

Are you Prepared for Quality 4.0 ?

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Industry 1.0 to 4.0



Mechanization,
steam and
water power



Mass production
and
electricity



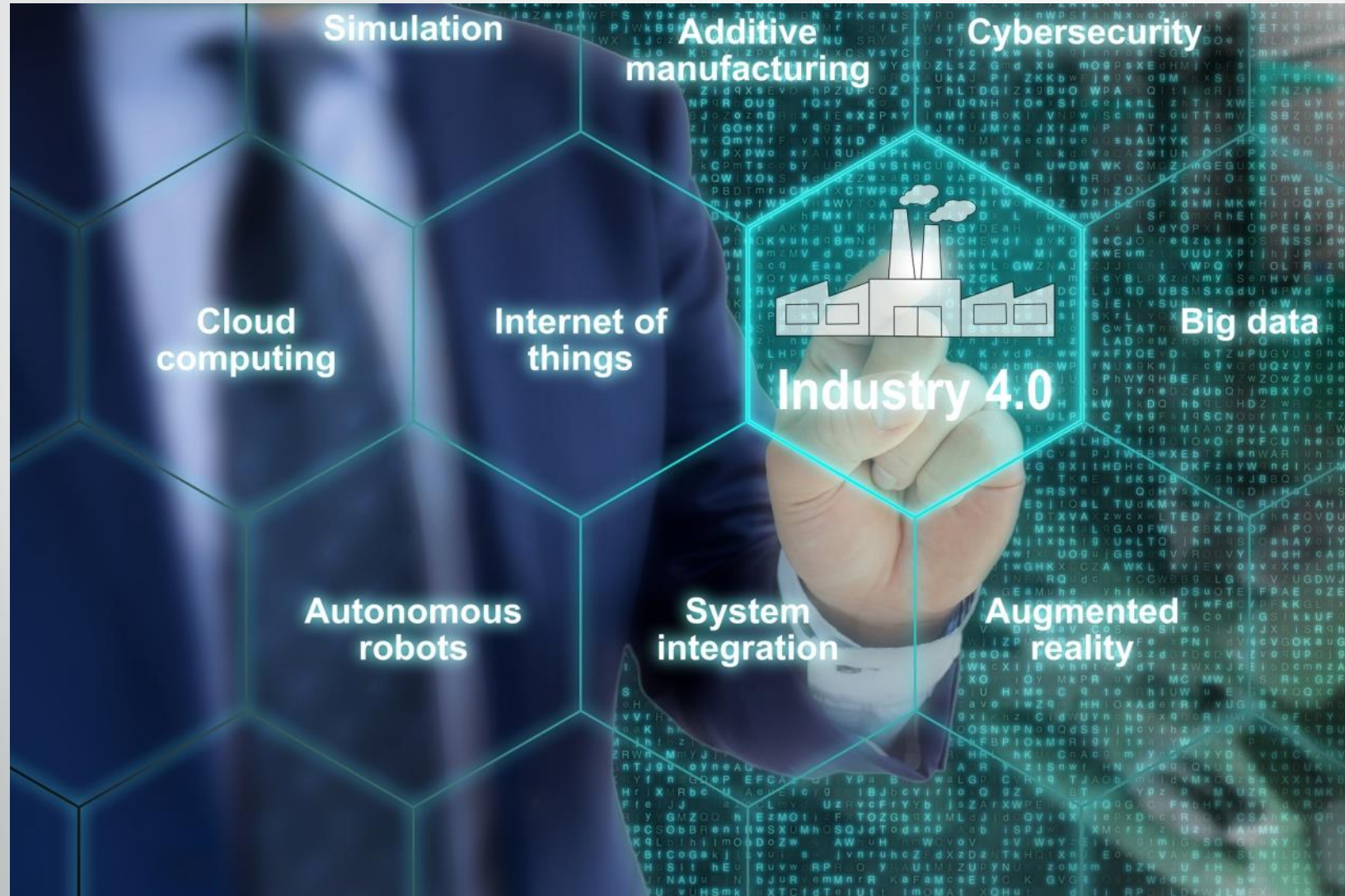
Electronic and IT
systems,
automation



Cyber physical
systems



Industry 4.0

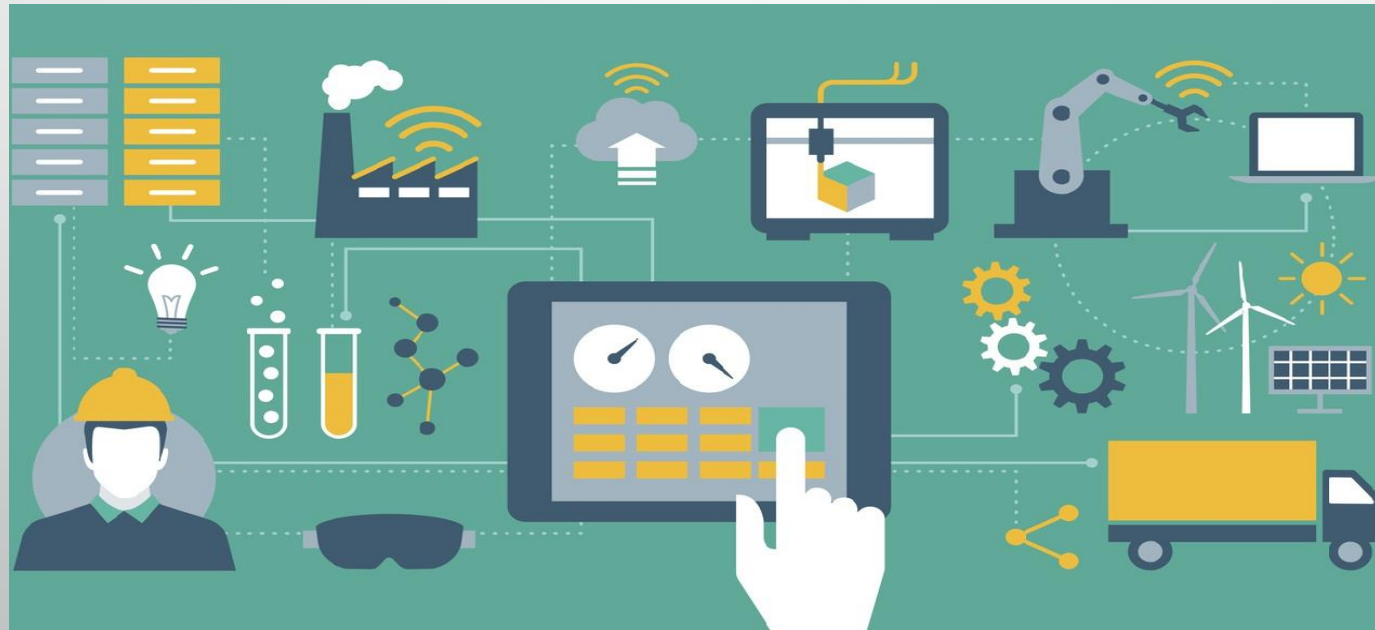


Quality 4.0 - Why Now?

- Manufactured **parts are getting smaller**, more **complex** with higher precision requirements.
- **Shrinking product lifecycles** dictate shorter delivery times and faster response to engineering changes.
- The rise of **just-in-time manufacturing (JIT)** has created pressure on supply chain with frequent short-cycle manufacturing (SCM), continuous-flow manufacturing (CFM) and demand-flow manufacturing (DFM).
- **Robotics automation** further **increases the productivity** and improved **cost structure** of competitors.
