

Improving Manufacturing Operations through the Appropriate Application of Technology

Aldrich Technology LLC

Presenters



Peter Adams VP BUSINESS STRATEGY

Aldrich Technology padams@aldrichtechadvisors.com 831.818.5100



Michael Cohen SHAREHOLDER

Schwabe, Williamson & Wyatt, P.C. <u>mcohen@schwabe.com</u> 503.796.2488

Schwabe MILLIAMSON & WYATT

State of Manufacturing in the Pacific Northwest - Technology



Technologies Currently Used	UNDER \$5 MILLION	\$5 MILLION TO UNDER \$20 MILLION	MORE THAN \$20 MILLION
nternet of Things	27%	22%	27%
Artificial intelligence and/or machine learning	19%	23%	26%
QR codes	16%	11%	15%
3D printing	10%	15%	23%
Predictive maintenance	8%	22%	24%
Blockchain	7%	18%	19%
nterprise resource planning (ERP) systems	7 %	15%	29%
augmented reality and/or virtual reality	6%	5%	22%
Automated vehicles	4%	13%	26%
Automated manufacturing	4%	20%	23%
Robotics	4%	15%	22%
ligital twin technology	0%	3%	6%

Schwabe I • Aldrich

Common "Do you know" questions

The true cost to make your products through every step of the process?

The impact of changes in Supply Chain costs on your products?

What other products your customers are purchasing that are associated with your products?

How engineering design changes affect production well in advance of production?





Purpose of Technology?

Improve Productivity

Enable New Capabilities

Mitigate Risk



Productivity AND Security?

They are not mutually exclusive...



Schwabe I • C Aldrich

Business Administration and Manufacturing Operations are DIFFERENT

Business Administration

- Routine
- Filtered, but open
- Readily accessible
- Routine
- Regularly scheduled
- Critical, Daily
- Critical, Continuous
- Fast 1,000-10,000Mb/s

ACTION

Change Internet Resources Updates + patches Downtime File Backups Disaster Recovery Network spe<u>ed</u>

Manufacturing Operations

- Tightly Controlled
- Highly restricted
- Restricted
- Tightly controlled
- Challenging to schedule
- Important, Daily
- Important, Continuous
- Slow 100Mb/s

Manufacturing Operations (6 Areas to Apply Technology)

- 1. Enhance the Manufacturing Process (Machines and Tooling)
- 2. Automate the Manufacturing Process (Robotics and Software Controls)
- 3. Improve Operations (ERP, MRP, MES, Scheduling, Supply Chain)
- 4. Improve Throughput and Yield (Data Collection and Analytics)
- 5. Enhance Customer Experience (Order Automation and Portals)
- 6. Improve Reliability (Resilient Infrastructures, Cybersecurity, and Process Visibility)



Schwabe of Aldrich

Data + Analytics



Most businesspeople look at their P&L bottom line every month and are either satisfied or dissatisfied with their margins and cash.

Do you know in detail what contributes to that bottom line?

What products are you making money on? What products are you paying your customers to take away?

Schwabe MILLIAMSON & WYATT

Data always tells a story. The goal is to accurately read the story. The data we get must reveal, not obscure reality.

- What do you care about? Yield or Throughput?
- Do you know your costs at each major step of your manufacturing process?
- If yield or throughput changes, do you know why? What's the impact on cost? Commitments?
- Can you make good data-driven decisions about rework and scrap at each step?
- What is the impact of fluctuating freight costs (incoming and outgoing) on our materials cost?
- What data do I need to make those decisions?
- How would I collect that data?
- How do I work with that data to reveal the story?



Machine Learning + Analytics



The most common application of this today is evidenced in robotics to automate product movement.

Ultimately, you can apply Machine Learning and Analytics to the entire manufacturing process.

Let the computer figure out how to optimize the process.

Schwabe MILLIAMSON & WYATT

Purpose of Technology?

Improve Productivity

Enable New Capabilities

Mitigate Risk



Cybersecurity, does it affect me?

- Cyber attacks happen daily. Small businesses are prime targets for these attacks.
- 60% of small and medium businesses close after 6 months of getting a significant hack.
- In the last year there was an increase of 424% of cyber attacks on small businesses.
- 60% of small and medium businesses think they're too small to be targeted.
- Small businesses spend roughly \$1 million to restore the businesses back to what it was after a successful cyber attack.



