

Machine learning can get a boost in companies that use Hadoop to keep large datasets available for use. Here, Oracle's BDA can be useful, together with tools such as Oracle Big Data Discovery and Oracle R Enterprise. However, there is room for further development: the big-data space could benefit from more collaboration between the open-source and corporate-proprietary worlds. Cloudera, partnered with Oracle, is a good example of this kind of collaborative effort from a vendor perspective. If there were more such examples, getting beyond the religious battles between open-source and proprietary, perhaps that would encourage more productized solutions pushing through to the machine learning and cognitive computing realms of the intelligent enterprise rather than being stuck at the rules-based automation level.

**A glimpse of cognitive computing**

Looking further out, cognitive computing—significantly extending a machine's ability to sense, comprehend, and act—will appeal to far-sighted business and IT leaders. They will begin this stage of the journey by raising expectations for their current solutions and then building in communication capabilities, such as NLP or image recognition.
They will start by focusing on small, better-defined use cases and then gradually broaden their scope—while providing more data to increase their systems’ contextual understanding—to tackle more ambiguous questions and daunting challenges. Oracle’s Text and Data Mining capabilities, Spatial and Graph Option, and to some extent its Endeca offering, provide some coverage in this space, and will have strong potential in the years ahead.

**Conclusion**

Increasingly, decisions made solely by software will determine the success or failure of companies. It’s up to business leaders to ensure that the software is intelligent enough to consistently make the right decisions.

Now that every company in every industry can access astounding amounts of data—and since machines are uniquely able to capitalize on the scale of big data—this is the time to make bold moves in software intelligence. We expect that companies will start by automating many of the tedious manual processes that inhibit agility as they pursue the data-driven enterprise. Next, machine learning will pave the way for intelligent software to evolve to keep pace with technology. And later, cognitive computing will go further, capitalizing on its unique reasoning capabilities to address questions that were once unanswerable due to their ambiguity and lack of clarity. Solutions from Accenture and Oracle can help companies on that journey.

Put simply, businesses that harness the power and potential of software intelligence can run more efficiently, innovate more rapidly, and serve customers more effectively. Software intelligence is a game-changer for every business in every industry. Ignoring that fact is, simply, not very smart.
CHAPTER 3

The Platform (R)evolution: Growing more with platforms than with brands and solutions

Patrick Sullivan
Accenture global Oracle Technology lead

Brian Sullivan
Accenture global Oracle Cloud ERP lead
With the digital revolution upon us, more and more companies are shifting away from talking in terms of traditional products and services and are moving toward creating platforms to meet a company’s needs in very specific ways. These technology-based industry platforms will create new kinds of products, value, and differentiation for buyers and sellers across the entire supply chain.

Accenture is closely tracking the platform trend. Its Technology Vision 2015 report explains that increasingly, platform-based companies are capturing more of the digital economy’s opportunities for strong growth and profitability. Faster advances in cloud and mobility not only are reducing the technology and cost barriers associated with such platforms, but also are opening up this new playing field to enterprises across industries and geographies.

To that point: the report notes that the key characteristic of a platform-based business is that others outside the company create value for the enterprise—in many cases enabling entirely new digital models for the company. In their latest survey, Accenture’s Technology Vision team found that 39 percent of executives are using industry platforms to integrate data and applications with digital business partners and to collaborate, while 35 percent are experimenting with industry platforms.

The report goes on to describe entire ecosystems of platforms as a new plane of competition—ecosystems that may transcend many industries, geographies, and functional boundaries. But there are other platforms, closer to home, that deserve attention: specifically, new digital platforms that tie together a host of largely internal capabilities in order to boost an organization’s agility and reduce its total costs of ownership.
Accenture and Oracle recognize the power that these platforms can provide, allowing an enterprise to be agile and more efficient. To help enterprises develop a platform-based business, among other initiatives, Accenture and Oracle formed the Accenture Oracle Business Group (AOBG) in 2015 to jointly develop and deliver digital solutions powered by the Oracle Cloud. The group brings together Accenture's deep industry, technology, and delivery experience and Oracle's expansive set of cloud solutions and platforms to streamline the path to becoming high-velocity enterprises—which are characterized as being agile, connected, and optimized. The AOBG is helping organizations embrace the platform revolution by enabling them to respond to disruption faster and with less risk with industry-based solutions and prebuilt accelerators, assets and tools. As a framework for the enterprise, the AOBG goes beyond the platform revolution, enabling the Internet of Me—or the ability to personalize and expand on providing an exceptional experience for customers, which we discuss in the next chapter. The AOBG is unique; no other Oracle alliance partner has a group such as this.

