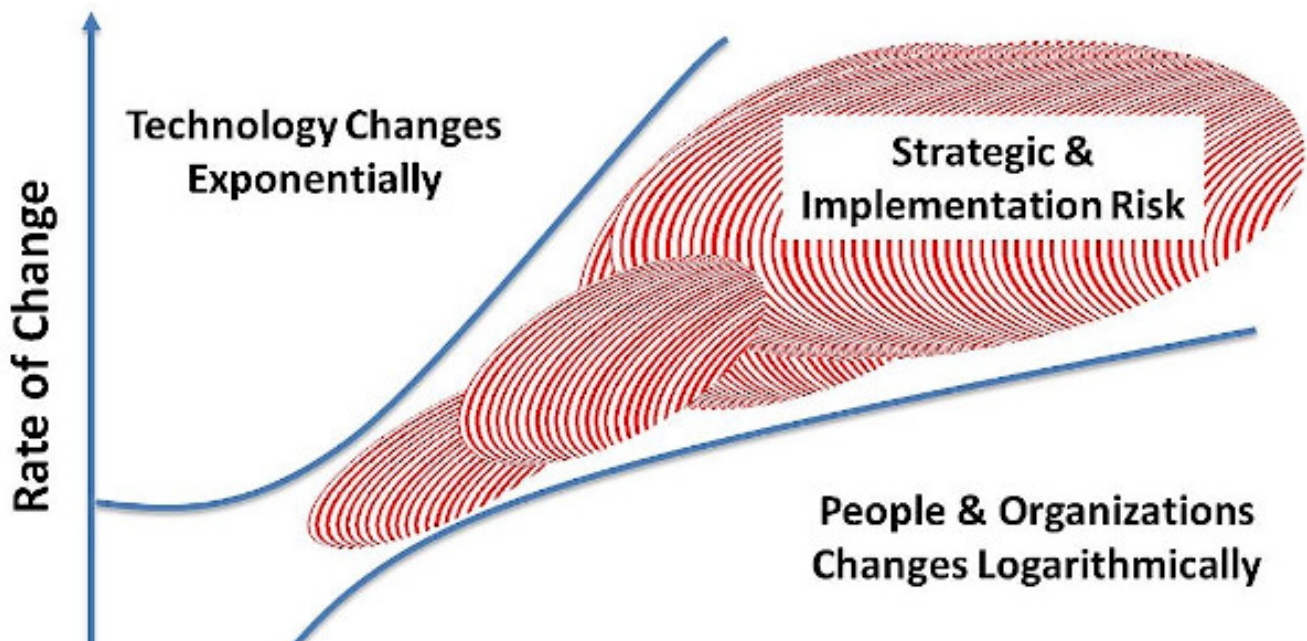IIOT, INDUSTRIE 4.0

Smart manufacturing: Five strategies for smashing silos

'That's the way we've always done it' is not 'smart manufacturing'

BY MO ABUALI, PHD AND ISAAC BENNETT   JUNE 8, 2021

Courtesy: IoTco

The concept of smart manufacturing, including the many technologies and solutions that transform and optimize manufacturing, isn't new. It's been around for more than two decades. However, even with its relatively mature status, many manufacturers find it to be a target that remains beyond their reach.

One might want to blame the continually evolving technology landscape, which requires regular evaluation and investment, or the reliance on old ways of doing business that still serve some manufacturers reasonably well.

