Reasons To Improve the Climate Impacts of Your Supply Chain

written by admin | February 17, 2016

CDP's Dexter Galvin explains how business can benefit by increasing their supply chain's commitment to sustainability.

(GreenBiz – Jocelyn Timperley: 2-4-16) Following the release this week of a report that showed that even green-minded multinationals can struggle to keep tabs on their supply chain's carbon footprint, Dexter Galvin of CDP —one of the organizations behind the report — discusses how and why businesses should be looking at where they are buying as well as where they are selling.

Supply chains account for the bulk of corporate emissions

If a company is aspiring to cut the carbon impact of its products, looking only within its own four walls won't cut it. The CDP research reveals most supply chain emissions are around four times the operational emissions for most companies (with the exception of energy or mining firms). "Essentially a lot of big purchasing organizations around the world have effectively outsourced their emissions to their supply chains," said Galvin, head of CDP's supply chain program. "We think one of the solutions is to get more and more companies to start measuring, managing and disclosing their carbon emissions."

Engagement takes time, and is trickier than you think

Many suppliers are still turning a blind eye to the climate debate — leaving many big firms in the dark as to the true impact of their business. Of the almost 8,000 key suppliers contacted through CDP's study on behalf of the multinationals, only 51 percent even gave a response. "These are the key suppliers for some of the world's largest corporations," said Galvin. "In light of the Paris Agreement, we think that there's very significant risk in corporate supply chains from suppliers who have no awareness of climate risk at the moment."

Major internationals are spearheading supply chain reform

While the high carbon impact of supply chains presents significant risk, it also presents a huge opportunity. Many big corporations are already beginning to take their supply chain impacts more seriously, and companies who don't could risk being left behind. CDP has 75 major multinationals — including Coca-Cola, Goldman Sachs and Walmart — signed up to its program and collecting data from their suppliers every year. Collectively, these organizations account for around $2 trillion of annual spending. Even the U.S. federal government is signed up, as well as the electronics industry through its industry group the Electronic Industry Citizenship Coalition (EICC). More than half of these companies are already using CDP data to assess their suppliers. L'Oréal, for example, has made a commitment that its top 300 suppliers will have a carbon reduction target in place by 2020 — and has made clear it isn't afraid to deselect suppliers who don't perform. Dell has a similar set of demands, and even requires suppliers to engage their own supply chain in turn.

Regulation is lurking around the corner

Following the Paris Agreement many countries are already beginning to take swift action on emissions. Only last week China announced that the list of industries set to be covered by its national carbon market will include petrochemicals, power, the construction and steel industries, and even aviation. Waiting for regulation can cause a lot of problems, not least cost increases in the supply chain, [while] companies that have been managing this issue in their own will naturally be more prepared for regulation. All this means companies that use a take-it-as-it-comes approach may find themselves disadvantaged down the line, as a world striving to keep up with an ambitious global agreement could have trouble finding the time to bring the laggards up to speed, said Galvin.

"There's a huge amount of risk out there in the world at the moment on climate change," said Galvin. "Waiting for regulation can cause a lot of problems, not least cost increases in the supply chain, [while] companies that have been managing this issue in their own operations for a number of years will naturally be more prepared for regulation."

Meanwhile, although many companies believe their "global sourcing strategy" means they can just source their supplies from elsewhere, it may not be as simple as

this. “If we look at regulatory risk specifically, the Paris Agreement means that regulation will be implemented across the world in order to meet [the agreement’s] ambitions,” said Galvin. “The regulatory frameworks in most emerging markets would need to change very significantly.” All this means those areas companies typically may have moved to could be at the most risk of fast-rising cost increases, as regulation rapidly comes into play.

One example, said Galvin, is a recent estimate from Bank of America predicting the annual cost impacts on the company should the U.S. federal government pass a carbon tax. When the company alone was considered, it estimated the cost would be between $13 million and $26 million — but when the bank’s complex supply chain costs were factored in, it estimated that potential additional costs could reach between $180 million and $500 million.

Don’t forget water

While emissions reductions and energy often steal the limelight as far the climate goes, the CDP report also highlights the risk to companies of ignoring the issue of water shortages. Of the 8,000 suppliers CDP asked to report on their water risk, only 34 percent had even undertaken a water risk assessment. “A very important starting point for a company engaging on water as an issue is for them to understand how it’s going to impact their operations,” said Galvin. “It’s a very scarce commodity and we feel that a lot of the suppliers are not helping their customers to deliver water stewardship in their own supply chains.”