Individually and together, Accenture and Oracle are pushing the development of advanced platforms. The platforms may fully integrate new sets of applications, provide an easier user interface, and help address industry-specific needs with vertical solutions, all offered in an "as a service model." They may spotlight a primary business function, as Oracle’s Human Capital Management (HCM) Cloud does for HR teams. They may soon replace long-standing core ERP platforms since that functionality is now cloud-ready. Or they may act to accelerate and amplify existing capabilities, as Accenture Foundation Platform for Oracle (AFPO) does for the integration of clouds (Oracle and non-Oracle) and the various data sources that the clouds need to talk to.

Welcome to the platform age

Digital business platforms mark the beginning of the platform age. According to Massachusetts Institute of Technology, "In 2013, 14 of the top 30 global brands by market capitalization were platform-oriented companies—companies that created and now dominate arenas in which buyers, sellers, and a variety of third parties are connected in real time." To be clear: this isn't about simply developing and deploying digital tools piecemeal—social, mobile, analytics, cloud, and the Internet of Things (IoT). Certainly, more and more businesses are using those tools for competitive advantage in a widening array of business functions.

But far-sighted enterprises are bringing together their digital initiatives under platform umbrellas. The platform is essentially a well-defined technical architecture, governance, and set of technology services all focused on enabling the creation of new industry-specific applications. It serves as a pool of reusable functionality and capabilities to make...
building and evolving these applications fast and easy—and to help companies ultimately achieve better business outcomes.

This is not the first time we’ve seen platforms preempt waves of change. Two centuries ago, factories were the platforms that drove the industrial revolution. In the 1800s, railroads were the platforms that revolutionized the transportation of goods and people, enabling new ecosystems of communities and commerce. And computer and communication platforms have driven the biggest disruptions of the past 30 years.

Why now?

The primary force bringing platforms to the fore is the elimination of barriers—in terms of the technology, cost, and time associated with traditional IT infrastructure and application development. According to Gartner, “the cost for service providers to deliver infrastructure will plunge almost 40 percent by 2017.” Advances in digital technologies and the economic leveling that they create are the major reasons why traditional companies can now develop their own digital industry platforms. These enabling technologies include continuing developments in cloud services, mobile platforms as front ends, rapid application development, application programming interfaces (APIs), and other advances.

While these digital technologies have disrupted numerous established companies during the past 10 years, digital industry platforms will fuel the acceleration of disruption during the next three to five years, leaving less and less time for established companies to react to change. According to research firm IDC, one-third of leaders in virtually every industry will be disrupted by competitors by 2018—newcomers and established—that leverage platforms to innovate new offerings, reach new customers, radically expand supply and go-to-market networks, and disrupt their industries’ cost and profit models.

Industry leaders with staying power are already moving in this direction. GE, for example, has formed a number of strategic relationships with Amazon Web Services, Pivotal, Softbank, and Cisco to accelerate the adoption of its GE Predix software platform, which serves as the foundation for connecting machines, people and analytics to the Industrial Internet.

On another front, home improvement retailers are battling it out for the do-it-yourself home automation market with a variety of products and partnerships. Like many large retailers, Home Depot and others are also looking to engage with in-store customers through platforms that are supporting apps, do-it-yourself project help, and digitized product catalogs.

Digital platforms that take over from traditional ERP

The heartbeat of any large enterprise is still its ERP platform. After a few years of decline, ERP is back at the top of CIOs spending agenda. If enterprises are to move at speed and operate with the agility now expected by their customers (and increasingly, by their employees), they must re-evaluate their core ERP systems, storage systems, and peripheral applications and determine how best to establish a long-term roadmap to address these fast-changing expectations.
For the most part, enterprise ERP systems are on-premise and have been customized, updated, and augmented many times. But digital tools now provide many more flexible and less costly options. Imagine a new set of applications, built on a fully integrated platform, with a seamless user interface, containing industry-specific vertical solutions, with everything offered in an "as a service" model.

With this model, enterprises do not have to sacrifice competitive business processes or unique customer advantages. They can fully embrace the benefits of cloud architecture and lower TCO, while retaining the capabilities of their on-premise customizations. The transformation can be phased in smoothly: the enterprise migrates its enterprise solutions over time, without having to cope with the fragmentation of multiple databases, multiple data models, and multiple applications.

Accenture and Oracle have created a new digital platform that delivers Oracle SaaS Applications as a full platform to suit a variety of industries. The platform appeals directly to business leaders as well as IT executives because with cloud, the tasks that historically have come with enterprise applications—everything from system administration to patches and upgrades—simply don’t exist.

The joint developments of the cloud-based solutions make use of several new and existing accelerators that Accenture has built. Accenture’s Cloud Link for Oracle is a tool that automates the extraction of data from the “as is” platforms (such as Oracle E-Business Suite or PeopleSoft) to the new “to be” Oracle Cloud platforms. The Accenture Foundation Platform for Oracle (AFPO) provides industry-specific verticals and extensions to address industry and implementation gaps across the cloud landscape. The extensions are built on a combination of Platform as a Service (PaaS), Java as a Service, and Schema as a Service. AFPO includes a service catalog of pre-built accelerators for Oracle Cloud and other non-Oracle applications in order to help reduce migration risks and to deploy solutions across Oracle’s Cloud portfolio faster and in a more predictable manner.