While these barriers to running smart factories carry some weight, often, the biggest inhibitor is the people side of the people, process and technology three-legged stool. Manufacturers can get processes in place following industry best practices. They can explore the advantages of low-cost, smart technology options. Most internet of things (IoT) devices cost in the hundreds of dollars, not thousands. But "fixing" the people part, well, that's another story.
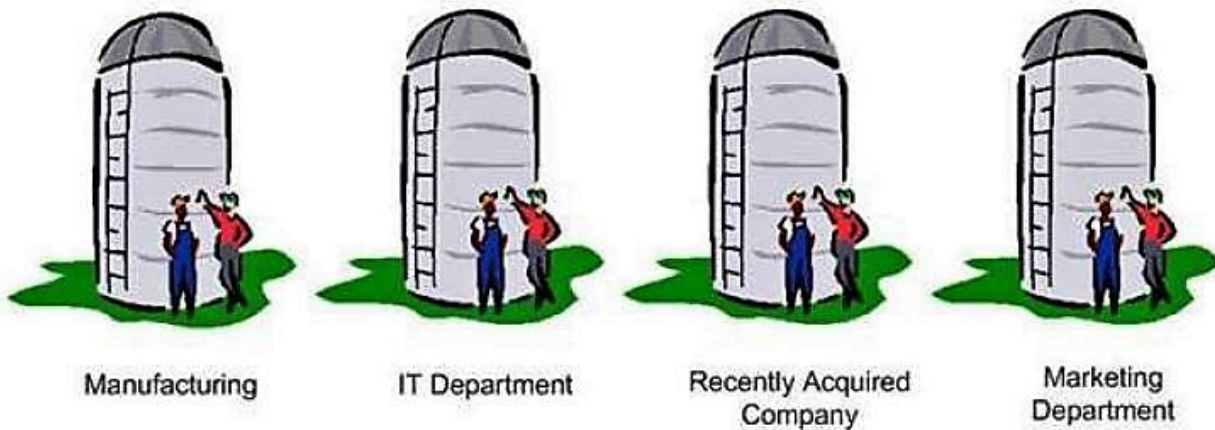
Figure 1: Organizational silos provide needed structure, but they can inhibit collaboration and innovation. Courtesy: IoTco

Fortunately, for manufacturers who want to make 2021 the year to embrace smart manufacturing and Industry 4.0 technologies, there are people-centered strategies that can mend the wobbly or broken third leg of the stool.

How to break through silo walls

In many manufacturing businesses (and other industries, too), the organization is structured to support a siloed way of doing business. People in the silos — whether they work in information technology (IT), finance, sales or on the production floor — have been taught to do things in a particular way (see Figure 1). They often can't shake the "that's the way we've always done it" or "management doesn't want our input" mindsets, which stymies change.

These perceptions and others are what makes it so challenging to get people to think beyond the walls of their departments, but there are proven strategies for breaking through.

To keep the businesses' eye on the smart manufacturing prize:

1. Focus on the value of data.
2. Foster a culture of innovation.
3. Establish a smart manufacturing steering committee.
4. Empower digital change champions.
5. Make internal communications a change management priority.

1. Focus on the value of data, from shop floor to top floor

Smart manufacturing's foundation is rooted in Big Data — "smart data" that doesn't just exist in one place but is connected to other organizational data and offers actionable insights for the business, including what can be done faster, cheaper, better or more safely.

Data from the shop floor, which might be thought of as raw data, needs to permeate throughout the entire company. Understanding the full set of data is eye-opening and can sometimes scare people. For example, knowing what's happening on the plant floor — whether it's related to downtime, inventory issues or the volume of scrap — brings a level of transparency to the table required for transformative change.

If departmental data needs to flow in the proper way and "collaborate" with other data, the people who work throughout the organization must collaborate too. Senior leaders and plant supervisors who can help their managers and teams understand data's cumulative value and how it benefits the organization will find more support for their smart manufacturing initiatives.

Digital Transformation Steering Committee

Purpose:

Develop a clear vision of what Digital Transformation represents to the company

Develop policies to ensure regulatory and strategic compliance

Provide strategic direction regarding Digital initiatives

Ensuring Digital Alignment Across the Business

Priorities
Best Practices
Resources
Partners and Solutions
Education
Communication

Members:
- C-Level
  - CEO, CIO, CDO, COO...
- Key Functional Leads
  - Manufacturing
  - Quality
  - Finance
  - Etc.
- Knowledge Experts

Business Leadership Focusing on Business Improvement

Figure 2: The most effective steering committee structure includes individuals from not just the C-Suite and senior management but representatives from all key business areas. Courtesy: IoTco

2. Foster a culture of innovation

One of the best exercises to light the smart manufacturing fire in a company is to regularly bring people together from every department to share their areas' obstacles and discuss what's possible if problems are addressed.