- **OEM's demand compliance** with more stringent quality standards and **require supply chain greater transparency**.
- OEMs see their **suppliers as a critical component** of their supply chain. As such, they expect the **suppliers to adopt technology and automation** so they can improve productivity, quality control, meet timeline and reduce cost.

Quality 4.0 with challenges

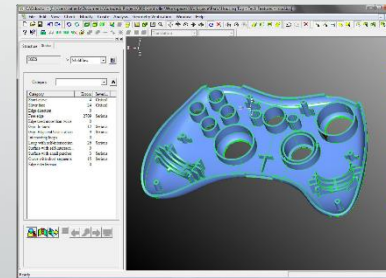
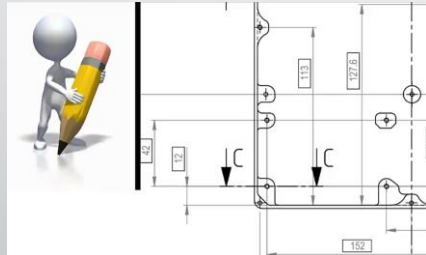
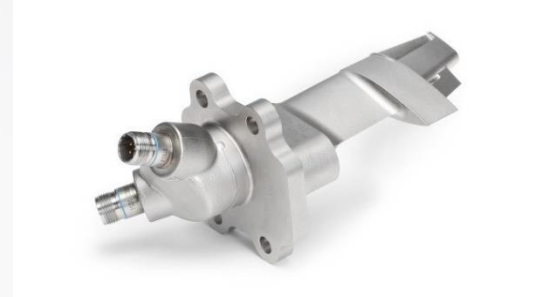
- **Quality 4.0** is a term that encapsulates the current trend of **automation** and **secure data exchange** in **manufacturing and quality control technologies**.
- It acknowledges that **Quality Control** contributes to the **“Smart Factory”** evolution by leveraging **modern technologies and practices**.



