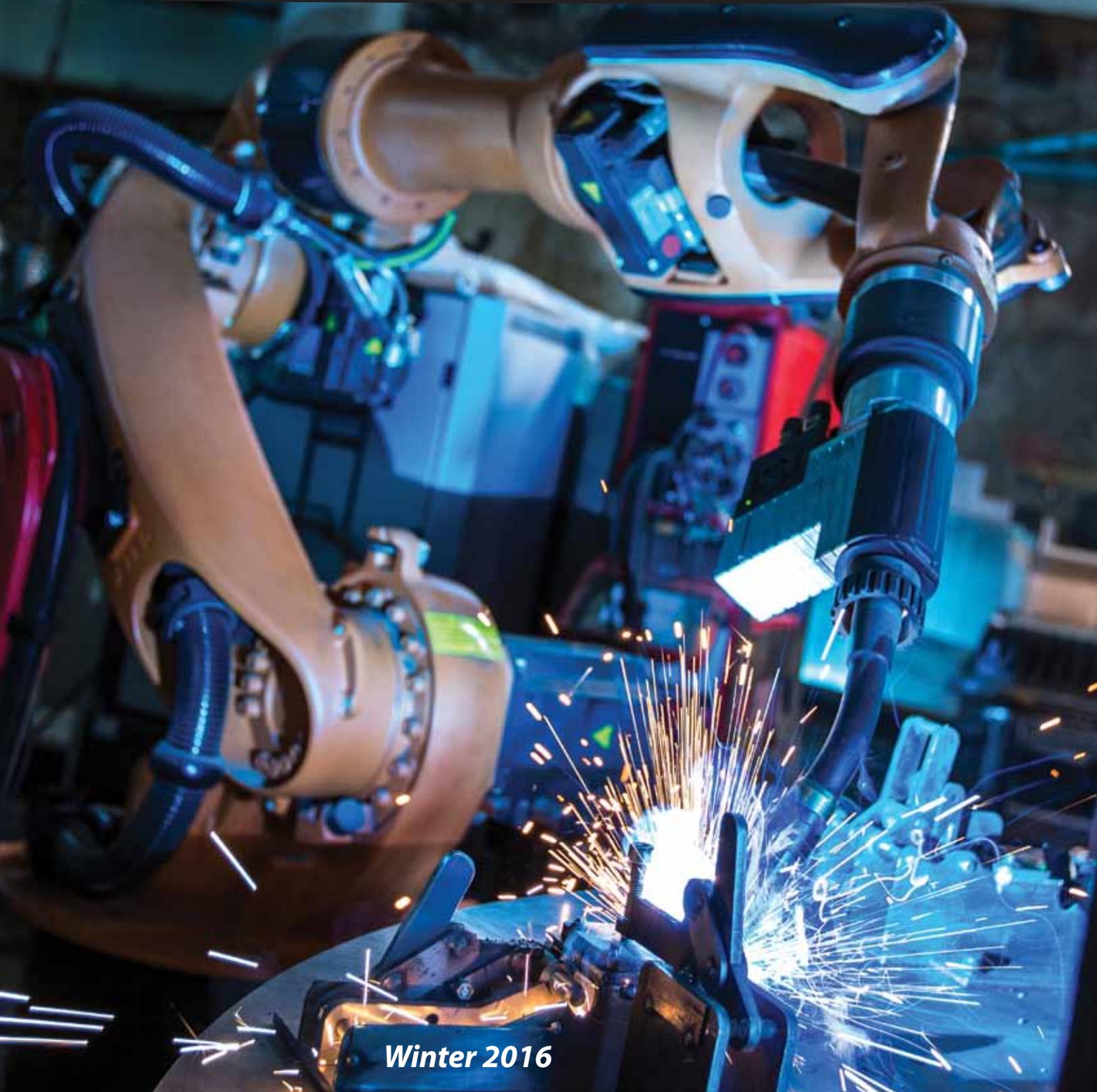


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Special Technology Edition



Winter 2016

TECHNOLOGY- THE GAME CHANGER IN MANUFACTURING

Most of us work from a “to do” list of some sort -whether a pad of paper, Post-It note or a task list on our computer. If you’re like me, it seems that most days for every task I complete, two more get added. As we try to be diligent in our jobs, we work furiously to knock off one task to get on to the next.

We pay a penalty for working this way. We become so focused on the immediacy of what’s on our plate, we fail to look ahead at potentially game changing events which are looming around the next bend.

One such game changer is technology. Like never before in our history, technology is changing our culture, our society and, yes, our businesses. The proof lies in looking at recent history, say the last two decades. In the ‘90’s we were first introduced to email as a quirky new way to communicate. The internet was an intriguing novelty we accessed through a dial-up connection. Car phones were introduced which quickly became portable cell phones – now smart phones – which again, changed forever the way we communicate.

