

# Outlook

The online journal of high-performance business

A large, stylized blue chevron graphic pointing to the right, composed of two parallel lines that converge at the tip. The text "High performance. Delivered." is centered within the chevron.

High performance. Delivered.

Outlook Point of View | Workforce of the future

## Why the IIoT spells jobs for information technology professionals

By Allan E. Alter and Paul Daugherty

In many traditional sectors, IT jobs are at risk. But the Industrial Internet of Things promises to create entirely new job categories. The best place to look? The emerging IIoT service sector.

Many sectors that used to provide a lot of IT jobs are shrinking. For example, the US manufacturing sector continues to contract, whether measured by employment or by the number of facilities where products are made.<sup>1</sup> IT professionals may well wonder whether job growth with producers, rather than consumer-facing businesses, is a thing of the past.

Accenture research reveals grounds for a more optimistic view. It starts with the vast opportunity represented by the IIoT—the emerging universe of intelligent products, processes and services.

The IIoT spans industries representing 62 percent of GDP among G20 nations according to Oxford Economics,<sup>2</sup> including manufacturers, utilities, mining companies, food and energy producers, and their business customers in transportation, logistics and health-care. In an Accenture survey, 87 percent of executives said the Industrial Internet will help drive long-term job growth.<sup>3</sup> It's easy to understand their enthusiasm: IIoT products and services will contribute between \$10.6 trillion and \$14.2 trillion to global GDP by 2030, according to research by our colleagues at the Accenture Institute for High Performance.<sup>4</sup>

What does this mean for IT professionals? The IIoT service sector, home to the software services that will drive tomorrow's smart industrial equipment, is creating whole new categories of jobs for those in IT. Companies will need technologists

to write applications, connect and repair equipment, and integrate the information coursing through machinery, factories and supply chains.

Through our research on Industrial Internet pioneers, we have identified three job categories that will be in high demand in this emerging sector:

#### 1. Product-service hybrid development

Tomorrow's industrial equipment will be hybrids of products and services: intelligent products that produce data for digital services (and often consume those services too). Tractors and planters are becoming crop yield optimizers as farm equipment makers like John Deere team up with providers of information about weather, crop prices and commodity futures.<sup>5</sup> Siemens is one of a growing number of companies that offer predictive maintenance services for its products.<sup>6</sup> And Caterpillar analyzes data from its machines and engines and transmits the insights to dealers, enabling them to detect when maintenance is needed and help customers manage their fleets more efficiently.<sup>7</sup>

<sup>1</sup> U.S. Bureau of Labor Statistics, Employment, Hours, and Earnings from the Current Employment Statistics survey, extracted December 2, 2014; Quarterly Census of Employment and Wages, extracted December 2, 2014; Martin Neil Baily and Barry P. Bosworth, "US Manufacturing: Understanding Its Past and Its Potential Future," *Journal of Economic Perspectives*, Winter 2014; Oya Celasun, Gabriel Di Bella, Tim Mahedy and Chris Papa-georgiou, "The U.S. Manufacturing Recovery: Uptick or Renaissance?," *International Monetary Fund Working Paper WP/14/28*, February 2014.

<sup>2</sup> Copyright Oxford Economics Ltd. Global Industry Databank, accessed on June 12 2014. <https://www.oxfordeconomics.com/forecasts-and-models/industries/data-and-forecasts/global-industry-databank/overview>.

<sup>3</sup> Mark Purdy and Ladan Davarzani, "The Growth Game-Changer: How the Industrial Internet of Things can drive progress and prosperity," *Accenture Strategy*, January 2015.

<sup>4</sup> Purdy and Davarzani, *ibid*.

<sup>5</sup> World Economic Forum, "Industrial Internet of Things: Unleashing the Potential of Connected Products and Services," January 2015, page 15.

<sup>6</sup> "Creating the most from wind – due to perfectly coordinated products and systems," Siemens.

<sup>7</sup> Paul Daugherty, Prith Banerjee, Walid Negm, Allan E. Alter, "Driving Unconventional Growth through the Industrial Internet of Things," *Accenture Technology*, 2014.