Smart manufacturing, by nature, is about innovation. An IT person won't have the same viewpoint as a person from production or finance. They will have their own processes and biases and thoughts about innovation. When multiple perspectives are brought together, problems are aired and solutions are raised (hopes, too). This is when the seeds of innovation grow and thrive, and the full vision of smart manufacturing begins to take hold.

Innovative thinking will expand when one looks beyond their organization, too. Consider bringing in outside perspectives to foster change and new ways of thinking and working. Bring an innovation expert in to lead a workshop or ask a representative from a peer manufacturer or respected industry supplier to speak to teams. Look to supporting technologies such as innovation software where people can use an internal portal to post and discuss ideas related to innovation.

3. Establish a steering committee

A firm-wide mindset focused on innovation and smart manufacturing principles is a great foundation. But smaller groups are necessary to keep the focus going forward.

One method for doing so is to establish a digital steering committee on smart manufacturing made up of representatives from all departments (see Figure 2). If you run more than one plant location or do business in multiple regions or countries, include representation from those facilities, too.

Your steering committee's role could be charged with:

- Finding change champions throughout the organization
- Vetting smart manufacturing use cases and collecting ideas for change
- Evaluating short-term costs that can yield long-term gain
- Strong decision-making, including allocating the right business resources
- Regularly and clearly communicating what changes are being considered and which are coming.

Make sure your people know the steering committee's virtual door is always open and they understand the process for providing input and the committee's role in evaluating submitted use cases and ideas.

4. Empower digital change champions

Change champions are the people in the organization who are vital to the success of smart manufacturing initiatives. They carry the "smart" flag for change in their respective areas and can collect ideas, feeding them up to the steering committee.

Have at least one champion per key department and facility, maybe more. Be sure to include people on the shop floor, so input on obstacles and how to innovate come from more than just your management.

5. Make internal communications a priority

Despite best intentions, change management efforts don't always transform company culture as quickly or as completely as organizations hope (see Figure 3). This happens with adopting smart manufacturing processes and technology as well; people don't fully support what all is needed for change.

In IT, we find ourselves regularly in the role of getting people to adopt the new technologies we invested in. But while we can force technology on people, we can't get them to adopt it unless they understand and accept it — and that's why effective communication plays a huge role in any transformation effort.

We believe there's no such thing as too much communication. Helping people understand how smart manufacturing efforts can make their jobs easier or can make the company more money, so that they can make more money, is a recurring and worthwhile task.
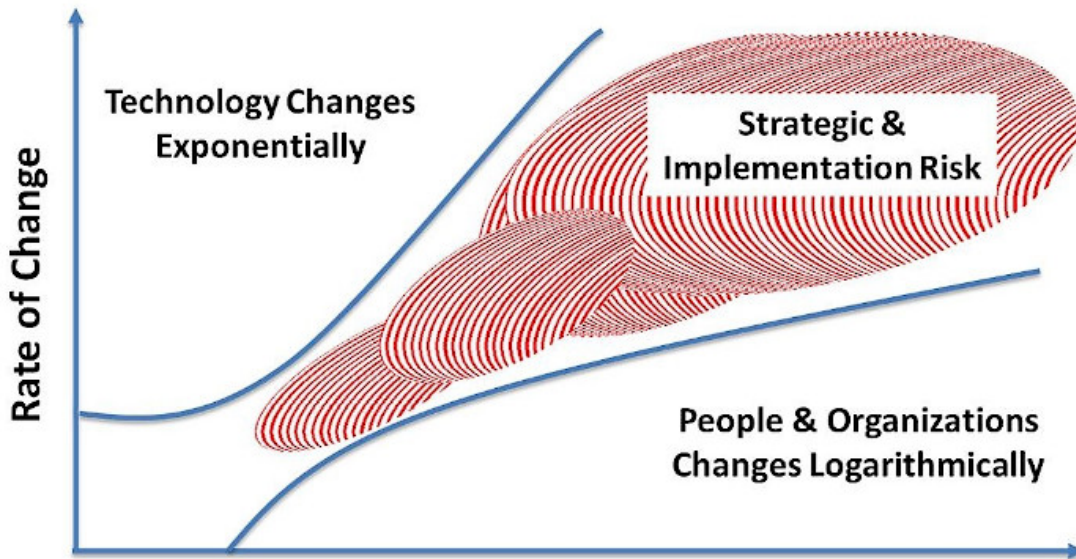
Figure 3: The change management conundrum: Technology changes at an exponential rate, while changes in human behavior and organizational culture take more time. Courtesy: IoTco