Supply chain reform has measurable effects …

While the CDP reported disappointing returns for the number of suppliers who responded to request for climate information, where suppliers did report back there were often significant improvements. Between the first and third year of being in the program, suppliers become far more likely to report on their emissions, much better at identifying risk to their organization, and even twice as likely to have a reduction target in place. “Of course to measure is to manage,” said Galvin. “When you look at the suppliers themselves, where the suppliers take management of this issue seriously, you can see that it yields results.”

Purchasers also can push progress by setting an emissions reduction target in their own supply chain. “Obviously those companies that have targets that include their supply chain are much more likely to see their suppliers respond, to report emissions reductions and to report emissions reductions targets as well,” said Galvin. “You can see a very significant increase in the performance of their suppliers.”

And saves cash

Reducing risk is not the only reason for purchasers to engage with their supply chain — it also can deliver huge cost savings. CDP found that those suppliers that did disclose their climate information reported combined savings of $6.6 billion. The savings also increase with time — those suppliers who have been reporting the information for at least three years reported average savings of $1.5 million per emissions reductions initiative. “We’re seeing very significant savings across the board,” said Galvin. CDP found that those suppliers that did disclose their climate information reported combined savings of $6.6 billion.

“If we look just at the emissions that suppliers have reduced that they attribute directly to their customer engagement with them … we’ve actually captured 3.5 million tons of carbon emissions that were directly attributable to customer engagement last year. Which is the equivalent of 90 million trees over 10 years.”

Supply chain engagement is going public

CDP is concerned that too few companies are engaging their supply chains on climate — so this year it will begin scoring companies on the management of carbon and climate change across their supply chains, with rankings to be released in a year’s time. For companies keen to keep their green credentials clean, this may be the right year to check that all of their house is in order.

Council on Competitiveness Report Makes Recommendations for National Skills Agenda

written by admin | February 17, 2016

(SSTI Weekly: 2-4-16) As long-term trends continue to impact the U.S. economy and its recovery from the Great Recession, more must be done to develop diversely skilled and adaptable workers, according to a new report by the U.S. Council on Competitiveness.

In addition to describing the radical changes facing the landscape for America's workforce, WORK: Thriving in a Turbulent, Technological and Transformed Global Economy provides numerous recommendations on how to best respond to these challenges. Ultimately, the WORK report views itself as a roadmap to align education and training to 21st century skills needs, effectively leverage intellectual capital, and supply businesses with the talent needed to compete globally.

Although American workers have struggled in the years following the Great Recession, the U.S. labor force is also heavily impacted by several long-term trends. Even though agriculture, mineral extraction, and manufacturing drove the U.S. economy in the 19th and 20th centuries, it is driven by knowledge, technology, and innovation (KTI) in the 21st century.

While the U.S. has the highest concentration of KTI industries among major economies, this has also led to a polarization in the labor market. Demand has grown for both high-end workers for jobs involving non-routine cognitive tasks … and for low-skill/high-touch workers, but has stagnated for many middle-skill workers, according to the report.

Macroeconomic trends such as globalization, trade liberalization, and the digital revolution have complicated this as skilled individuals from around the globe can now compete to perform the world's work, oftentimes for lower wages than American workers.

As the digital revolution continues to spur disruption, the rise of machines, and large-scale technological changes, skills and labor markets must be flexible to respond to changes in demand.

The report concludes with a series of recommendations to address the challenges of new workforce realities intrinsic in today's highly productive, dynamic, and knowledge-driven economy. As a complement to two strategic plans developed by the Obama administration – A Strategy for American Innovation … and A National Strategic Plan for Advanced Manufacturing – WORK also recommends the development of a National Skills Agenda to help ensure the employability of Americans in an era of rapid change and an increasing demand for skills.

Because it is difficult to predict what the jobs of the future might be, the report recommends encouraging real-world skills and experiences that help build a foundation for success in a highly skilled knowledge and technology-driven global economy.

Pillars of technology-based economic development, such as the development of science and engineering skills through STEM education and the nurturing of the next generation of entrepreneurs, are also recommended.

Other recommendations include better communication channels for industry to communicate its needs to educators, students, and job seekers; continued engagement of the aging workforce; and, establishing pathways to transition veterans into the workforce.

The report also emphasizes the importance of a new era of sustainability and energy innovation as an opportunity to boost U.S. employment in a variety of new, well-paying jobs for high/medium/and low-skill workers alike. To take advantage of this potential growth, the report recommends teaching and developing skills in sustainability, committing a portion of the federal government's R&D budget to energy-related fellowships, and scholarships for students who commit to serving in an energy-related career.

