5G and the Factories of the Future

Who will be buying? Who won’t be?
Does a new technology require a new way of selling?

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Introduction:

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15+ years as a Control Systems Engineer
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Agenda

• What is a Control Systems Integrator? ~1 minutes
• State of Manufacturing and Related Technology ~5 minutes
• How WE Can Sell This ~5 minutes
Summary

Technology has been evolving in the manufacturing space since before Henry Ford and his assembly line.

Some of these changes have been adopted and implemented very quickly and across many, if not most, manufacturing verticals.

However, many factories still exist that use technologies that were invented decades ago. They have chosen not to take advantages of many of the advances in “modern” factory automation.

Because of this, and specifically the monumental, potential game changing aspect of 5G, we need a new way of going to market so that all levels and verticals within the manufacturing space, can take advantage of 5G and the knowledge that it can expose and provide.
What is a Control Systems Integrator?

• Design, build, and program control systems for industrial automation and process automation.
• Consult with manufacturers to understand their needs and pains.
• Uniquely positioned to form a strategic partnership with manufacturers (maintenance, operations, management, corporate) and vendors.
• In short, we solve manufacturing problems through automation.
State of Manufacturing and Related Technology

• In 2014, there were 251,901 firms (US) in the manufacturing sector, with all but 3,749 firms considered to be small (< 500 employees).


• Small businesses:
  • 49.2% of private sector employment
  • 43% of high-tech employment
  • 98% of firms exporting goods

State of Manufacturing and Technology

• Who will be purchasing 5G devices and services:
  • Large Early Adopters
  • Small Early Adopters
  • Those that understand the technology and will implement and reap the benefits
  • Vendors that are involved in the technology

• Companies with the need for:
  • Remote devices such as those found in oil fields, large warehouses, equipment that should be “untethered” from traditional wired networks.
  • Real-time, low latency applications such as Automated Guided Vehicles (AGVs) and autonomous vehicles.
  • Systems that need to communicate to a large database for information such as recipe management systems.
State of Manufacturing and Technology

• Who won’t be purchasing 5G devices and services:
  • Large/Small factories that believe in the “IIABDFI Principle”
    • Safety:
      • “We’ve had that machine for 20 years and no one has gotten hurt...”
      • “We can just write a procedure and tell people what to do....”
    • Upgrades:
      • “It’s been working for 20 years without a problem, why should I upgrade....”
      • “Our technicians are getting close to retirement, so we don’t want to re-train anyone...”
      • “I can still get parts on eBay...”
    • Data Collection:
      • “We know what the problems are...”
      • “I can have an intern with a clipboard watch the machine and put the issues into a spreadsheet for you...”
State of Manufacturing and Technology

- Other “innovations” that are largely ignored:
  - Power and Energy Management
  - Track and Trace
  - Electronic signatures (21 CFR Part 11)
  - Reporting
  - Asset Management
State of Manufacturing and Technology

- Barriers to implementing new technology and change:
  - Data and Information Security
  - Inoperability of proprietary systems
  - Lack of clearly defined return on investment (ROI)
  - Legacy equipment
  - Technology immaturity
  - Lack of vision and leadership
  - Lack of understanding of values among management or C-level executives
  - Lack of proven business models (e.g. outcome-based revenue sharing or profit sharing)
  - Rapid evolution of the technology causing companies to delay large investments
  - Require heavy upfront capital investment
  - Require business process change
  - Inadequate infrastructure
  - Lack of application development tools

(source: Industrial Internet of Things: Unleashing the Potential of Connected Products and Services, World Economic Forum, 2015
http://www3.weforum.org/docs/WEFUSA_IndustrialInternet_Report2015.pdf)
State of Manufacturing and Technology

• Example:

“The relatively slow pace of adoption of human machine interface and the high cost of investment are the two factors dissuading the global market. Analysts anticipate that the lack of skilled operators is the main reason for the slow adoption of this technology. Owing to this reason, the several small and medium-sized enterprises are expected to steer clear of using this technology. The lack of awareness about the benefits of using this technology and the delayed adoption are also likely to hamper the growth of the global human machine interface market. Several sectors are still struggling to adopt this technology due to its high cost and other barriers.” April 20, 2017

(Source: https://www.linkedin.com/pulse/human-machine-interface-market-adoption-automation-earnings-sawant)

BTW...
• 1968, first graphical user interface
• 1985, Windows 1.0

HMI technology really came to prominence with the release and widespread adoption of Windows 95 and NT 4.0
• 1995, Windows 95
• 1996, Windows NT 4.0
How Do We Sell This?

• What does the “traditional” buying cycle look like:

- Operations, Maintenance, Engineering
- Operations or Maintenance
- Operations, Maintenance, MAYBE Engineering
- Finance, Purchasing, Maintenance, Engineering
How Do We Sell This?

- Where does 5G and new technology fit into the “traditional” buying cycle:
  - A “consultation team” must be formed by a strategic partnership of stakeholders and groups:
    - Manufacturers
    - Vendors
    - Implementers
      - Control Systems Integrators
      - IT
    - Service
      - Control Systems Integrators
      - IT
    - Others????
How Do We Sell This?

• We need to look at who else should be on the team:

“...spend more time focusing on our critical thinking skills
“...we have the potential to make bad decisions far more quickly, efficiently, and with far greater impact than we did in the past.
“...show your math, because if I don't know what steps you took, I don't know what steps you didn't take, and if I don't know what questions you asked, I don't know what questions you didn't ask. And it means asking ourselves, really, the hardest question of all: Did the data really show us this, or does the result make us feel more successful and more comfortable?”

(Source: https://www.ted.com/talks/susan_etlinger_what_do_we_do_with_all_this_big_data)

• Who are the critical thinkers?
How Do We Sell This?

• How we should go to market:

  - Operations, Maintenance, Engineering
  - Partnership of Manufacturers, Vendors and Implementers
  - Operations or Maintenance
  - Partnership of Manufacturers, Vendors and Implementers
  - Operations, Maintenance, MAYBE Engineering
  - Partnership of Manufacturers, Vendors and Implementers
  - Finance, Purchasing, Maintenance, Engineering
  - Partnership of Manufacturers, Vendors and Implementers
Conclusion

• 5G has the potential to be a game changer and disrupter in the marketplace.
• Technological advances in the manufacturing space traditionally face an uphill battle for acceptance and adoption.
• Developing strategic partnership “consultation” teams to work with manufacturers—both small and large, will enable this technology to be understood and then adopted.
• We must also work with other, non-conventional, critical thinkers to develop knowledge and not just information.
Questions?

Thank you!

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