Remember, it's more than just 'technology'

As manufacturing consultants, what we often see when starting to work with a company is they often want to look at technology first. We see their IT organization leading the initiative and discover the effort's detachment from the factory floor and the people running the machines.

We also see turf wars and communication gaps. When IT doesn't get operation technology's buy-in or technology is pushed top-down from leadership, initiatives stall or don't find enough traction. IT can recommend and implement smart manufacturing technologies all day. But if no one fully understands or uses the technology — or if users and other stakeholders feel left out of the decision in any way — the impact reverberates across the entire organization.

Challenges are similar across manufacturers

Manufacturers of all sizes can benefit from smart manufacturing technologies and the power of a collective mindset that supports them. Whether your organization is large or small and no matter where you are in your smart factory transformation journey, you likely experience the same people-problems as others do — how to get people together, encourage collaboration and focus on innovation while leaving old ways behind.

Differences do exist, however. Smaller manufacturers may find themselves dealing with less internal politics, which means they could find quicker traction agreeing on smart manufacturing's benefits.

In larger organizations, Industry 4.0 discussions can be more difficult. First, there needs to be a link between the needs of corporate and the needs of the plant. Then, the organization must intelligently map the needs, making sure smart manufacturing technologies can address these and be scaled across other locations.

Celebrate small wins and find momentum

We like to say, "Think big, start small and scale fast." That's because there is real business value in identifying quick wins and working to solve a particular problem that smart manufacturing technology can address. Small

initiatives add up over time, and the lessons learned can often be translated to other use cases, departments and plant locations. With these wins, comes the momentum to do even more.

At the end of the manufacturing day, smart initiatives of any size require a multi-disciplinary approach and relentless collaboration, and they must pass the "sniff test." If senior leaders chant, "We're an innovative company," and it rings hollow with your rank and file, you have a problem. Your people will keep doing what they've always done, heads-down and your smart manufacturing initiatives will have trouble taking flight.

Often, the hardest part of organizational change is getting people in the same room and talking — and doing so on a recurring basis. We believe if you engage the right people, you can break down silos, inspire your people to embrace (and your leaders to fund) smar t manufacturing processes and technologies.

Your people are the key to smart manufacturing success, and this is the year to put the focus on them.

Mo Abuali, PhD is the CEO and managing partner at IoTco, the Internet of Things company, a CFE Media content partner. Isaac Bennett is the digital transformation and IT director at Wright & McGill Co.

Mo Abuali, PhD and Isaac Bennett

Author Bio: Mo Abuali, PhD is the CEO and managing partner at IoTco, the Internet of Things company. He is a strategic and transformative technology and business management leader with a 20-year record of driving achievement and sustaining change in manufacturing. Abuali serves industrial and manufacturing clients in automotive, aerospace and defense, and others, providing digital transformation, industrial IoT (IIoT), and predictive analytics technology and services, as well as the IoT Academy for Industry 4.0 training. He has a PhD in industrial engineering and is an adjunct faculty member at the University of Cincinnati. He has worked at companies like IBM, P&G, Omron and Toyota. www.linkedin.com/in/abualima/ Isaac Bennett is the digital transformation and IT director at Wright & McGill Co., the only manufacturer of fishhooks in the U.S. He comes from an automotive manufacturing/IT background having worked as the IT director of Detroit Manufacturing Systems (DMS), and previously the global IT innovation manager for Maxion Wheels, both tier-1 automotive suppliers. He has worked in the IT field for nearly 20 years, where he led the automotive IT departments' global digital transformation initiative, helping plants around the world implement smart manufacturing projects. www.linkedin.com/in/isaacbennett/