There is also an integration fabric, leveraged by AFPO in the cloud, that acts as the switchboard, connecting an enterprise’s various data sources, applications and other clouds. AFPO also offers a pluggable platform to add edge solutions like social, mobile and cloud-based customer experience platforms (such as Eloqua and Vitrue). And it provides a joint customer engagement process and simplified commercial model, meeting the pace and flexibility demands across the customer base. AFPO has already helped simplify and speed up the installation of Oracle Fusion Middleware across more than 250 implementations worldwide.

Accenture and Oracle recognize the power that platforms can provide, allowing an enterprise to be agile and more efficient. Individually and together, they are pushing the development of advanced platforms.
Oracle, the platform company

For its part, Oracle has been making headlines with its emphasis on platforms. In essence, Oracle has become a platform company. Over the past five years, it has been acquiring, building and delivering a variety of cloud-based platforms. Oracle Cloud Platform as a service (also known as PaaS) provides a shared and elastically scalable platform for consolidation of existing applications and new application development and deployment. It delivers cost savings through standardization and higher utilization of the shared platform across multiple applications.

Oracle also has numerous cloud platforms specific to key business functions. For instance, Oracle HCM Cloud helps HR professionals find, grow, and retain the best talent, enables collaboration, provides complete workforce insights, increases operational efficiency, and makes it easy for employees everywhere to use any device to connect to the company’s core systems. There are also cloud-based platforms tailored to specific industries. For example, Oracle’s recent acquisition of Micros, a platform purpose-built for the restaurant, retail and the hospitality industries, now takes on much more functionality when added to Oracle’s portfolio of platforms and solutions.

At the center of Oracle’s platform approach is the concept of delivering the full technology stack as a platform. Indeed, Oracle has achieved proven levels of interoperability across its expanded product lines because it can now provide what amount to vertically integrated systems. The objective of offering pre-integrated, workload-compatible systems is to strip out significant amounts of labor—not just upfront but also throughout the life cycle of the services delivered to the business.

Integration happens at multiple layers of the stack, starting with—leading-practices component technology, databases, middleware, and applications, expanding to tightly integrated, highly utilized, engineered systems for specific and general-purpose workloads. Users benefit since, for instance, Oracle software runs faster and more efficiently on Oracle storage. Oracle is unique in owning IP in each layer of the stack—applications, middleware, and hardware. Oracle owns the source code, and thus can optimize its hardware around its software—an advantage that brings substantial benefits for clients. The most important benefit is that now this is all available in the cloud, as a service—a big step forward in efficiency and effectiveness.

Accenture as platform partner

Accenture’s implementation of Oracle solutions emphasizes high-performance delivery—removing bottlenecks in systems, in applications, and between systems and applications. In the storage arena, for instance, this involves Accenture’s continued development of application-aware storage. Accenture’s continual push for efficiency means that users can purchase less storage for their needs and run the storage systems with leaner resources.

Accenture works hand-in-glove with Oracle to develop industry-specific cloud-based platforms. A good example of this is the Accenture Life Sciences Cloud (ALSC). Used by several large phamas, including Pfizer, ALSC is built to provide a significant advance for that industry: the ability to aggregate clinical trial data under one roof and give pharmaceutics scientists and drug developers the ability to run cross-trial analyses to speed the development of new drugs.
The data helps provide insights that previously scientists have not had before they began clinical trials. This platform is now being extended to create an ecosystem across the contract research organizations (CROs). They can now populate data directly into the ALSC platform to obtain a single source of the truth. ALSC was built on AFPO; it uses Oracle's Exadata and Exalogic platforms to help enhance the performance of the solution.

Accenture has built similar platforms leveraging the Oracle stack that are industry-specific, such as the Hospitality Suite for hotel and resort companies, Enterprise Services for Government, the Public Service Platform, and several others. These will continue to embrace Oracle's Cloud Applications to deliver the solutions required for organizations to compete and meet their customers' rising expectations.

**Conclusion**

"Cloud connected" platforms are not a far-future idea. The tools and techniques are ready or coming together today, and the data and sources of data are readily accessible. What's needed most is a widespread shift in mindset toward the acceptance of cloud-based platforms and away from historically expensive on-premise applications. Leading organizations are making that shift now. An increasingly urgent challenge for other global players: they must quickly determine which platforms will give their organizations a competitive advantage—and that will define their roles in the digital economy.