Software Eats Manufacturing (and Manufacturing Gains)

written by admin | February 17, 2016

(IW – Mark Muro, Kelly Kline and Bruce Katz: 2-9-16) It's been five years since the venture capitalist Marc Andreessen quipped that "software is eating the world," meaning that all of the digital tools and platforms needed to transform industries through software finally worked and were doing that. To prove his point, Andreessen ticked off a long list of mostly consumer-facing service industries like bookselling, music, telecom, and air travel that were being productively disrupted. Though he noted that the global economy would soon be "fully digitally wired," he didn't have as much to say about the manufacturing sector.

However, waves of digitization have been coursing through the manufacturing sector as well, creating new opportunities. Digital technologies are rapidly transforming the design, production, operation, and use of items as diverse as cars, workout clothes, and light bulbs. The changes have huge implications for industries and places, workers, and entrepreneurs.

To explore these implications, the Metro Program, in partnership with the city of Fremont, Calif., convened its second advanced industries regional workshop last week in Silicon Valley—the world focal point for the digitization of everything.

Such digitization is now so ubiquitous as to practically define the nation's critical advanced industries sector, including manufacturing.

The session brought together two dozen industry executives, entrepreneurs, investors, scholars, and economic development officials to tour an emblematic factory (Tesla Motors); discuss the latest trends in the Silicon Valley manufacturing ecosystem; and parse their implications for companies, regions, and the U.S. economy. Many, many trends were raised and assessed during the day's discussions

on the campus of Seagate Technology, in the former Solyndra solar factory, but a short list of compelling conclusions with broad implications came into focus.

Here are five takeaways:

• The digitization of everything is potentially very good for U.S. manufacturing. Sure, the software genie is worldwide in scope. Shenzhen-based factories are wired too, and Germany is in every conversation. However, the fact remains that most of the IT technologies revolutionizing manufacturing and advanced industries today reflect American competencies, ranging from increasingly powerful visualization software; computer assisted design (CAD), 3-D printing, and rapid prototyping tools; and key forms of automation and machine learning to the cloud, the Internet of things (IoT), and data analytics. Most notably, the fact that software underlies all of these technologies and that eight of the largest 10 global software companies are American suggests that current trends play heavily to America's strengths. "You need to have a software culture now [to be a manufacturer] and the Valley and the U.S. have that," said Helmuth Ludwig, the chief manufacturing officer of Siemens PLM Software, "U.S. dominance in software is a huge advantage given where things are going." Added Russ Fadel, the founder of ThingWorx, an IoT firm: "The cloud makes software more central, and that opens up new production opportunities for our companies." That "the modern technology stack can be delivered instantly," as observed Dan Levin, the chief operating officer of Box, a cloud storage provider, means that "IT is ready to enable every positive trend."

• "A hardware start-up is no longer a contradiction in terms." Some of the same trends (and others) are also changing the game for entrepreneurs. Conventional wisdom has long been that software start-ups are the American way (think Microsoft, Facebook, What'sApp) but that manufacturing start-ups are too hard, given the costs and complexities of design, equipment, production, materials, and distribution. Now, though, that is changing, said multiple workshop attendees. TechShop founder Mark Hatch noted that entrepreneurs around the Midwest, as well as in the Bay Area, are "getting a feel" for how to reduce the costs of hardware start-ups using cloud-based digital tools and physical ones provided in "maker spaces" like TechShop. Likewise, Ben Einstein, the co-founder of the hardware-oriented venture capital firm Bolt, noted that "a hardware start-up is no longer a

contradiction in terms," now that more VCs will provide funding, or, like Bolt, help incubate and accelerate startups at the "intersection of hardware and software." And for that matter CEO Scott Miller described how his company Dragon Innovation functions "like a Match.com of manufacturing" that helps would-be manufacturers connect with contract factories to produce sizable production runs. Increasingly, it seems a suite of tools and supports like the ones that have fostered so many software start-ups are in place to support hardware start-ups.