Some companies have placed listings for "IIoT evangelists"—marketers to publicize their new products and services.

IT professionals working in product-service hybrid development will create these digital services and the platforms to develop and test them. Those involved in this process will include product managers, software developers, data scientists, user interface and experience designers, and security experts.

Companies such as GE, Schneider Electric and ABB are already looking for technical professionals to work on product-service hybrids. For example, Schneider Electric—which provides products and services to help consumers and businesses efficiently manage energy usage—has posted on LinkedIn that it is hiring software development leaders for services related to connected homes.<sup>8</sup> Skycatch, a company that builds unmanned aerial vehicles to inspect oil pipelines, has been looking for software engineers and mobile engineers with Apple iOS skills.<sup>9</sup>

But these aren't just in-house jobs. Much of this development work will be done by contractors and freelancers. Manufacturers including Ford and GE are deliberately opening up their software and hardware development platform to encourage crowdsourcing of IIoT solutions.<sup>10</sup>

## 2. Digital service operations

Once they're developed, intelligent products and digital services will require IT professionals to run and support them. These will include data scientists and analysts who can interpret the insights from analytics programs; intelligent equipment

operators who operate robots and equipment on site or from remote locations; maintenance and repair staff; and trainers.

For example, BHP Billiton Petroleum Inc. is hiring digital oilfield IT architects to design and deploy smart oilfield frameworks and technologies.<sup>11</sup> And as operations technology increasingly incorporates analytics and connects with other systems and the cloud, new opportunities will arise for maintaining these networks and creating the connections between control systems and other systems on the network.<sup>12</sup>

## 3. Solution sellers and evangelists

Companies offering Industrial Internet services and products will need sales managers to identify potential customers and sell the new offerings. These managers will often need engineering knowledge to sell product-service hybrids. They will also need to focus more on advising customers than on carrying out a series of one-off transactions. Sales engineers must understand the buyers' needs, requirements, issues and technology environment to put together and install the right solution.

Companies will also hire marketers to publicize their new products and services. Salesforce, Digi International, Mashery and Xively have even placed listings for a new position they call "IIoT evangelists."<sup>13</sup> In this role, people not only develop new technology; they also spread awareness of their technical offerings among

<sup>8</sup> LinkedIn job posting, <https://www.linkedin.com/jobs2/view/18003989>

<sup>9</sup> Skycatch job posting, <https://angel.co/skycatch/jobs>

<sup>10</sup> Ford: Presentation by Venkatesh Prasad and Ford Motor Company exhibit at O'Reilly Solid conference, May 21-22, 2014. Open XC Night Vision page: <http://openxcplatform.com/projects/nightvision.html>; Joseph Salvo, General Electric Global Research, "Giving Factories A Voice In The Industrial Internet", O'Reilly Solid Conference, *ibid*.

<sup>11</sup> LinkedIn job posting, <https://www.linkedin.com/jobs2/view/11279927>

<sup>12</sup> Sudarshan Krishnamurthi, "Re-Skilled Workers Bring the Industrial Internet of Things to Life," *Manufacturing Business Technology*, March 11, 2015.

<sup>13</sup> LinkedIn, Digi.com and Bullhornreach.com job postings, [http://www.bullhornreach.com/job/954231\\_sr-marketing-managerevangelist-internet-of-things-iiot-boston-ma](http://www.bullhornreach.com/job/954231_sr-marketing-managerevangelist-internet-of-things-iiot-boston-ma), <https://www.linkedin.com/jobs2/view/13968073>, <http://www.digi.com/aboutus/careers/jd?lid=19&cid=1073>, <https://www.linkedin.com/jobs2/view/24450318>.

customers and other developers through conferences, informal meetings and social media.

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The Industrial Internet service sector is good news for IT professionals. Yes, older IT and operational systems will be made obsolete by newer technologies. But the Industrial Internet of Things service sector will provide technology opportunities with companies offering product-service hybrids and digital services, and with the digital businesses that use them.

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## For further reading

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