Now let’s look ahead two decades, or even just one. The pace of technology is accelerating, and it’s going to continue to change the way we live and work.

When I was in school a computer filled a specially constructed clean room, and programming was in a language called Fortran using punch cards to give the computer its instructions. Today I watch my young grandchildren operate an iPad with ease, moving from videos to movies to games. The next generation is growing up with technology unimaginable to us in our early years. With a foundation of comfort in navigating their devices, these young people will grow up pushing the limits of technology to levels we can’t now comprehend.

“Generation Y”, or “Millennials”, are entering the workforce and looking for jobs where they can use technology in their daily routine and assist companies with finding new ways to improve product and processes. As for my grandchildren, they are part of “Generation Z” or the “Internet Generation.” When they enter the workforce, they will be looking to the internet for innovation and new ideas and will be fully entrenched in virtual and cloud based systems.

So what does this have to do with manufacturing? You can be certain that technology will change the way we buy, sell, schedule, track, produce and ship every product made. Integrated systems will automate processes, driving productivity to new heights. Operators sitting in their offices – or their homes – will instruct robots to do the physical work. “Smart Manufacturing” is emerging now and will be a game changer in the coming decade. This change is rapidly approaching and we will all be well advised to embrace the technology and figure out how to use it to our competitive advantage. The train is leaving the station; we need to get onboard or be left behind.



John W. Lloyd
President & CEO

“Smart Manufacturing is emerging now and will be a game changer in the coming decade. This change is rapidly approaching...”

CYBERSECURITY IMPLICATIONS



Industrial control systems used to automate manufacturing processes are relatively new to being susceptible to cyber threats. Nonetheless, the recent increase in targeted attacks is a result of the access points now available for exploit, as modern information technology (IT) integrates with legacy manufacturing systems that were never built for connectivity. Operational technology (OT), such as SCADA and other forms of industrial control systems, are often found in industries that manage critical infrastructure, such as water, oil & gas, energy and utilities, but also in automated manufacturing, pharmaceutical processing and defense networks.

As IT continues to converge with OT to improve efficiency and productivity and reduce costs, complicated cybersecurity threats are being introduced into manufacturing environments once immune to a variance of risk.

Manufacturing facilities must embrace strategies and best practices to streamline the convergence process if they are to be successful in preventing a disaster. It is the responsibility of those accountable for governance to implement strategies to protect assets; as both public safety and the reliability of manufacturing output depends on it.

More Details- www.mantec.org/cybersecurity

How Millennials Can Help Manufacturers Adapt To Change

Research from the Manufacturing Institute and Deloitte predicts there could be as many as 2 million unfilled manufacturing jobs by 2025. Add to those statistics 77 million Millennials coming into the labor force, and what do you get?

An opportunity to revitalize the manufacturing sector, with a renewed emphasis on technology, innovation, and digitization, many of the areas that attract the younger generation of workers.

Yet many manufacturers find themselves reluctant to embrace this new era of manufacturing. ThomasNet's Industry Market Barometer shows 62% of manufacturers feel Millennials represent a small fraction of their workforce, and 81% have no explicit plans to increase these numbers. What's more, 43% of manufacturers surveyed believe that this generation lacks the work ethic and discipline to succeed.

But the numbers don't lie: Millennials, ages 18–32, are expected to take over 75% of work over the next decade. These shifting workforce demographics will significantly alter the manufacturing landscape.

Focusing on Millennial workers can help manufacturers adapt to a changing industrial landscape and come out a step ahead by:

1. Addressing Public Perception & Education
2. Offering Internships & Training Programs
3. Going the Way of Technology

Millennials will increasingly replace Baby Boomers looking to retire. The question then becomes not “Are you incorporating Millennial workers into the labor force?” but “How are you incorporating Millennial workers into the labor force?”

More Details- www.mantec.org/Millennials





3 KEYS TO MAKE INTERNET OF THINGS WORK CONTINUOUSLY

1. Recognize how Operational Technology (OT) differs from Information Technology (IT)

Information Technology includes the world of climate-controlled data centers filled with servers and storage platforms, with a team of skilled technologists constantly at the ready to attend to the systems in their charge. These systems are typically upgraded to keep pace with ever-changing business demands, technology advances and security threats.

Operational Technology is focused on the design, implementation, maintenance, and operation of the systems tasked with running manufacturing equipment — from the warehouse and shop floor to the field. These systems are not housed in climate-controlled data centers, but in cramped industrial environments where every square foot is dedicated to revenue-generating equipment and activities. OT platforms don't have teams of technologists on hand to address problems or outages. And they are expected to run continuously, without interruption, day in and day out.