**KEY QUESTIONS TO ASK**

Here are some of the questions that should now be on senior management's agenda:

- What is your plan to integrate your cloud to other clouds? The cloud to your custom apps? The cloud to on-premise ERP apps?
- Are your customizations and enhancements holding you back from embracing a true cloud-based platform?
- Do your current on-premise applications give you the flexibility and agility to support your changing business needs?
- Do your customers and employees have higher expectations of leveraging a digital enterprise, but you struggle with understanding how and when to get there?
- Are you concerned about the maturity of cloud applications and their viability to support your business requirements?
- Are you faced with a short application support window and are trying to decide whether to upgrade or move your enterprise solution to the cloud?
CHAPTER 4

The Internet of Me: Personalizing every experience, every day

Aaron Wright
Accenture global Oracle CX lead
The day is coming when it really is all about you.

Already, the Internet enables each of us to personalize our lives in all sorts of ways. My playlist. My book recommendations. My news feed. My new car, customized online by me. But now digital technology is pushing personalization much further and faster—toward a true “Internet of Me.”

Accenture’s latest glimpse into the future of digital technology—the Technology Vision 2015 report—explains that leading enterprises are actively creating connected worlds where their customers’ preferences, habits, and context are woven together to make daily experiences simple, delightful, and unique to them. Although many companies can already mimic customer intimacy—as seen in the online ads that pop up quickly to reflect your latest searches—the new frontier of personalization means something much more meaningful to the individual.
This signals a wholesale change in the way businesses must design applications. Now, the focus has to be squarely on experience—and success may be gauged by the extent to which enterprises are able to make their customers’ people the center of business decisions. Forward-leaning companies are already moving fast in this direction. In Accenture’s Technology Vision 2015 survey, 81 percent of respondents put the personalized customer experience in their organizations’ top three priorities, with 38 percent reporting it as their top priority.

Accenture and Oracle are well placed to support this accelerated personalization push. Each has a long tenure with customer experience solutions. For a start, Oracle’s Customer Experience solution suite for marketing, e-commerce, sales, service, and social media helps companies deliver superior customer experiences that foster advocacy and drive revenue growth. And Accenture’s Customer 2020 study of the “nonstop digital customer” underscores Accenture’s work in promoting premium customer experiences.

Perhaps most importantly, both companies have a wealth of solutions and experience to develop and support agile, scalable IT platforms that can be pivotal to managing information and data from multiple areas of the enterprise—platforms that require interaction between on-premise and cloud systems.

Personalization up close

So what’s driving the personalization phenomenon? While companies have been experimenting with personalization to one degree or another for years, today—and certainly the spotlight on customer experience is not new—the surging proliferation of data and sensors can provide a much more complete picture from which companies can personalize their products and services at scale.

What’s happening now is that every experience is becoming a digital experience as ordinary “things” become intelligent devices. Today, rather than just one channel, like the PC or mobile phone, the convergence of the digital and physical worlds is creating hundreds of potential channels that reach deep into every aspect of people’s lives. Now there are digital parking meters, smart refrigerators, adaptive security systems, and much more.

A few examples show the Internet of Me in action. The new connected car from Mercedes-Benz includes application programming interface (API) connections to Nest thermostats at the driver’s home. The car can notify the thermostat when the driver will arrive, and the thermostat in turn adjusts the in-home temperature to the driver’s desired settings.
Appliance-maker Whirlpool is making similar moves: its smart dryers include a function that allows environmentally conscious consumers to schedule energy-intensive tasks for when electricity is more abundant and rates are lower. And fashion and apparel leader Ralph Lauren, in line with the quantified-self movement, has developed a sensor-embedded athletic shirt that tracks the wearer’s activity and heart rate.

At the same time, Georgia Power, a utilities provider, is driving new customer value by leveraging its network of 2.4 million smart meters. The company now offers consumers access to their real-time data generated by the meters so they can better understand their energy use. Georgia Power is even attracting new business by offering personalized services such as pre-paid and pay-as-you-go billing—allowing it to serve customers who don’t have good credit and can’t afford a security deposit.

Ultimately, success in the Internet of Me will be driven by how businesses deliver the individual experiences that consumers demand. Many businesses are well aware of this, and are acting on that awareness: 62 percent of organizations attribute their investments in omni-channel initiatives to the simple fact that their customers expect it, notes one study. Companies are exploring a variety of emerging channels to engage customers, according to Accenture’s latest Technology Vision survey—channels that include wearables (62 percent), connected TVs (68 percent), connected cars (59 percent), and smart objects (64 percent).

For more and more companies, this new focus on exhilarating user-centric experiences is paying off. Fully 60 percent of Accenture Technology Vision survey respondents report positive results from their investments in personalization technologies. These numbers will only improve as companies gain sophistication in this space, and quickly become the foundation for the next generation of business. “Gartner research shows that 89 percent of companies believe that customer experience will be their primary basis for competition by 2016, versus 36 percent four years ago.”

Tackling the challenges ahead

But competing for customers’ mindshare—winning in the Internet of Me—won’t be a cakewalk. The study of investments in omni-channel initiatives also found that only a minority of companies agree that they are doing this well.