• "In fact, productive new connections can now be imagined between the "maker" movement and industry. The increasing feasibility of serious hardware start-ups noted by Hatch, Einstein, and Miller also stirred up dialogue about more convergences of the smaller-scale maker community and larger-scale advanced manufacturing. Kate Sofis, executive director of the non-profit SFMade, stressed that the two communities are now bifurcated and that there's a need to find some middle ground between hobbyist prototyping and scale. With that on the table, several speakers said they thought some of that middle-group was coming into focus. "A lot of lifestyle businesses used to not be able to get started in manufacturing, which was a pitfall for any small-scale renaissance," said Hatch. "Now, access to tools, capital, and other supports is making manufacturable products like the [Oru] collapsible kayak possible," continued Hatch. Coming from the industry side, CEO Nat Mani of the contract manufacturer Bestronics reported that his company is increasingly working with small start-ups as a form of "business development" and to track new technology development. In Fremont, it seemed possible to imagine a near future in which small-scale makers (empowered by cloud-based platforms and tools) become meaningful participants in regional manufacturing ecosystems.

• With all of that said, the convergence economy is bringing new challenges. Leave aside the looming land-use problems facing Silicon Valley, summarized by one executive as: "We're running out of land!" Beyond that, the valley offers an extreme case of multiple finance, training, and network issues that are critical across the country. Einstein and Mike Abbott, a general partner at venture firm Kleiner Perkins Caufield & Byers, each acknowledged that VCs are still very much on the sidelines of hardware investment. Several voices named the limited supply of middle-skill technical workers—including ones with a feel for design and especially coding—as the biggest impediment to software-powered manufacturing growth. Brookings

Trustee Antoine Van Agtmael said flatly that, “It sounds like the region is out to lunch on job training.” And Levin, for his part, was blunt about efforts to intensify the matching and linking of the region’s software/manufacturing cluster. Declared Levin: “We do a horrible job of nurturing the networks effects that could be huge here. There is no formalization and matching of the assets here.”

• States and metropolitan areas need to focus. Ultimately, many in the group agreed that states and localities have key roles to play if U.S. metropolitan areas are going to monetize the digitization of manufacturing. With federal processes gridlocked, multiple workshop attendees agreed with City Innovate Foundation Board Chairman Peter Hirshberg that linking software and hardware and start-up and industry communities is “a distributed problem” that will be worked out city by city, ecosystem by ecosystem. In that vein, multiple attendees agreed that that states and localities are the natural leaders of bottom up initiatives to develop much better training and apprenticeship initiatives that leverage true public/private partnerships, as opposed to public systems that simply solicit input. Others stressed the need for regional maker communities and industry networks to link up more. And others stressed the need to shape urban innovation districts such as the emerging Warm Springs area in Fremont to foment collaboration.

In the end, it was clear that both Silicon Valley and other regions can benefit if their advanced industry communities can become meet ups of software and hardware competency. Given U.S. software dominance, digitization looks set to revolutionize more industries and give them a new shot at competitiveness. Shouldn’t ensuring that that happens rapidly and successfully be part of U.S. and local strategies for advanced industry leadership?

(Mark Muro, a senior fellow and director of policy for the Metropolitan Policy Program at Brookings, manages the program’s public policy analysis and leads key policy research projects. Kelly Kline is economic director for the city of Fremont, Calif. Bruce Katz is the inaugural cross-disciplinary Centennial Scholar at Brookings, where he focuses on the challenges and opportunities of global urbanization and leads the Anne T. and Robert M. Bass Initiative on Innovation and Placemaking.)

AME February Mid-Atlantic Newsletter

written by admin | February 17, 2016
The attached newsletter contains information on upcoming events and other regional and national news.

MA Region Newsletter Feb 2016

Power of Small

written by admin | February 17, 2016
Today the National Association of Manufacturers (NAM) is launching an exciting, new campaign called “Power of Small” to tell the story of small and medium-sized manufacturers. The new “Power of Small” webpage will showcase the amazing work of small manufacturers, highlighting our critical contributions to the U.S. economy.

Our success as an industry, and as a country, depends on small manufacturers across the United States, which represent 90 percent of the NAM’s membership.

Click Here for more information on the “Power of Small” campaign. Share the link with members of your community as well as manufacturers who don’t yet know what the NAM can do for them.

Penn State Announces SME Additive Manufacturing Challenge

written by admin | February 17, 2016

Partnering with America Makes and MEP, Penn State's Center for Innovative Materials Processing through Direct Digital Deposition (CIMP-3D) is sending an open invitation to SMEs to present ideas for how Additive Manufacturing can revolutionize their business. The challenge will be focused on concepts that utilize additive manufacturing for improving a current product or developing a new product. Although the Challenge will focus on additive manufacturing of metals, applications involving polymer printing will also be considered depending upon the impact of improving or developing a product through additive manufacturing. The top five submissions will be awarded stipends and access to Penn State and America Makes world class facilities and research personnel in order to validate, demonstrate, and showcase their ideas.