2. Understand the potential vulnerability of virtualization

Virtualization has transformed the way enterprises deploy technology, delivering significant cost savings and operational efficiencies. By enabling multiple applications to run on the same platform, rather than on separate dedicated platforms, virtualization delivers dramatic reductions in hardware costs, energy consumption, rack space, and maintenance, just to name a few.

3. Define your downtime tolerance — and deploy accordingly

Studies have attempted to quantify the impact of downtime in a variety of industries. The fact is, each deployment has its own unique downtime tolerance. That's why a thoughtful, cost-effective Industrial Internet of Things availability strategy weighs business risks against the implications of downtime for that deployment.

More details- www.mantec.org/3keys

Sizing Up the Internet of Things

New advances in technology have led to strong interest in the Internet of Things, where everyday objects have sensor capabilities, computing power, and connectivity that allows for data sharing. Projections estimate 50.1 billion connected devices by the year 2020 and \$1.9 trillion in global economic value-add, suggesting a world of new opportunity for businesses.

The ecosystem of the Internet of Things is complicated, spanning hardware, software, rules, and services. Many of these elements have roots in traditional IT components, but there are new aspects to consider and the true value of the system comes from the combination of all the pieces.

There is a positive outlook for channel firms looking for business related to Internet of Things, since businesses will need help building and applying the complex systems. There will be many new firms focused specifically on IoT aspects such as devices, data analysis, and integration; but there will also be opportunity for channel firms to extend existing offerings into these new areas.

More Details-
www.mantec.org/IoTReport

RECIPE

4 Ingredients to Make Internet of Things Work for Manufacturers

1. A common sensor platform to integrate information from people, processes and devices.
2. Sensor data management to infer data relevance and business context.
3. Process compliance to ensure data quality and exception handling.
4. Actionable information via real-time alerts and integration with systems of record

More details- www.mantec.org/recipe

Manufacturing and the Digital Revolution

by Scott Sipe, MANTEC Director of Technology

The manufacturing world is changing as digital technology resets the landscape. Known as “Technology Disruption” or the “New Industrial Revolution,” technology gives a competitive advantage for small to medium sized enterprises (SME).

Prices continue to plummet making the advanced technology accessible to smaller manufacturers. Many of these changes in price and availability are driven by the convergence of technology trends. Lower costs related to big data and cloud computing, electronic sensors, microprocessors, and other components lead to making new and legacy manufacturing equipment more adept. Advances in software and communications technology make it possible to manage operations with a new and higher level of precision, along with new forms of collaboration.



MANTEC, along with the six other Industrial Resource Centers in the state, collaborated with the PA Department of Community and Economic Development and the National Telecommunications & Information Administration to develop a strategy focusing on technologies for SMEs in Pennsylvania. As part of that strategy, four areas of focus for technology in manufacturing were developed:

- Business, Sales, and Front Office
- Design Services, Prototyping and Testing
- Planning and Production; Manufacturing Processes
- Supply Chain and Logistics; Shipping and Receiving

Referencing the Digital Intensity Solutions Matrix Infographic, each focus area has technology opportunities for SMEs to consider for its business strategy. SMEs possess different levels of internal capacity to deploy sophisticated modern information systems and technologies. Some embrace the solutions in long-term business strategies while others focus on the “quick solution.”

Automation offers wide opportunities by transitioning manual, labor-intensive process steps to an automated system which produces outputs better, cheaper, and faster. Many fail to realize that adding automation to inefficient processes undermines any business value of the investment made. Process improvements should be implemented in concert with the new technology. Regardless of the technology, the old adage still applies, “garbage in-garbage out.”

Cybersecurity is another critical component of a technology strategy. New technologies can expose important company information and processes. The average cost to a SME business from a cyber-attack is \$188,242 and within six months of a major malware event 60% of the SMEs breached closed permanently. Understanding the risks, developing risk strategies and creating tactics for implementation can lead to great technology success.

For assistance in stating your strategy contact me at sipesw@mantec.org or 717-843-5054.

