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Accenture and Oracle:
Leading the IoT Revolution

The Internet of Things (IoT) is rapidly moving from concept to reality, as companies see the value of connecting a range of sensors, devices and equipment to the network, and using the resulting data to improve business performance.

Accenture research indicates that by 2020, some 212 billion sensors and 50 billion devices will be connected to the network. As IoT evolves, it is blurring the boundaries between the physical and digital worlds, making it possible for interconnected systems to seamlessly support activities along the entire value chain. IoT promises to bring increased visibility into products, processes, customers and partners—and significant benefits in terms of reduced costs and improved efficiency; greater speed and scale; and the ability to create new smart products and services. With such opportunities on the horizon, the number of vendors providing IoT products and services has tripled in the last three years.

While IoT continues to blur the boundaries between the physical and digital worlds, leading enterprises are uncovering opportunities to use highly-connected devices to give customers what they want: not just more products or services, but more meaningful outcomes. They will compete on their ability to deliver measurable results to customers—

outcomes such as guaranteed machine uptime on the factory floor or the delivery of specified crop yields for an area of land. In short, IoT will have a powerful impact on business, and analysts project that by 2020, it will drive $12 trillion in added global economic value.

But the world is not there yet. Although the trend toward IoT is already having an impact on business, it is still in its early stages. For IoT to become truly widespread, companies will need access to end-to-end solutions. They will need the ability to connect people, assets and spaces. They will need IoT solutions that are easy to implement and operate, while providing the flexibility to meet industry- and company-specific needs. And they will need to do it all cost-effectively.

With those requirements in mind, Accenture believes that Oracle is uniquely positioned to be a key provider of IoT cloud platforms and solutions, and a driver of the IoT revolution.

Oracle's Strengths for the IoT Era

Today, Oracle is working to create comprehensive IoT solutions. The company already has many key strengths that lend themselves to an end-to-end approach to IoT— more, perhaps, than any other technology company. These strengths include:

Strong data storage, analytics and management capabilities

IoT naturally produces tremendously large volumes of data that need to be stored and maintained. This makes the ability to scale data storage without performance degradation increasingly critical. Oracle addresses this with deep experience and proven technology in the form of Oracle Database and Oracle MySQL, which house a majority of the world's structured enterprise data. Oracle also provides unique hardware and software products that can store and query unstructured data across SQL and non-SQL repositories. In addition, Oracle's Business Intelligence Cloud Service enables analysis of the data that the Oracle Internet of Things Cloud Service generates. Combining the strengths of Oracle's Database, Big Data and Business Intelligence Cloud Services, the Oracle IoT Cloud Service has a strong value proposition for storing, analyzing and managing data.

Knowledge and experience to manage the business of IoT services

Part of the extensive Oracle Platform as a Service (PaaS) offerings, the Oracle IoT Cloud Service enables companies to securely connect to any device generating data; perform real-time and predictive analytics on device data; and extend business processes within enterprise applications. It also allows them to rapidly build IoT applications for preventive maintenance and asset tracking using pre-built integrations with Oracle PaaS and third-party and Oracle Software as a Service (SaaS) applications, including Oracle JD Edwards, Oracle E-Business Suite, and Oracle Fusion Applications. In addition, the Oracle Mobile Communications Business, which supports billing at a number of telecommunications companies, has significant experience in tracking devices and usage, as well as managing data on the network layer. Here, relevant technologies include Oracle Billing and Revenue Management and

other Oracle enterprise management tools. Oracle's capability and experience in this area can be easily transferred to managing the business side of IoT.

A broad range of cloud-based offerings

The Oracle Cloud Platform offers many of the capabilities needed for IoT across both PaaS and SaaS. PaaS offerings include IoT Cloud Service, Mobile Cloud Service, Integration Cloud Service, Process Cloud Service, BI Cloud Service, Java Cloud Service, Big Data Cloud Service, Database as a Service, and Engineered Systems as a Service. SaaS includes Service Cloud, Logistics, Supply Chain, and Manufacturing offerings. Oracle also offers Process Cloud Service and Integration Cloud Services that can integrate IoT data streams and events with applications, in the cloud or on-premise. In addition, Oracle provides overall IoT cloud services for managing device messaging, along with device and security management that incorporates streaming analytics.

Tools for gathering and understanding a wide range of data

Corporations today typically struggle to make effective use of their data—and that challenge will only grow with IoT. Data will come from a variety of sources in a wide range of formats. The Oracle Integration Cloud Service can aggregate all of this data on a real-time basis. In addition, the Oracle big data and business intelligence technologies can sift through this wealth of data to create actionable insights for decision makers. Analytics can also automate decision-making near the edge of the network, enabling operations to respond quickly to local changes.

Security

Security in a connected world is paramount, and Oracle technologies address security at both the data and device levels. For example, Oracle IoT Cloud Service manages device endpoint metadata and lifecycle states; provides registration and activation mechanisms needed to make all devices part of a secure IoT solution; and authenticates network communications and data streaming to help ensure that all the components using data are part of the organization's IoT network. Meanwhile, Java provides embedded security that enables reliable and secure messaging. And Oracle's Database Security, Advanced Security, and Identity and Access Management products provide end-to-end security capabilities for allowing access, controlling access, and securing stored data at the network's edge and in central data stores.