*The SME Challenge proposal should include IMC as the regional NIST MEP as an integral member of the proposal team. Concepts due March 27, 2016.

Click Here for more information and directions on how to enter the challenge.

Wearables and the 'New Toolkit for Modern Manufacturers'

written by admin | February 17, 2016

With dozens of new products introduced at the Consumer Electronics Show, 2016 might really be the turning point for wearables on the factory floor. If you already

implemented some of the new tech, get ready to upgrade. If you haven't … why are you waiting?

(IW – Matt LaWell: 1-21-16) *Two seconds*. … In 1968, an IBM psychologist named Robert B. Miller presented a paper on computation response time at the Fall Joint Computer Conference that focused in part on that passed-in-a-flash stretch of time. Miller had been studying early computer operators for years and — long before the first personal computers, the first laptops, the first tablets, and certainly before the first connected eyeglasses and watches and rings — focused on what he called the *two-second response* theory.

"The tasks which humans can and will perform with machine communication will seriously change their character if response delays are greater than two seconds," Miller wrote. More simply, we will shake our heads and walk away (or at least say we will) if our various devices fail to deliver what we ask within two seconds. Good thing wearables help cut down on that response time, technologically spoiling us that much more. The next round of wearables will continue the trend.

New hardware and software, some of it delivered at the most recent Consumer Electronics Show earlier this month in Las Vegas, could finally allow our dreams of a wired workforce to become reality. We all know that Google Glass sputtered for the consumer market and is a relative hit for the factory floor, and that Apple Watch has sparked more general interest than any other wearable, with strong potential for industry. There are plenty of other options out there now, though, and the number of choices will continue to climb.

The Daqri Smart Helmet and Kopin Smart Glass, for starters, "have the potential to give manufacturers more choices to support workers with real-time, on-body connectivity to applications and data," said Plex CTO Jerry Foster, who is at work on new wearables apps for the floor and the warehouse.

"Wearable devices are part of the new toolkit for modern manufacturers," Foster said, "with cloud solutions making it easy to connect new products and innovation as fast as they hit the market." Which is a little slower than two seconds, but still really fast.

We are still in the early days of adaptation and implementation, but if this round of products delivers, 2016 really could be the turning point — especially for manufacturers.

Let's start with the scale of deployments, which could be even more important this year than the technology itself, at least according to Brian Ballard, CEO and co-founder of APX Labs, which has carved its early wearables niche in developing software for some major names in the oil, gas and defense sectors.

"Smart glasses really cemented themselves as something companies were using in 2015, but … it takes almost a year to get through everything," Ballard said. "You'll start seeing them used on a much larger scale than they were in 2015: Moving from one line to the whole factory, or from one factory to the whole bullpen of factories that support a process.

"There are still some areas inside logistics that we won't see — the hardware can't replace all the tools used today — but in field service and manufacturing, I think you're going to see a big uptick in the technology."

Ballard and APX Labs could play a part in that uptick, thanks to another recent round of funding that increased its total raised to $29 million and included considerable investment from General Electric, which is also a customer. (Boeing is another customer, as are two of the five largest companies in the oil and gas industries, though they don't allow their names to be used.)

"We started off in the defense space," Ballard said, "building software to power defense-focused wearable technology — almost entirely smart glasses and heads-up displays. … We thought you could eventually do anything and everything on wearable glasses, so we built a flexible, powerful platform, then thought about our feature set in terms of specific verticals.

"If I'm a manufacturer, what are the five or 10 top things every manufacturer has to do? We put a lot of energy into those features, but it has flexibility for a bunch of different use cases." Among those top 10 things are inspection and compliance, the collection and access of knowledge, and the implementation of an easy-to-use work process.

“The same platform your supervisors are using is the same one your technicians are using and the same one your supply chain is using. It’s a hyper-connected, multi-player work environment,” Ballard said. “We didn’t see this as just a bunch of individual users working together. We saw it as a team working together — with your existing legacy systems, with your robotics, with your IoT — and all that together could be a game-changer.”

What Will We Use? And Who Will Make It?

Glasses might not be the biggest game-changer, though. A recent study from IDC forecasts about 160 million wearables shipped in 2019, with more than 120 million of them headed for your wrist. (For the sake of comparison, about 25 million wearables shipped in 2014, and close to 80 million shipped last year.) Connected glasses, modular and clothing will make up almost all of the remaining quarter.