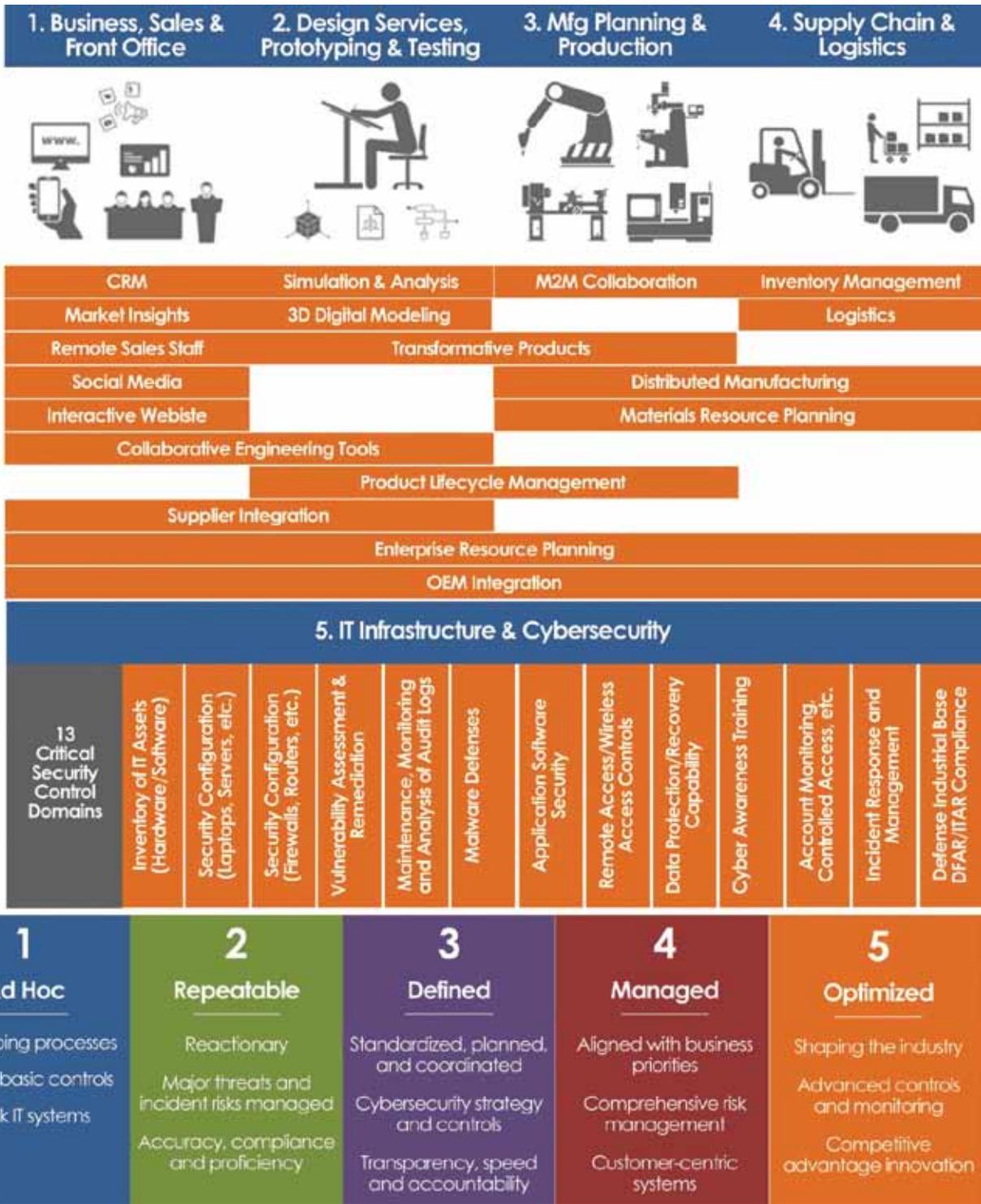
Detect, Respond, Recover: How to Keep Your Business Safe Online

Excerpted from Michael Kaiser
futureofbusinessandtech.com

In 2013, National Institute of Standards and Technology established a “best practice” framework for reducing risks to the nation’s critical infrastructure. This approach recommends five steps that any-sized company can take for addressing cyber threats.

1. Identify:
Inventory your most valuable assets- the “crown jewels,” such as employee, customer and payment data.

DIGITAL INTENSITY SOLUTION MATRIX



2. Protect:
Assess what protective measure you need to have in place to be as defended as possible.

3. Detect:
Have systems in place that would alert you if an incident occurs, including the ability for employees to report problems.

4: Respond:
Make and practice an incidence response plan to contain an attack and maintain business operations in the short term.

5. Recover:
Know what you do to return to normal business operations after an incident or breach, including assessing any legal obligations.



www.mantec.org

Your Resource Driving Manufacturing Innovation

600 North Hartley Street, Suite 100 York, PA 17404

MANTEC Professional Business Advisors



Lancaster County

Kent Keller
kent@mantec.org
717-873-1292



York County

Brad Kreidler
brad@mantec.org
717-873-6755



Adams, Cumberland, Franklin, Fulton and Perry Counties

Dave Fitzgerald
fitz@mantec.org
717-873-7992



Dauphin, Lebanon and NW Lancaster Counties

Ken Rubell
ken@mantec.org
717-781-4884



Hanover Area

David Hanan
hanands@mantec.org
717-873-1054



Non-Profit Organization
U.S. Postage PAID
York, PA 17405
Permit No. 242

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