Oracle and Accenture are collaborating to move those companies forward. Oracle is continuing to expand the level of personalization within its customer- and employee-facing products. However, one of the practical challenges is in bringing together the array of personalization approaches across the enterprise and across all channels, from desktops to smartphones to sensors and social media.

With that challenge in mind, Accenture has developed an asset—the Portal of the Future—that integrates more than 20 of Oracle’s products across its customer experience portfolio. The Portal of the Future combines data from various sources (including social) to give a specific customer a personalized experience and personalized offers across channels, highlighting the mobile experience and personalization across all customer touch points—mobile, digital, and physical. Crucially, the benefits from such personalized customer interactions can extend beyond immediate engagement to additional profit resulting from commerce, loyalty, and advocacy.
Accenture and Oracle are well placed to support the push toward accelerated personalization. Each has a long tenure with customer experience solutions.

A large telecommunications company is using the Portal to drive digital transformation and achieve competitive differentiation by redefining its customers’ experience. Within seven months, the telco has been able to conceive, develop and implement a new portal that incorporates social channels such as Twitter and Facebook. The information coming from these platforms helps the company understand what its individual customers want—and enables it to personalize offerings to them.

At the same time, Oracle has an array of solutions that support mobile connectivity as a key element of the Internet of Me. Mobility is built into Oracle’s Application Cloud, and its Mobile Application Framework streamlines development of mobile apps. There is room for continued improvement in this area as the consumer world outpaces the enterprise world when it comes to mobile. What’s needed now are breakthroughs in integrating mobile connectivity and concepts into the enterprise systems that Oracle understands so well. Mobility—in the form of smartphones, watches or new wearables to come will be the “killer app” of this digital age that we are all now operating in—whether we like it or not.

Realistically, however, the Internet of Me cannot flourish without the foundation of an agile and scalable IT platform—one that supports established channels, such as enterprise data flows, and emerging channels, such as wearables. Oracle has long built foundational platforms that enable multiple apps, or devices, to be plugged in. Now the company has developed a strong set of solutions to accept large amounts of unstructured data and make business sense out of them using a rich set of analytical tools. In the years ahead, further developments will help build a robust architecture that enables a many-to-many approach.

To help IT leaders marshal such solutions effectively in the service of the Internet of Me, Accenture provides its Accenture Foundation Platform for Oracle (APFO). The AFPO is a development accelerator for more than 40 Oracle products today. Many organizations employ it as an “integration hub,” using products from Oracle, such as the SOA Suite, to connect clouds, enterprise and custom applications, devices and more. AFPO also serves as an architecture to help enable the Internet of Things in the enterprise. Tapping into Accenture’s experience and tool sets, IT leaders can worry less about getting the implementation right and focus more on achieving their business outcomes.

AFPO is a prebuilt and tested reference application that includes leading-practice documentation, Day One deliverables, and quick-start virtual-machine images, along with access to a team of skilled resources. AFPO can be delivered all at once or in stages, and it can run on-site, hosted, or as a cloud solution. It has already helped simplify and speed up the installation of Oracle Fusion Middleware at more than 250 organizations worldwide.
A significant challenge for many organizations is the fact that they have heterogeneous back-end architectures with solutions from multiple vendors—some on premise and some cloud. Quite often, there are multiple instances of cloud. So the question becomes how best to leverage those existing enterprise investments to suit Internet of Me objectives. AFPO can help make this task easier. In addition to supporting integrations to various Oracle systems, AFPO can serve as an integration hub, supporting third-party integrations. The platform is continually being expanded in these directions.

The large telco mentioned earlier shows AFPO’s integration capabilities at work. Its digital platform and personalization solutions are integrated with its Siebel CRM system and with multiple other back-end systems to amass the data required to power real "me" levels of personalization and to provide the omni-channel experience that customers are demanding.

The telco’s experience raises a key point: harnessing an ever-growing amount of data from various sources is key for powering an Internet of Me solution. Accenture and Oracle are on top of that point. Not only is 50 percent of the world’s data within Oracle databases, but Oracle provides an array of Big Data and Big Data analytics solutions to support advanced analytics, augmenting the data in an enterprise’s own data centers with data from its partners, suppliers and customers and with data from third-party sources.

In the Internet of Me, trust matters—a lot

There is one huge watch-out, though: premium customer experiences require rock-solid trust. As businesses create personalized experiences, they necessarily receive troves of personal data about consumers, their habits, and their preferences. To be comfortable sharing their data, consumers must trust the other party. However, they’ll almost certainly exit a relationship when trust is broken. A recent Accenture survey reveals that 67 percent of individuals are willing to share data with companies, but that percentage drops to 27 percent if the business is sharing data with a third party.22

Since data collection and sharing have direct implications on a company’s ability to compete for mindshare in the Internet of Me, digital businesses must improve their competency within three components of trust: security, privacy, and transparency. Oracle’s Identity Management Suite can prove invaluable here; it is a complete and integrated, next-generation identity management platform that provides scalability; helps enable organizations to achieve faster compliance with regulatory mandates; secures sensitive applications and data regardless of whether they are hosted on-premise or in the cloud; and can reduce operational costs.