“A lot of companies will use ergonomic sensors,” including some in clothing, said Rana J. Pratap, principal technology consultant for LexInnova. Why clothing wearables? It’s a safety measure, more than anything else, and “safety is a huge area. I don’t see a lot of wearable applications used just for the heck of it. More will be used for safety, for improving the worker productivity.”

Clothing wearables could be used most prominently to help workers remain visible, especially to, say, forklift drivers, when they would otherwise remain hidden around corners or behind other machines. They could also, Pratap said, help maintain temperature in extreme conditions, though “those applications are more futuristic.”

At least as interesting as what the new wearables will be is *who* might be manufacturing them. In a new paper titled “Wearable Technology: Patent Landscape Analysis,” LexInnova breaks down which companies have the most current wearable tech patent filings. Smartphone leaders Samsung and Apple do not top the list — ranking fourth and 12th, respectively, with 498 patents and 197 patents, with Fitbit even lower at 15th thanks to its 192 patents. Granted, those companies might have better patents — quality over quantity, which is also measured in the paper — but different companies at the top could open the door to more innovation and competition.

And the top three on that list? Microsoft and Philips, which are neck and neck at 757 and 756 wearable patents, respectively, and Alphabet (which is still just Google for all intents and purposes) at 602.

That number of patents, and the corresponding level of possibility, is exciting. “We’re in the first phase of wearables,” Plex vice president of development Jason Prater said. “In the next five to seven years, as the consumerization continues to drive the innovation, you’re going to see some amazing things. I think this iteration of wearables is going to continue to go faster.

“And even after that,” his Plex partner, CTO Jerry Foster, said, “you’re going to see ingestibles that start to monitor things inside you. That’s fascinating and kind of scary at the same time.” Technology, tracking you, measuring you, telling you about yourself … from your insides.

In a 2013 interview with *Wired*, Evernote CEO Phil Libin said that wearables will “make you more aware, more mindful. They’ll reduce the number of seconds in the day when you’re confused.” And they will keep you more aware and give you a sense of where you are, whether you wear them on your wrist, your fingers or your eyes, in your clothing … even whether you swallow them first.

“That’s what this whole connected universe will do,” Libin said. “It will make you a functionally smarter human.”

In just two seconds. Or less.

How the Internet of Things is Pivoting Manufacturers into Service

Providers

written by admin | February 17, 2016
(Triple Pundit – Jennifer Tuohy: 1-27-16) Do you know the name of the company that made your doorbell?

If not, you're pretty typical: Many homeowners make a single purchase from a manufacturer and never return to buy updated models, instead moving on to another vendor or even another product. Industry insiders call it "one and done" – but the age of the smart home is turning this concept on its head.

Nowadays, baked-in Internet connectivity enables everything from your smart thermostat to your smart doorbell to upload new features "over the air." Thanks to the Internet of Things (IoT), one-and-done now means purchasing one product that gets better the longer a consumer has it.

It's a positive new spin on a perennial customer-loyalty problem, but it's one that poses some unique challenges.

Now, manufacturers must plan to continue to work on products, offering improvements and enhancements that can be delivered after the product leaves the loading dock. But this comes with a new responsibility for manufacturers: service and support. Manufacturers will need to be involved in the entire lifecycle of the product, not just its birth. Are they up to the challenge?

The start of a beautiful new relationship

The ability to improve a product after it is in the consumer's hands is the key for manufacturers looking to unlock the promise of IoT. Building sensors and Internet connectivity into a product are just the beginning. What truly makes a product smart is the ability for it to develop intelligence — to learn and improve. It can either do this on its own through learning algorithms, or through after-market manufacturer input that improves the product with updates based on feedback from sensors and the users.

This new model is a reversal of the consumer-adverse process of making the initial

product cheap, then increasing the price of the products needed to keep it functional (think: printers and ink or razors and blades). It hits on two of the core goals businesses should be striving for in today's market space:

1. **Increased profits.** By providing an Internet connection, a manufacturer can reach into a product after it's left the loading dock and fix any issues before they become bigger problems. As any company that has ever dealt with a recall knows, this ability will save millions of dollars. "A big part of the IoT's power comes in its ability to help businesses operate proactively instead of reactively; it essentially addresses problems before they've become problems," wrote Tom Chapman in this post for TriplePundit.

1. **Keeping Customers Happy.** The after-market value IoT can facilitate is almost limitless. By continuously adding value to its products, a manufacturer can transform its relationship with the consumer, creating brand loyalty that will extend to future purchases. For example, Nest Learning Thermostat debuted as a simple smart thermostat in 2011. It learned your routines and programmed itself for you, removing what was once a major pain for consumers.

