How Do You Embrace Technology?

by Bob Zaruta, President/CEO, NWIRC

Technology is advancing at lightning speed. It’s hard enough to keep track of the newest versions of computers, cell phones, smart home technology, and software for personal use, let alone innovations in advanced manufacturing technology. If you are knowledgeable on the latest technology that would benefit your company…are you an adopter?

Everett Rogers wrote the book, Diffusion of Innovations, back in 1962 and his concept of a technology adoption bell-curve is still very relevant today. He describes five categories of adopters, here’s a synopsis of each (Rogers 1962, p.282-283):

Innovators (2.5%)- the first to adopt innovation, takes risks, younger age, financial liquidity

Early Adopters (13.5%)- high degree of opinion leadership at an organization, advanced education, socially forward

Early Majority (34%)- adoption after varying degree of time, above average social status, seldom holds positions of opinion leadership

Late Majority (34%)- adoption after the average participant, approach with high degree of skepticism after majority, lower social status

Laggards (16%)- last to adopt innovation, no opinion leadership, focused on ‘traditions’, lowest social status, and low financial liquidity.

These categories have generalized characteristics, but how would you categorize yourself? What type of technology adopter are you in your personal life, and does this converge with technology advances within your company?

In his book, Rogers also outlines five stages of the innovation adoption process. While the names of these stages have changed over the years, initially they were 1) awareness, 2) interest, 3) evaluation, 4) trial, and 5) adoption. Learning and working through these stages may help ‘up’ your adoption level. This becomes even more important today, during this 4th industrial revolution (aka Industry 4.0). The advances are coming at us faster than ever before and when it comes to technology, the gap among generations is also becoming wider. Many of us probably have both laggards and innovators in our lives- parents set in their ways and letting technology pass them by and children or grandchildren light-years beyond our own capabilities. The same may be true regarding diversity of employees within your company.

For 30 years, the Pennsylvania Industrial Resource Centers, such as NWIRC, have been helping small to mid-sized manufacturers evaluate and implement programs and technology in order to stay competitive. Creating a roadmap to keep your company moving forward and capitalize on technology that makes sense for your business is key. First steps can be making a commitment for your company to stay ahead of the bell-curve and nurturing generational diversity to help you stay on course so technological advances don’t pass you by.

Creating Value with IoT

By Kevin Jones, Owner/Founder, Ectobox, Inc

Most everyone has now heard the terminology ‘Internet of Things’ (IoT). Simply put, it refers to data pulled securely in real time from devices or machines (“things”) and then transmitted over the Internet, transformed into valuable information, and applied to business decisions. It’s important to consider IoT for the future growth of your business. Let’s breakdown the value creation of IoT into 4 categories.

Maintain equipment better

One of the easiest ways to get value from IoT is around maintenance and support of products. If a company improves their maintenance of a product they are then able to get a longer life out of the piece of equipment, and can prevent unplanned downtime. For example, two leading causes of machine breakdown may be lack of lubrication in some parts and overuse which...
Continued from Page 1

causes overheating. Typically, reactive or preventative maintenance is performed. Companies will react and maintain the product when they hear, see, or otherwise experience an issue with the equipment. Or they may perform maintenance on the product every so many hours of usage, or every month or so. Reactive maintenance is usually too late and those issues, including unplanned downtime, could have been prevented. Additionally, preventative maintenance could be performed too frequently. Each of these maintenance methods can be costly.

If we were to add sensors to the machine and pull the data, we could remotely monitor the machine’s operation. Better yet, we could add some predictive analytics to the solution. This then alleviates the need for the human to watch the data, and we can setup alerts to indicate that the machine will need maintenance at some point soon before a breakdown, and automatically generate a work order in the CMMS (i.e., work order management system) with appropriate data about the data. We can then schedule the machine for some planned downtime during a slow shift. This can significantly reduce the costs of maintenance and repairs, and prevent expensive unplanned downtime of the production line.

Operate equipment better
Costs for operating equipment can be reduced with IoT by providing better data and then acting on that data. This data can then be used to improve operating uptime of the equipment and to operate the equipment autonomously. Uptime is improved by having data which allows a user to operate the equipment within engineering limits, which maximizes its use in production. Costs can be further reduced by running the equipment autonomously. Data from the equipment as well as other data from manufacturing process can be computerized to perform repetitive tasks and workflows. This allows people to perform higher value tasks, and monitor the production of more equipment at the same time.

Make existing products better
It’s possible to get value from IoT by making products better, i.e., innovating on your existing products. The idea here is to obtain and understand data about the product, the environment in which it’s used, how it’s used, and the customer’s business. Once you have that data you can understand how the product is used and improve how the customer uses it through better training, or more data for the customer to consume. It would also be possible to improve the product itself by eliminating bugs in the equipment or incrementally improving features in the product. Imagine a piece of equipment you currently manufacture and sell to a customer. Once they have it installed, do you really know how they’re using it? It would be valuable to receive a continuous feed of data about how the product is used which may indicate a need for changes—changes that would make the product more interesting and valuable to prospective customers and more competitive in the market.

Make new products better
Let’s take the idea of making products better and extend that even further, i.e. invention. If you had the data available to you, enabled by IoT, for how your customers are using the products and if you analyzed the data and product’s use, it’s possible you could add new features or develop a completely new product for the existing or a new market. This is taking the process of improving products to a new level. This drives even greater opportunities for increasing sales and thereby increasing revenue from the new products.