Oracle has been fine-tuning its security suite of software to accommodate emerging technologies and to support the Internet of Me. With its recent acquisitions such as Bitzer, which protects end users’ digital content such as photos and videos, Oracle can help an enterprise to secure the data it shares with its employees.
For example, using Bitzer technology, functions such as “copy and paste” can be switched off. Enterprise mobile apps can be provisioned and deprovisioned with one click. And with Oracle’s Mobile Security offering, organizations can adopt and deploy new mobile technologies and applications, and segregate and manage corporate data and applications without interfering with mobile users’ personal data and applications. This capability is being incorporated into the AFPO previously mentioned to provide an end-to-end platform integrated across multiple Oracle products.

## Conclusion

Oracle is well positioned to support and power the Internet of Me—from its ability to provide personalization capabilities and the middleware/SOA to bring them all together to its array of cloud solutions and security offerings.

Increasingly, businesses in almost every sector will find value in the ways they personalize their products or services. Today, highly personalized customer experiences represent a wide-open opportunity for competitive differentiation. Before long, they will have become a necessary condition for doing business in the digital economy. The message is clear: the sooner the Internet of Me is on your company’s executive agenda, the better.

### KEY QUESTIONS TO ASK

Here are some of the questions that should now be on senior management’s agenda:

- What data do we already have that can be better utilized to drive more relevant and personalized interactions with customers?
- What additional data would we want and how would we use it? Would our customers provide it in order to get improved experience with us?
- Do we have the data, big data, and integration platform to enable the next level of our personalization strategy? Can it support the volume and scale required?
- Through which channels do our customers interact with us today? Through which channels do they want to interact with us? What channels are our competitors using with their customers?
- How can we apply the same concepts to create a personalized world at work for our employees?
- How can we use the cloud to help expedite the move to a true omni-channel experience?
CHAPTER 5

Workforce Reimagined: Simplifying the collaboration between humans and machines

Tony Diaz
Accenture global Oracle HCM Lead

Brandon Johnson
Accenture global Oracle HCM Cloud Lead
Is it crazy to think of technology as a new employee in the workforce? More and more voices say the idea actually starts to make sense.

We’re not talking about muscular assembly-line robots or military exoskeletons or Chappie-like droids. We mean a much broader interpretation of intelligent technology in the workplace. Advances in natural interfaces, wearable devices, and smart machines are giving companies new opportunities to empower their workers. The push to go digital is amplifying the need for humans and machines to do more, together. Successful businesses will recognize the benefits of human talent and intelligent technology working side by side—and they will embrace them both as critical members of the reimagined workforce.

In 2014, Accenture’s Technology Vision report described in detail the technologies, such as crowdsourcing, that are giving open-minded enterprises access to a virtually limitless pool of intellectual resources. This year’s Technology Vision report examines the potential of a so-called “blended” workforce—humans and machines working in collaboration, with all that that implies for human resources professionals and business-line managers.

Accenture and Oracle are working hard to realize this vision. Individually and together, they are making big strides to improve the interfaces between humans and machines, on many levels and through many channels and device types.
At a minimum, Oracle's human capital management (HCM) suite of solutions—particularly HCM Cloud—have been designed to provide HR leaders with the tools to more effectively help find, grow, and retain the best talent, enable collaboration, provide complete workforce insights, increase operational efficiency and make it easier for employees to connect on any device. On other levels entirely, both Accenture and Oracle are pushing the frontiers of wearable technologies that promise to produce enormous gains for enterprises—and not only in terms of productivity.

We'll explore some of those activities in a moment. But let's look in more detail at two of the areas that hold great promise for improving human-machine interactions.

**Newer and more natural interfaces**

It seems straightforward, but you can’t work with machines if you can’t communicate with them. The developments in how people interface with machines are a driving force behind the new wave of human-computer collaboration.

The development of more natural interfaces for interacting with technology is making it more acceptable to turn to machines for assistance. By bringing the digital into the physical world, wearables are, in effect, transforming people into “better versions” of themselves.

Advances in natural language processing (NLP) and speech recognition are making it much easier for humans to interact naturally with technology and machines—and companies are starting to recognize this value.

Voice searches on mobile phones that use Apple's Siri or Google Now are increasing in popularity. That’s because speech recognition is more reliable than ever. By making unstructured conversations, written or spoken, searchable in real-time, NLP is acting as the enabler behind speech recognition. Additionally, as users grant these mobile intelligent assistants access to contextual data, they receive more relevant suggestions. Take Google Now, which makes inferences based upon voice and written searches and confirmation messages sent to Gmail. By analyzing contextual clues and incorporating user feedback—for relevancy and accuracy—tools like Google Now learn what is useful and, for example, notify users of flight times for itineraries found in email. Immediate user feedback not only enables Google Now to evolve as an improved assistant, but also grants Google the ability to act as a trusted mobile advisor to every user.