Four years later, the Nest thermostat is the closest thing a smart home has to sentient brain. A Nest, whether it was bought in 2011 or 2015, can not only control the climate without input from the homeowner, but it can also control compatible lights: turning them on when it senses you are home and off when it senses you are away. It can activate Nest's compatible security camera to record when you leave the house, and shut down the HVAC system when its compatible Nest Protect detector senses smoke or carbon monoxide.

None of these features were a part of the original launch of the product, but now any Nest owner can benefit from them. Nest also works with other manufacturer's products through its Works With Nest program, further extending its value to the consumer.

The new challenge: Service and support

Of course, this possibility of ongoing iteration presents a new challenge for

manufacturers: No longer can a company simply manufacture the best doorbell engineering can produce and move on to the next model. The introduction of something changeable to a product, in this case connected "smarts," necessitates a service to go with it. Whether that service is simply support for the product, or whether it develops into an entire ecosystem that includes monthly fees (as Nest does with its cloud-based video recording for the Nest Cam), is a complicated choice. But in either case, the pivot to providing service and support with the product, while initially costly, will reap huge benefits.

For many Kickstarter-born or Silicon Valley startup products, support and the manufacturer go hand-in-hand, but for larger, more established manufacturers with legacy systems to circumnavigate, the pivot to becoming a service company poses a logistical challenge. Putting smarts into your product and then not providing support to back it up will, in the age of online customer reviews and Twitter, ensure a swift and brutal end to a product's lifecycle.

Better for the consumer, better for business

So, what are the benefits? The combination of data received through an IoT product and feedback through the service/support loop is incredibly valuable. After all, data is the currency of the new millennium. How that data is put to use will vary for each product, but first and foremost it can and should be used to inform product development, whether the product is already in the hands of consumers or still to come.

Take the example of Ring's Video Doorbell. The product was originally envisioned as a simple way to remotely communicate with whomever was at your front door. In an interview with TechCrunch, Ring's founder and CEO, Jamie Siminoff, said the company learned from early customers that many were finding strangers coming up to their front doors and ringing the doorbell, then leaving when it was answered. This led the company to pivot from a simple connected doorbell to a full-featured security product, complete with motion alerts and motion-sensing recording, so that the doorbell doesn't even need to be pressed for the video to start recording. That video is then stored in the cloud, accessible anytime by the user for a monthly service fee.

The iteration didn’t end there. Today, customers who purchased a Ring doorbell can have it unlock their front door, too, if they have a compatible smart door lock. Further integrations within the home are planned for Ring, meaning that while a $200 doorbell sounds like an extravagance, its current and future capabilities could one day save your home.

Service as a product

As manufacturers grapple with the changes IoT is bringing to their business, keeping the concept of service and support as a product foremost in the development process will serve them well. As we’ve seen, the benefit of a closer relationship with the customer will help produce products the consumer wants, driving up profits and minimizing the impact costly manufacturing mistakes have on the planet.

(Jennifer Tuohy is a tech enthusiast who is fascinated with Internet of Things smart products and the future possibilities they hold. She provides interesting insight on what IoT means for manufacturers.)

Manufacturing 4.0 on the Rise

written by admin | February 17, 2016
(Manufacturing Leadership – Jeff Moad: 1-21-16) A year ago, organizers of the massive German industrial trade show *Hannover Fair* released the results of a survey showing that, despite a rising chorus of attention devoted to the topic, *Industry 4.0* was a subject of conversation at only 50% of manufacturers. Keep in mind that many of the respondents to this study were from Germany, where the government embraced and invested in what it calls Industrie 4.0 as part of its High-Tech Strategy 2020 Action Plan in the hope of establishing the country as a leader in integrated digital industrial technologies.

That led some to note that there was a significant gap among manufacturers

between the *attention being paid* to Industry 4.0 (*we call in Manufacturing 4.0)* and *interest in investment*. No big surprise there. Hype around technology-based innovation often outruns reality.

Recently, however, we've begun to notice signs that manufacturers are indeed beginning to take Manufacturing 4.0 much more seriously. In fact, results of a soon-to-be-released Manufacturing Leadership Council survey strongly suggest that, not only are manufacturers internally discussing M4.0, a great many—37%–are already implementing discrete or companywide M4.0-related projects. Twenty-nine percent said they even expect substantially all their production and assembly processes to be digitized within the next five years. That's up from 8% saying those processes are already digitized today.