All four of these methods are very interesting ways that adding IoT capabilities to products can create value for a company, some helping your company save money and others helping you increase revenue. All good reasons to take a look at your current capabilities, create a roadmap of where you would like to go, and determine if and how IoT capabilities might help you get there.

Ectobox, Inc. is a company of IoT and software experts that provide consulting, services, and product solutions that improve manufacturing clients’ competitive position.

Improvement Kata Hits the Road
A kata is a pattern you practice to learn a skill and mindset. Through practice, the pattern of a kata becomes second nature. Mike Rother, author of Toyota Kata, visited our region last December to present Improvement Kata to
manufacturers and Kata in the Classroom (KiC) to educators—both involved teaching a pattern of scientific thinking as a life skill for problem solving and achieving difficult goals. Many participated in these programs—teachers took the exercise back to their classrooms and some of the manufacturers started introducing within their companies.

In an effort to keep the ball rolling, an Improvement Kata workshop is hitting the road over the next several months. The goal is to introduce many more manufacturers and educators to using Improvement Kata within their team, organization, or classroom. The Introduction to Improvement Kata Workshop is scheduled in several locations, including Erie, Warren, Hermitage, Oil City, Bradford, and Clarion. The complete schedule and details can be found at www.nwirc.org/events. The 2-hour workshop includes a 50-minute simulation exercise and facilitators (depending on location) include: Lisa Pustelak and Tom Weible. Lisa is an Employee Development Specialist and recently attended the national Kata Summit. Tom Weible is a NWIRC Strategic Business advisor and certified in Improvement and Coaching Kata by TWI Institute.

If you’re interested in new opportunities for your company to stay up to date and become more educated about the latest technology, here are a couple of ideas:

**Manufacturing Advanced Expo**
This free Expo will take place on May 10th from 12noon-5:00pm at the Ambassador Conference Center in Erie. More than 35 exhibits will showcase and demo the latest manufacturing technology innovations, including robotics, machine safety, energy saving solutions, and others. Register at www.nwpa-ntma.com/expo.

**Robotics & AI Summit**
A one-of-a-kind manufacturing business summit identifies the market forces driving change and the business strategies organizations need to adopt, to sustain, or regain competitiveness as digital automation revolutionizes all industry sectors of manufacturing. The Robotics & AI Summit at LiveWorx will be held at the Boston Convention & Exhibition Center on June 18-19, 2018. The event is produced by Robotics Business Review, a market leading source for the global robotics, automation, and artificial intelligence market. If you’re interested in attending, receive a 30% discount on event passes by using code: NWIRC30.

Details and registration at: http://bit.ly/NWIRCPA

**Keeping Pace with Industry 4.0**

Over history, manufacturing has experienced 3 industrial revolutions. The connections through the internet has set the stage for the greatest revolution yet. Industry 4.0 involves a range of new technologies that are fusing the physical, digital and biological worlds and impacting all disciplines, economies and industries. These technologies will improve lives, create new jobs, make goods cheaper and better and impact the world in ways we have yet to imagine. Technological progress is not guaranteed. It requires people to make it happen. Check out this Industry 4.0 video about why it’s a great time to be a manufacturer. (Use QR code or www.nwirc.org/news/industry4-0)

**News from Our Team**

Ashleigh Walters, President of Onex, Inc. in Erie, PA, was named Vice-Chair of the NWIRC Board of Directors. Walters joined the NWIRC Board a little over a year ago and has been very active with stakeholder advocacy at both the federal and state levels.

Tom Weible, Strategic Business Advisor at NWIRC working with manufacturers in 6 counties of North Central PA, is certified by TWI Institute as a Toyota Kata (Improvement and Coaching) trainer, facilitator, and coach. Practicing Kata helps companies and teams improve, adapt, innovate and achieve challenging goals. With his additional training, Weible is certified to teach a 10-hour course, as well as offer manufacturing companies onsite implementation and coaching support so company employees can develop the routine of practicing Kata.
YOUR STRATEGIC BUSINESS ADVISORS

If you have questions, or would like to speak with someone from NWIRC about services, please contact your Strategic Business Advisor:

Tom Weible  
814.590.5202  
Cameron, Clarion, Clearfield, Elk  
Jefferson, McKean & Potter Counties

Susan Hileman  
814.572.2077  
Crawford, Forest, Mercer &  
Venango Counties

Ed Barthelmes  
814.217.6061  
Erie & Warren Counties

UPCOMING EVENTS

Introduction to Improvement Kata  
May 22  
Location: Hermitage  
June 6  
Location: Warren  
June 19  
Location: Oil City & Bradford  
June 26  
Location: Erie & Clarion

A perfect opportunity for manufacturers in the region to learn and experience Kata first-hand! In this free 2-hour workshop, you’ll learn how Kata is used in teams, organizations, and your everyday life. Participate in a 50-minute simulation for practice and to learn how to teach scientific thinking to others. Walk away understanding how Kata can help your company develop and sustain a culture of continuous improvement.

ISO 9001:2015 Internal Auditor  
June 19, 20, 21  
Location: Corry

This 3-day course will provide a detailed review of ISO 9001:2015 quality standard, including the most recent changes. Participants will learn how to conduct an audit, write the audit report, take corrective actions, and more.

Lean Together™ 1.0 Groups forming now!  
Locations: Erie / Meadville

Two new Lean Together™ working groups are forming to begin this summer. One group for Erie/Warren Counties companies and the other for those in Crawford/Mercer Counties. This collaborative learning program focuses on studying and implementing concepts from the book, 2 Second Lean™.

For more information or to register for training, visit www.nwirc.org