

A close-up, high-contrast photograph of an industrial robotic arm performing a welding task. The arm, which is metallic and complex, is positioned diagonally across the frame. It is emitting a bright, intense light from its welding torch, which is in contact with a metal workpiece. This interaction creates a massive spray of bright orange and yellow sparks that fan out across the lower half of the image. The background is dark and out of focus, showing hints of industrial structures and other equipment, which emphasizes the robotic arm and the welding process. The overall color palette is dominated by the cool blues and greys of the machinery, contrasted with the warm, fiery oranges and yellows of the sparks.

NOT YOUR GRANDFATHER'S SHOP FLOOR

Modern Manufacturing Trends in the
NetSuite Customer Base



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Read Time: 4 minutes

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Every January, a group of global movers and shakers—politicians, business executives, academics and celebrities—descend on the exclusive Swiss ski resort of Davos Klosters to be part of the annual meeting of the World Economic Forum (WEF) with the humble goal to make the "world a better place". The agenda this year was "Mastering the Fourth Industrial Revolution". The first three revolutions came with introductions of mechanization, electricity and IT—today, Big Data, the Internet of Things, robotics and other technologies are allowing for another revolution.

The WEF is usually ahead of the curve when it comes to such thinking. In this case, however, its cue came from a concept called "Industrie 4.0", which Germany's industrial base has been pioneering for a few years and is now becoming a theme across the world. China is looking way past Industrie 4.0 as

it plans for future manufacturing with its "Made in China 2025" initiative. In the US, the conglomerate GE has generated excitement with its ambitious initiative called the "Industrial Internet". Workers at airport hangars, wind turbine farms, hospitals, and many other settings are seeing the growing impact of smarter GE machines that generate loads of data used for optimized operations and predictive maintenance. Japan continues to innovate with 5S lean manufacturing and other methodologies. The bottom line—the world of manufacturing is evolving at warp speed, and an industry that was supposedly dying as the world moved toward services is back with a vengeance.

Most NetSuite manufacturing customers have implemented their ERP system in the last five years; this customer base allows for a look at the trends among modern smart manufacturers. Here are some of the changes in the last few years:

Every product—not just your phone—is smart

Most cars today have millions of lines of software code and hundreds of sensors and even the modern locomotive has been called a "rolling data center". Even humble products are becoming "smarter" in the world of Bluetooth and mobile apps. As a result, the Bill of Material in every industry is increasingly influenced by Silicon Valley trends.

A prime example from the NetSuite customer base is BigBelly Solar, which modernizes the garbage bin. BigBelly makes solar powered trash compactors that can hold eight times more garbage than a standard bin. Sensors measure how full the bin is and communicate with a cloud-based management system to coordinate collections. Since collections are now done as needed rather than on a regular schedule, it reduces collection costs by up to 75 percent—combine this with reduced CO2 emissions and tidier neighborhoods and it's easy to see the advantage of a "smart" trash compactor. The Bill of Materials is of course vastly different from the trash compactors of any previous generation; with solar panels, compactor and WiFi electronics, weather protection and volume sensors in addition to the plastics that the traditional bin required, the tech in this modern garbage bin rivals a tablet. You find similar Silicon Valley componentry these days in most manufactured products.

Manufacturing is customized and closer to the customer

The Ford Model T came in one color—black. Modern cars come in a dizzying variety of colors and offer all kinds of options. The modern manufacturer utilizes concepts such as mass customization and small batch manufacturing to give the customer exactly what they want. They also aim to manufacture these products as close to the customer as possible. As middle classes grow around the world, the geographic landscape of manufacturing is changing to get closer to them.

An example comes from the housing market. In the US, consumers primarily buy rolled carpet. In Asia, on the other hand, consumers prefer tile or modular carpet. Previously, Shaw Industries supplied those tiles to Asia from US plants. It opened a plant in China in 2013 to service several Asian markets and to shrink the time-to-market by several weeks. As manufacturers like Shaw open new plants closer to new customers, they are deploying the modern technology to match in what is called a two-tier ERP strategy. This involves implementing a nimbler solution like NetSuite for the new plants as they are unable to cost effectively, or quickly, roll out their old fashioned legacy on-premise systems at their headquarters.

The shop floor is much cleaner and quieter

Forget the grimy, noisy shop floor of old. Many of today's shop floors look like spotless hospitals. Operators walk around with hats and gloves. Not as a fashion statement, the headgear has smart goggles and the gloves have sensors to keep up with a new generation of robots.

Rethink Robotics, a NetSuite customer, makes Baxter—an example of a new generation of collaborative robots. As short as three feet, and weighing as little as 165 lbs, this mobile robot can perform a variety of tasks from kitting, to loading and unloading, to machine tending. With Baxter, Rethink Robotics provides an easier-to-use, quieter and more versatile modern day robot than the caged robots of the past. In fact, workers give their Baxters a bit of character and personalize them with names and faces.

There is much more outsourcing in manufacturing

Contract manufacturers like Foxconn and Flextronics make products for a wide variety of consumer electronics, from Apple computers to Medtronic medical devices. The advantages of outsourcing manufacturing stems from the concept of economies of scale. Larger contract manufacturers invest in the necessary plant equipment and can operate at a scale few of their customers can.

Then there are specialized contract firms like Epec Engineered Products which custom designs and manufactures printed

circuit boards (PCBs), battery packs, fans and motors. It offers its customers a team of design, R&D, quality assurance and manufacturing/supply chain professionals. For Epec, their competitive advantage comes from being able to custom design products within days, which requires tight integration between several manufacturing and testing locations in Asia, customs, and other supply chain activities that the NetSuite software helps coordinate.

These are just a few of the many changes in modern manufacturing. As the world of manufacturing speeds ahead toward the Fourth Industrial Revolution, legacy MRP simply will not cut it. As shown in BigBelly Solar, Shaw Industries, and Epec Engineered Products, modern manufacturers in our fast-paced, high-tech world need a nimble, high-tech business system to match.

Is your company ready for the Fourth Industrial Revolution? Learn more about how NetSuite can help poise your manufacturing business for success [here](#).



deal architect

About the Author:

Vinnie Mirchandani has been called "The King of Wow" for his keen eye for technology-enabled innovation. His blog, New Florence. New Renaissance., has cataloged over 4,000 posts of innovative products, projects, and people in work, life, and play. His books, *The New Technology Elite*, *The New Polymath* and *The Digital Enterprise* (written for Karl Heinz Streibich) have been widely praised as an "innovation firehoses". His latest books, *SAP Nation* and *SAP Nation 2.0*, are more investigative but carries his trademark style, which is case study-heavy. His books draw on the breadth of his blogs, extensive research and a global perspective from his travels to over 50 countries.

He is President of Deal Architect Inc, a technology advisory firm. The firm helps clients take advantage of disruptive trends like cloud computing and business process outsourcing (BPO) before they go mainstream. Between this firm and previous role at the technology research firm, Gartner, he has helped clients evaluate and negotiate over \$10 billion in technology contracts.

He spent his early career at Price Waterhouse, first as an accountant, then as a technology consultant (that division is now part of IBM). He has been quoted in most major technology and business publications, and he has presented at a wide range of industry events.

His sixth book, *Silicon Collar* will be released in September 2016. The book looks at how automation—machine learning, robotics, unmanned autonomous vehicles, white collar bots, exoskeletons, etc.—is changing the nature of work in over 50 settings. It is an optimistic read on the changing nature of work, a celebration of outstanding workers, and the machines which are making them even better.



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