Source: Chuck Brooks (2021) Alarming Cybersecurity Stats: What You Need To Know For 2021 Retrieved 7/13/2021 from https://forbes.com/sites/chuckbrooks/2021/03/02/alarming-cybersecurity-stats-----what-you-need-to-know-for-2021/?sh=5c7201e658d3

Source: Maddie Shepard (2021) 30 Surprising Small Business Cyber Security Statistics (2021) Retrieved 7/13/2021, from https://fundera.com/resources/small-business-cyber-security-statistics



Evolving Threat Landscape

- Last year's cybersecurity thinking is inadequate against this year's threats
- Threats are growing in number, complexity, sophistication, and consequence
- IT departments are playing a never-ending game of catch-up



Schwabe • Aldrich

Common Attacks





Who are you?

You are an address.

- What is an internet Protocol (IP) address?
- <u>www.google.com</u> to a hacker is 172.217.6.36
- IP addresses are usually assigned
- All IP addresses get the same probes at the same frequency
- This is done by automated systems, not people



It is not personal.



RANSOMWARE ATTACK

Your personal files are encrypted

You have 5 days to submit the payment!!! To retrieve the Private key you need to pay

there the rivate key you need to

Your files will be lost

Schwabe

Ransomware Statistics



\$20B in ransoms paid in 2021, doubling in 2022



37% of businesses were hit in 2021



32% paid the ransom



\$1.85M is the average cost to recover



65% of the data was recovered after paying



4 hours on average to successfully infiltrate and encrypt



Protect Yourself...

The basics whether your IT is On-Prem or in the Cloud...

- Keep unwanted people out.
- · Keep unwanted programs out.
- Keep the data assessable to the people and programs that need it.
- Keep the network and systems running and make sure there are Backups and Disaster Recovery for when they don't.
- Prevent interruptions to systems and access for people.
- Keep the data secure and true.



So, how do we do that?



How Do I Protect My Business, Customers, Employees?



- Establish IT Governance
- Establish a Security Policy
- Educate your People
- Develop an IT Strategy
- Pay attention to the Details
- Execution and Verification
- Cyber Insurance
- Engage Professionals
- Rely on competence rather than on personality/tenure/relations

Schwabe

• Aldrich

"Action without planning is the cause of all failure. Action with planning is the cause of all success" – Brian Tracy

- Infrastructure Security Policies
- Security Incident Response Plan
- Cybersecurity Awareness Training
- Periodic Vulnerability Scans
- Third Party Vendor Management Program
- Risk Assessment/Gap Assessment





Standards Bodies

- National Institute on Standards in Technology (NIST)
- Cybersecurity Maturity Model Certification (CMMC)
- Department of Labor (DOL)
- Payment Card Industry (PCI)
- Department of Defense (DOD)
- Healthcare (HIPPA)
- Federal (FARS/DFARS)

Leverage standards – don't make it up on your own!



Segregation of Functions; Coherence of Data

- People need the systems and data they need to do their jobs, and nothing else. Segregate and control access. This is also called "Least Privilege"
- Analytics needs access to the data across the enterprise. That data has to be stored in an accessible coherent way. Just like with people segregate and control access.
- Segregate the manufacturing control network, manufacturing data collection network, and the administration network.
- If we want to be able to look at our business data and really ask and answer questions, then we need to be able to access our data no matter where it resides.
- Isn't that a nonsequiter?



16 Best Practices for Risk Mitigation



3-2-1 BACKUP RULE

Store at least 1 copy at an off-site location

Sources: CISA's Alert (AA21-131A), Foster Institute Inc., Aldrich Technology

Schwabe OC Aldrich

16 Best Practices for Risk Mitigation contd.

Sources: CISA's Alert (AA21-131A), Foster Institute Inc., Aldrich Technology

Are we now Secure?

Schwabe

•C Aldrich

Important Take-Aways

- Productivity AND Security
- Build a Plan
- Establish sound IT Cybersecurity
 Defenses
- Verify & Test
- Bring in competence where needed

Can you afford this?

• What is the incremental IT spend to accomplish much what we have covered?

• O Aldrich TECHNOLOGY

- Information Security
- Software Solutions
- Process Automation
- Data Analytics

- Merger + Acquisition
- Cybersecurity
- Leadership + Governance
- Managed IT Services

Take a cyber security assessment to identify gaps your organization may have.

Aldrich Technology will discuss the results with you.

> Schwabe • Aldrich