Quality 4.0 – The Gap

Inspection Report 檢驗報告

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Engineering
Data



Quality 4.0 – Closing the Gap

- Streamlining of processes
- Improving the “Cost of Quality”
- Improving Overall Product Quality
- Meeting Product Delivery Time
- Support organization to better compete in a fast-changing landscape



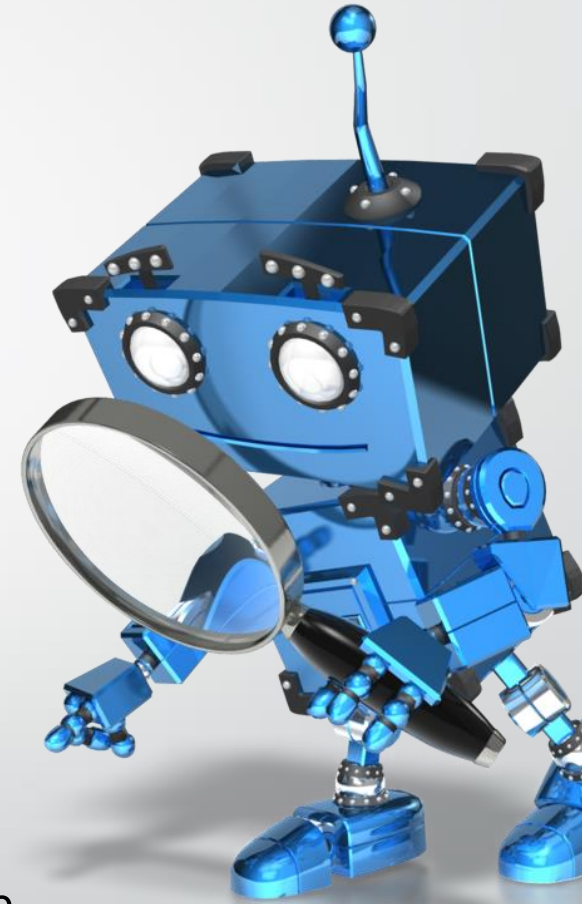
Quality 4.0

Readiness

- **Lower cost of technology** infrastructure (Storage, Connectivity, CPU)
- Better reliability, Systems maturity

Opportunities

- Leverage Technology to **augment human effort** (not replace)
- **Free your resources to focus on analyzing data and creative problem solving** compare to conducting manual data entry and doing copy and paste compiling data by hand.



Quality 4.0 – Case Study (Tyler)

(2017-2018)

- “Company Inc.” is a value leader in the machining, manufacturing, and assembly of components and complex assemblies.
- Company relies on over **40 years of manufacturing** and assembly experience. Combining state of the art C.N.C. machining equipment, manufacturing systems, strong supply chain relationships and a commitment to quality and continuous improvement.
- The Company facilities are **distributed over seven locations** (across three states in the Midwest) and is **employs 700 employees**.
- As an early adopter of Information Technology, the **Company management committed to investing in information systems infrastructure** and is continuously looking for additional ways to leverage smart technology and software solutions.