Advances in natural interfaces, wearable devices, and smart machines are giving companies new opportunities to empower their workers. The push to go digital is amplifying the need for humans and machines to do more, together.
The power of wearables

But the interfaces between people and machines are evolving in many more ways than just how both sides communicate. Physical enhancements provided by smart devices are helping to bridge the digital and physical worlds. Wearable technology is now collecting more data via sensors, communicating more information via displays, and truly augmenting a person’s physical capabilities. Leveraging wearable devices that augment action allows companies to equip their employees with the technology they need to do better work, while improving operational efficiency and safety.

Physical sensors are being built into wearable systems to collect information on their surroundings—which can potentially save lives in hazardous situations. Forty percent of organizations questioned in our Accenture Technology Vision 2015 survey are considering using sensors to augment their workforce for this intelligence gathering purpose. For instance, Accenture’s Life Safety Solution outfits workers in oil and gas refineries or chemical plants with a lapel-based wireless four-gas detector, in addition to a panic button and a motion sensor. By continuously monitoring the environment, companies can mitigate risks and improve worker safety. In a similar vein, Caterpillar’s telematics solutions use video analytics to detect when heavy machinery operators are drowsy. In both cases, these sensors are monitoring employees and their environments in order to alert them to unsafe conditions.

Pushing wearables deeper into the enterprise

Oracle’s Application User Interface (OAUX) team is actively exploring ways for wearables to move deeper into the enterprise. At a recent workshop, Ultan O’Broin, Oracle’s director of user experience, described wearables as smart personal technology devices, worn or carried all the time. “It’s about automating and augmenting activities,” he said. “Automating the things you hate, and augmenting the things you love. Using technologies you already know—cameras, watches—with new capabilities [such as] GPS, optical character recognition to perform tasks hands-free, and see or easily capture information. For us, these experiences are apps that are integrated with data in the cloud.”

O’Broin explained that right now, wearables technology is driven largely by consumer interest. But he noted that expectations from the personal world will affect user expectations of the enterprise. At another OAUX workshop, attendees divided into rival teams to develop ideas for enterprise wearables. The winning entry; a device to be worn by a shipping delivery driver—such as a UPS van driver. The wearable, such as a pair of sunglasses, would provide detailed information about the shipping delivery location such as whether the recipient is home, step-by-step directions to the location, how to be more efficient in the delivery based on past experience, sending alerts to the recipient when the driver is close, and taking a picture of the package at the drop location and sending it to the recipient. The device—a concept only—is aimed at making small efficiency gains that can scale across the whole business.
Accenture and Oracle are working hard to realize the vision of a “blended” workforce—humans and machines working in collaboration. They are making big strides to improve the interfaces between humans and machines, on many levels and through many channels and device types.

With its latest HCM Cloud Release (R9), Oracle has brought wearables into the HR space, linking Fitbit devices with its My Wellness Campaign functionality. “From the business perspective,” notes OAUX leader O’Broin, “Employee activity data gathered from corporate wellness programs could lead to negotiated discounts and rewards for users from healthcare providers, for example… Gamification, the encouraging of team members to engage and interact in collaborative and productive ways using challenges and competitions, is another strategy for [incentivizing] workplace wellness programs.”26

Connecting employees to enterprise capabilities

The workplace and the workforce have both been going through huge changes in recent years. This is a phenomenon that will only snowball as more businesses practice bring-your-own-device policies and use other ways to encourage remote working.

This presents huge challenges and opportunities for traditional HCM organizations that need to adapt not only to the changing work conditions but also to the expectations of increasingly mobile employees.

To address these challenges, more and more companies are realizing the potential of mobility in the HCM area and using its advantages to address a range of HCM-related issues, including recruitment, on-boarding, training, and ongoing talent management. This approach, combined with core HR processes such as time, expense and leave requests, means that enterprise HCM departments are better able to meet the challenges of the modern work environment—and the people who work there. This is becoming a major initiative: By 2016, almost 20 percent of employees will rely exclusively on their mobile devices for consuming learning content. By 2016, 50 percent of midsize to large organizations will have deployed at least one talent process on mobile devices.27

On another front, Accenture and Oracle, together, have devised ways to help enable employees to use personal technology to tap into the power of the enterprise. The Accenture Oracle Business Group has developed industry-specific cloud-based solutions to drive these advances, and “accelerator” tools such as the Accenture Foundation Platform for Oracle (AFPO) can make it easier to connect a wide range of back-end services and applications to mobile applications.