The language of devices

Oracle owns Java, the software language embedded in most intelligent devices. Java is found in a vast range of devices, from automobiles and web cams to medical devices, set-top boxes, chip-and-pin credit cards and all Blu-ray players. It is built into Intel and Qualcomm chips and can be found in 97 percent of enterprise desktops and 3 billion mobile handsets, as well as 5 billion SIM cards. Oracle has a key asset in its ownership of this ubiquitous, IoT-relevant technology, and Java is geared to developing applications for embedded devices, IoT and connected devices in general.

A cost-effective delivery model

Oracle's extensive lineup of cloud-based services means that the company can provide flexible, scalable services at cost-competitive prices. In addition, Oracle manufactures the key platforms used to deliver its cloud services, with engineered systems such as Oracle Exadata Database Machine and Oracle Exalytics In-Memory Machine. These devices also enable Oracle to process traditional enterprise data and big data—including both structured and unstructured data—at competitive price levels.

Overall, Oracle has a portfolio of products and technologies that provide many of the "ingredients" needed for effective, practical IT solutions. This, combined with Oracle's large installed base in the key industries that are driving IoT, makes the company a natural fit for the IoT revolution. Oracle has pulled these elements together to create a secure and scalable unified IoT platform for device connectivity, control and event analytics—all of which will help make it easier for companies to take advantage of IoT.

LEADING

TRANSFORMATION

Accenture and Oracle: Leading the Way for IoT Transformation

Accenture complements Oracle's IoT efforts in several ways. Most companies have complex IT environments that include technologies from various vendors.

With IoT, these IT environments will only become more complex as they encompass a growing range of sensors and devices. Accenture's capabilities in systems integration and digital transformation can bring those technologies and data together into complete, effective solutions. In addition, Accenture's deep industry and process capabilities can enable the tailoring of IoT solutions to meet specific industry and outcome-based needs. Altogether, these factors mean that Accenture can provide a comprehensive approach to applying Oracle technology to real-world business opportunities and challenges.

More broadly, Accenture can draw on its more than 23-year-long partnership with Oracle. With more than 52,000 Oracle-skilled professionals worldwide, Accenture can provide strategy, implementation, upgrade, and application-outsourcing solutions across the entire Oracle suite of products. The company's Oracle-related offerings include the Accenture Foundation Platform for Oracle Cloud, a comprehensive solution for industry verticals using Oracle's Cloud Applications and Platform; and the Accenture Innovation Center for Oracle Engineered Systems, which lets organizations "try before they buy" by assessing proof-of-concept systems.

Oracle technology presents a number of possibilities for using IoT to improve performance. For example:

- Accenture has created a hospitality-industry offering based on the Oracle IoT Cloud Service and mobile technologies and an Accenture wearable device for use by hotel employees. The solution can use sensors to monitor a hotel and then notify employees when a room is available for cleaning, or if there are issues with the heating and cooling systems, and so forth. Once a task is completed, the employee can use the wearable device to notify the hotel's management. This approach can help improve scheduling and deployment of staff and enable increased automation of time-and-attendance processes—ultimately increasing productivity, efficiency and customer satisfaction. In addition, IoT data can be analyzed to understand historical trends, allowing management to make more-informed strategic decisions about the procurement of equipment and staffing.

- An Accenture mobile app for retailers uses IoT technologies, such as beacons/wayfinding, to identify high-value "opted in" customers as they walk into the store. The app is fully integrated with the Oracle Retail Merchandising System, enabling store associates to use a mobile device to personalize offers, reward loyal shoppers, and access digital inventory and concierge capabilities, all of which helps the retailer provide efficient, high-quality service to these key customers.

- A number of companies across industries are using the Accenture Foundation Platform for Oracle Cloud to re-shape their enterprise architectures in preparation for IoT. These architectures are enabling organizations to integrate and manage the wealth of data generated by connected devices, assets and people. A number of healthcare organizations, for example, are using the platform to connect physicians working remotely to data coming from x-ray machines, monitors, hospital-floor tablets, and so forth—enabling those organizations to scale and manage IoT across the organization.

Accelerating IoT Adoption

To help organizations accelerate the journey to IoT, Accenture and Oracle have developed a joint IoT reference architecture. This builds on Accenture's base architecture for IoT, combining it with the Oracle IoT Cloud Service and PaaS/SaaS capabilities.

This joint architecture focuses on providing both cloud and mobile capabilities; end-to-end security; and using distributed intelligence. Overall, it provides a solid foundation for plugging in devices, gateways and other technologies, and a comprehensive framework that companies can use to plan and execute Oracle-based IoT initiatives.

In addition, Accenture and Oracle recently launched the Accenture Oracle Business Group to help companies take advantage of new digital capabilities, including IoT. Working together, Accenture and Oracle offer a portfolio of industry solutions, tools and accelerators that combines Oracle's broad set of cloud offerings with Accenture's deep industry, technology and delivery experience.

Getting Started

IoT promises to bring fundamental change to business. While there are no standard approaches for moving forward, companies can prepare for IoT by asking themselves a number of key questions:

- What is our near-term strategy and our long-term strategy for taking advantage of IoT?

- What IoT use cases should we target to achieve quick results—and learn more?

- How can we best leverage our Oracle technology for IoT?

- What potential barriers will we need to overcome as we move to IoT?

- How will we manage disruption in the business?

- What IoT standards and platforms will emerge in our industry?

- How will the shift to an outcome-based business model transform our industry and overall business strategy?

By answering these types of questions—and understanding how Oracle technology can play a key role in their efforts—companies can be ready to take advantage of IoT, and use it to achieve solid business results and improve performance.

To learn more, please contact:
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For more information about Oracle and IoT,
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