Forty-eight percent of respondents to the MLC study said the M4.0 notion of digitizing and integrating core processes for the purpose of improving real-time visibility and agility represents nothing less than a new era in manufacturing. Another 44% called it a significant trend.

(Full details of the Manufacturing Leadership Council *Factories of the Future* study will be published in the February issue of the Manufacturing Leadership Journal.)

This was reinforced on a recent Critical Issues roundtable discussion call for Manufacturing Leadership Council Members entitled "Plant Floor Migration Strategies to Manufacturing 4.0." On the call, which featured a presentation by Prof. Dr. Detlef Zuehlke, Founder of Germany's Smart Factory Consortium and a leader in the Industrie 4.0 movement, several manufacturers said their companies are either researching and planning their M4.0 roadmap or actively implementing smart factory technologies.

A top manufacturing executive from a large industrial firm said his company is aggressively educating itself on M4.0 opportunities while assessing the current machine footprint in its factories.

An executive from a large maker of industrial materials, meanwhile, said his company has launched a M4.0 adoption effort. Central to that effort, he said, is training and education for workers and executives intended to help them understand

how their roles and their thinking will need to change in a M4.0 era.

A manufacturing executive at a large pharmaceuticals manufacturer said his company is creating a roadmap that will allow it to transition from focusing on smart devices in its plants to entire smart factories. The initial focus, he said, is on strengthening connections between manufacturing execution systems and equipment control systems.

And an executive at a large, diversified industrial company said, after having spent the past two years researching M4.0 and planning for adoption, her company is launching pilot implementations across dozens of plants worldwide.

These manufacturers said the opportunity to reduce operating costs—through improvements such as predictive maintenance and greater equipment utilization—is only part of what's driving their interest in M4.0. Even more important, they said, is the opportunity to become much more agile and responsive to increasingly demanding customers by reducing cycle times, getting new products to market faster, and delivering greater value through smart, software-enabled products.

Indeed, said Dr. Zuehlke, M4.0 represents an opportunity for manufacturers to correct some of the damage that has resulted from a narrow focus on cost reduction over the past few years. That focus has resulted in outsourcing, long lead times, long product lifecycles and, ultimately, compromised customer satisfaction.

"Customers expect to be able to order by mouse click and to receive extremely fast deliver," said Dr. Zuehlke. "So we have to change our production strategy and bring production closer to the customer."

Dr. Zuehlke emphasized that the road to agile, digitized, and smart factory networks will be a long one for most manufacturers. He estimated this will be a five-to-ten-year process, with plenty of challenges along the way. Standards that can support modular, plug-and-play smart M4.0 systems are still incomplete. And, he said, manufacturers will need to think differently to develop new business models that can take advantage of smart factories and smart products.

Given such challenges and the extended time frame that will be required for

widespread adoption, it's certainly possible that manufacturers will, over time, lose their enthusiasm for the concept and that M4.0 will be just another buzzword footnote. (Remember Computer-Integrated Manufacturing?)

But, at least for now, manufacturers' commitment to M4.0 seems to be on the rise.

Governor Wolf Announces Final Phase-Out of Capital Stock and Foreign Franchise Tax

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Governor Tom Wolf today announced the successful January 1 phase-out of Pennsylvania's Capital Stock and Foreign Franchise tax, calling it "an unfair tax on business" that he was committed to eliminating.

"As I noted in my budget address, Pennsylvania's economic prosperity has long been hobbled by an outdated tax structure that fails to incentivize job growth," Governor Wolf said. "It was well past time for Pennsylvania to finally remove the Capital Stock and Foreign Franchise tax from the books."

The Capital Stock and Foreign Franchise tax dates to 1844. Its phase-out had been proposed as far back as 15 years ago, but the elimination had been delayed by previous administrations.

These taxes were imposed on corporations with capital stock, joint-stock associations, limited liability companies, business trusts, and other companies doing business within Pennsylvania. Domestic corporations were subject to the capital stock tax, while foreign corporations are subject to the foreign franchise tax on capital stock apportioned to Pennsylvania.

“I am committed to fostering a business climate that encourages job creation by creating a tax structure that is fair to businesses and taxpayers,” Governor Wolf said.

The Pennsylvania Department of Revenue noted that the elimination of the Capital Stock and Foreign Franchise tax means that many business types, such as S corporations, LLCs taxed as pass-through entities, and business trusts will be filing their final corporation tax returns for 2015. These returns should be marked as final returns. More information will be available on the department’s website at www.revenue.pa.gov.