Using solutions that include Oracle E-Business Suite, PeopleSoft, Oracle Identity & Access Management, and Oracle WebCenter Portal, Accenture has created an HCM mobile suite to support time and expense reporting together with approval processes that run on mobile devices (smartphones and tablets) and desktop platforms.
A wearable that works as hard as the hotel housekeeping

For the hospitality industry, Accenture has created a wearable offering that can enable intelligent staffing and reduce churn among housekeeping staff.

The solution features a bracelet that can be worn on the wrist, clipped to the shirt, or attached to the housekeeping staff’s trolley. After the housekeeping staff has cleaned and prepared a room for the next guest, a simple press of a button on the bracelet tells the front desk the room is ready for inspection, or for immediate occupancy.

By automating part of a daily routine in the hospitality industry, this wearable application not only improves operating efficiency but customer service, as anyone who has waited at the front desk for a room to be ready can testify. The device can be plugged into an existing back-end system, such as Accenture’s Hospitality Suite solution targeted at hotel and resort companies, which is built on Oracle’s PeopleSoft and HCM Cloud software.

In future phases, this innovative wearable will bring further business benefits to the hospitality industry. Examples include:

1. Better information on time taken to clean rooms, helping facilitate scheduling and allowing predictive analytics to make it easier to forecast the need for housekeeping staff.

2. Dynamic scheduling which enables flexible work patterns, responding to housekeeping workers’ needs (and thus improving employee engagement and reducing employee churn) as well as the staffing needs of the hotel property.

3. More effective deployment of housekeeping staff, based on metrics obtained based on room size, area, and the staff’s prior performance.

4. Collecting data on actual work times based on start/end of room cleaning. The data could be granular down to the level of specific housekeeping tasks. The time data can be ported to Oracle’s Time and Attendance solutions.

5. With dynamic time/task entry, workers can take breaks when they are supposed to, and management can apply pay rules as necessary to manage workforce costs and control overtime and shift overruns.

6. Housekeeping resources can be deployed based on need (for example, early guest check-ins and “Do not disturb” signs) and can be managed more efficiently based on historical patterns.

7. Less need for initial shift planning, freeing supervisors to focus on higher-level tasks; workforce requirements can be managed more efficiently to match actual room occupancy and checkout times.
These "end-to-end" platform solutions, designed for the mobile workforce, help extend capabilities by using camera functionality, onboard encrypted MySQL database, and offline synchronization. Users do not need to be connected to the application to enter transactions, which makes the solution portable and independent of the Internet. Data is stored safely on the mobile device and can be synchronized with the HR application once the user is able to connect online. All of this was possible by using Oracle's Mobile Application Suite's hybrid mobile platform to integrate with backend services as part of the AFPO Mobility HR Suite.

**Conclusion**

The new world we are describing is the world of the augmented workforce—one in which intelligent machines enable more work to be done better. The machines are not limited to robots that amplify people's physical capabilities; nor are they confined to already familiar devices such as Android smartphones, Apple watches, and Fitbit fitness trackers. They extend to a dizzying variety of sensors, voice recognition systems, and artificial intelligence tools.

For business and IT leaders, the biggest question may be how to recognize and then respond to the fact that business processes—indeed, the entire value chain of business operations—are starting to shift from a labor-driven and technology-enabled paradigm to a digital-driven and human-enabled model.28

Leading companies are already beginning to explore these issues. They are starting to think about the combinations of intelligent technology and training that can enable and optimize human-machine efforts, accomplishing more than either could on their own. Tomorrow's leading enterprises will be those that reimagine their workforce and effectively blend humans and technology as partners. Are you ready for the new digital workforce?

**KEY QUESTIONS TO ASK**

Here are some of the questions that should now be on senior management's agenda:

- How can HR leverage investments in cloud-based technology to enable the company to adapt to changing business conditions?
- Is my organization ready for wearable solutions? Does information provided by a wearable device like Fitbit violate any worker privacy issues?
- What data can HR deliver to the business that provides "actionable insights that drive competitiveness"—specifically around talent management?29 Does our organization spend too much time and money maintaining standalone HR systems?
- How can HR move away from siloed leading-practices solutions to provide a more integrated and dynamic view of our workforce—without having to rely on multiple system feeds for trends and predictive analytics? Can we more easily inventory skills across the global organization so we can match our future business needs?30
- Are we using workforce data to give top management a clear picture of HR performance? Do our systems give us the insights we need to identify employees who are at risk of leaving—or to allow us to predict the performance of teams and individuals?31
- Can we track internal social media activity to help improve our processes and performance?32
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About Accenture

Accenture is a global management consulting, technology services and outsourcing company, with more than 336,000 people serving clients in more than 120 countries. Combining unparalleled experience, comprehensive capabilities across all industries and business functions, and extensive research on the world’s most successful companies, Accenture collaborates with clients to help them become high-performance businesses and governments. The company generated net revenues of US$30.0 billion for the fiscal year ended Aug. 31, 2014. Its home page is www.accenture.com.

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