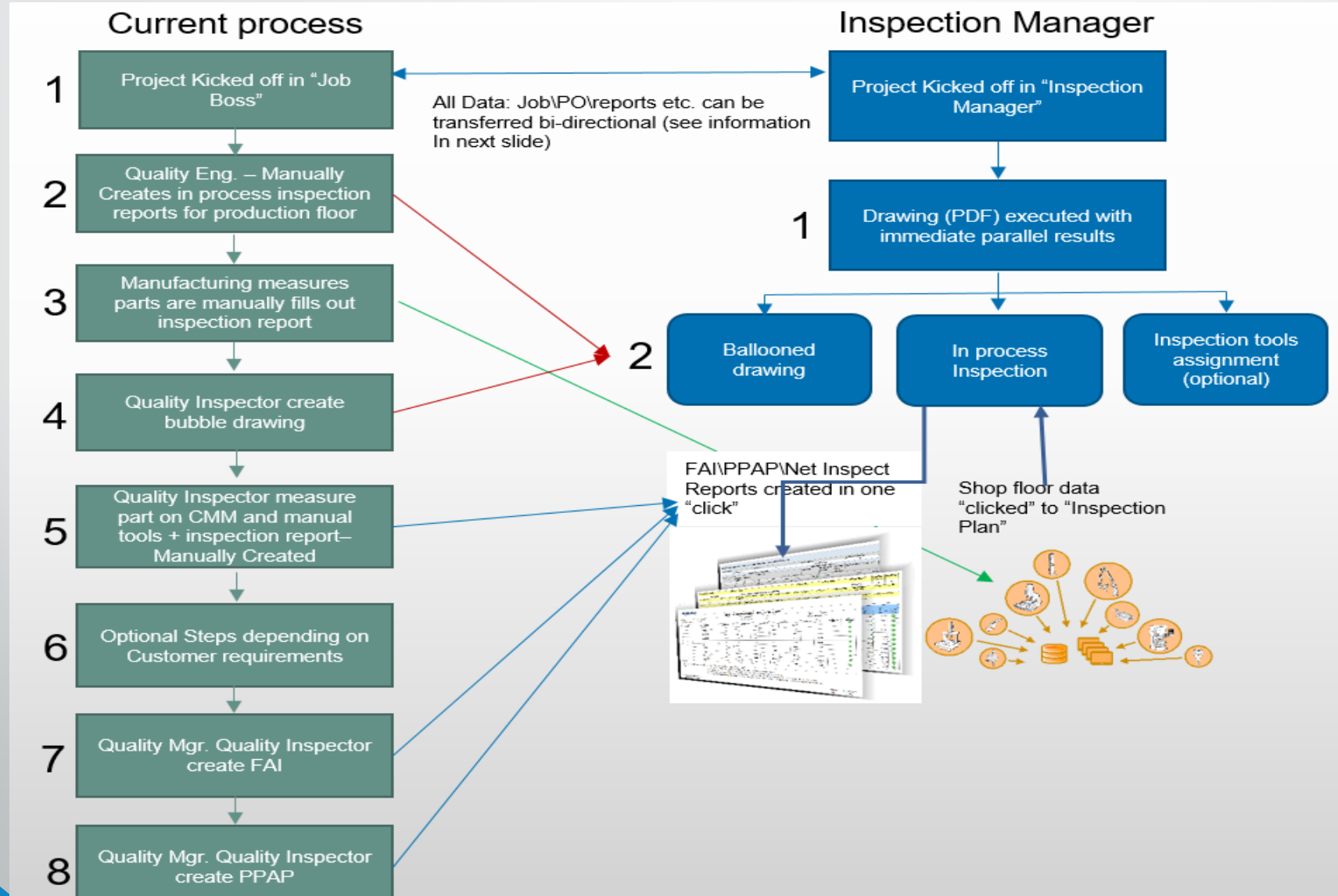
.....Case Study.....

- We wanted to improve our **Quality Management process and flow**, ranging from ballooning, GD&T recognition (without manual interpretation), through inspection planning, CMM and inspected data collection through final documentation and reporting all in one cohesive centralized database
- Company contacted [HighQA](#), the software company behind the [Inspection Manager Software](#).
- We **were using a different technology** and realized still a huge pain:
 - Staff Spend too much time on manual tasks
 - Software doesn't really enforces best practices
 - Usability?
 - Not making enough progress
- We wanted **Quality planning to lead** the quality control process

.....Case Study.....

- An example to what wasn't working well:
 - we do a lot of "big things", we can have thousand and more dimensions and G&D characteristics. Ballooning took so much time that the CMM team already completed their inspection prior to having the ballooned plan shared with them.

.....Case Study.....



.....Case Study.....

What did we look for?

- Call it an **Expert System**, or Artificial Intelligence
- **Database driven** and strong IT infrastructure
- **Performance** should be Optimized
- **Streamline** our Quality Management **process**
- **Usability** and level of **Service**
- **Trusted Vendor**

.....Case Study

Where are we now? Six months later

- IM enabled us to create the right logical and optimized workflow process
- Automatically propagating inspection plan from one location to all facilities
- Automatically inspection results “pushed” to automated reporting
- Strategically we are now:
 - Meeting higher demand with the same staff (scalability)
 - Significantly less “busy time” with lots of manual tasks
 - We now allocate staff to other needed activities (opportunity)
 - We are able to better respond to changes
 - We are in control

Driven by Four Disruptions

Quality 4.0 Improvements:

- Ability to handle much **larger volume of data**
- **Strong computation power** - do it significantly faster
- **Secure Connectivity** - share it with your internal and external colleagues
- **Analytics** and business-intelligence – **Keep an Eye on Quality**

Wants to Move Forward?

- Look for a **Database Driven Applications**
- **Search for unique innovation** - Identify automation differentiators that will cut time to achieve the results you need at a reasonable cost.
- **Interoperability** - **interact, integrate, and exchange data with other applications** such as ERP systems, SPC, Tool Management, supply chain management.
- **Prepare your IT infrastructure** - enough storage to contain large amounts of collected data, strong CPU to run **statistical computations and reporting**, and fast bandwidth to bring it all to your screen (dashboard) or a remote facility, with good performance.
- **Top Security Standards** - Data Encryption, review Locally Installed compared to a Cloud model, Secure Communication, User's authentication, traceability and audit trail registering who did what.
- **Support for key Industry Compliance Standards.**
- Learn what it will take to **implement and train on the software** and **plan accordingly**

Summary

- **Automation is expected!** Manufacturers will not be able to compete and survive without catching up wisely on its latest trends.
- Commit to change and evolution – **win more business!**
- **Slow-moving** competitors will **fall further behind.**

Thank You

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