

Qualifying Quality 4.0

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MAY 7 - MAY 10

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PHILADELPHIA, PA

Learning Objectives

- In this session you will:
 - Understand what Quality 4.0 is
 - Learn to develop a data strategy
 - Become familiar with the technology/process paradigm
 - Recognize Quality 4.0 implementation barriers

So, what is Quality 4.0?



Understanding Quality 4.0

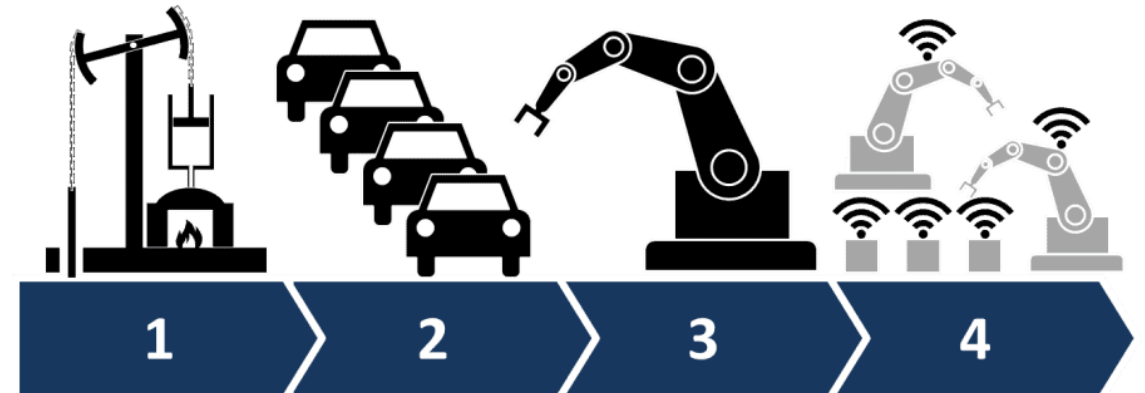
- Quality 4.0 has two components
 - Quality
 - Industry 4.0

Quality

- Defined many different ways
 - Conformance to requirements – Crosby
 - Fitness for use – Juran
 - Predictable degree of uniformity and dependability at low cost - Deming
- Differs across companies and industries

Industry 4.0

- The current industrial revolution
 - First – Steam Power
 - Second – Electricity
 - Third – PLC
 - Fourth – Data
- Revolutionary changes to how we operate



Quality 4.0

- Industry 4.0
 - Data and digital technologies
- Quality
 - Defined by each company
- Quality 4.0
 - Use of data and digital technologies to improve quality performance

Quality 4.0 Examples

- Continuous monitoring
 - 100% visual inspection
 - IoT
- Autonomous equipment
 - AGVs
 - Predictive machine adjustment
- Virtual augmentation
 - Simulation



Data Usage with 4.0

- Data collection
- Data Analysis
- Actionable insights – improved quality
- Did I just describe Six Sigma?
- Automation component required for “4.0”

Technology or process first?

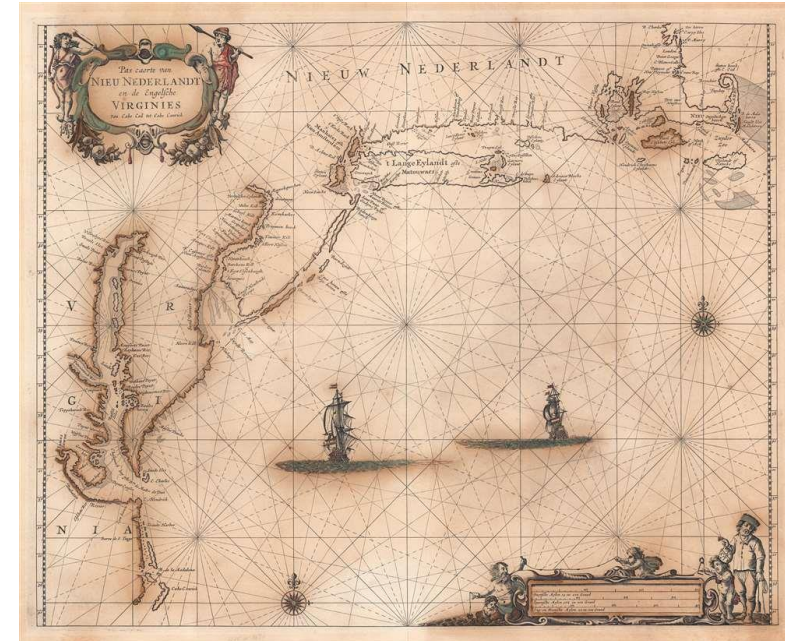


Technology/Process Paradigm

- Technology before process
 - Subordinates process to technology
- Process before technology
 - Build a good process
 - Enhance that process

Navigation Example

- Compass and charts
- Road maps
- First generation GPS
- Data supported cellular GPS
 - 4.0 level maturity



Data Strategy

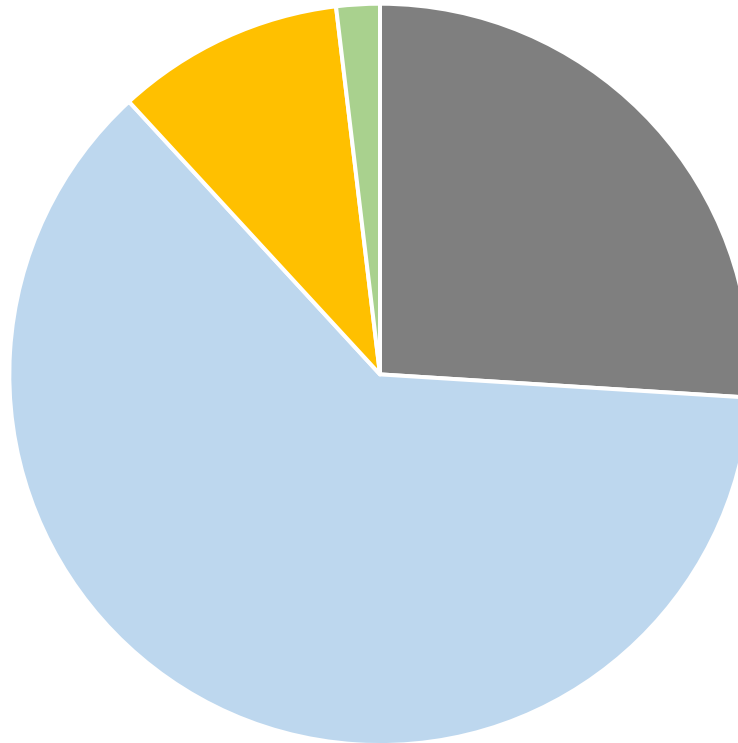
- Identify an actionable metric
 - Total drive time
- Set a goal for that metric
 - Minimize without compromising safety
- Identify data to collect
 - Location and speed of drivers

Data Collection

- Data infrastructure
 - How to collect and move data
- Data quality – the four V's
 - Volume – have enough data
 - Velocity – real time data
 - Variety – the correct data points
 - Veracity – consistency and accuracy

Quality 4.0 Implementation

Quality 4.0 State of Industry



- Quality 4.0 Not Important
- Quality 4.0 Important
- Attempted Quality 4.0
- Reported Success

Quality 4.0 Barriers

- Cybersecurity concerns
- Leadership commitment
- Workforce skills
- Company culture
- Lack of strategy

Cybersecurity

- Cyberattack fears prevent implementation
- Security must be developed early
- Hire for cybersecurity
 - Build cybersecurity into the implementation process

Leadership Commitment

- IT infrastructure is expensive
 - ROI may take a long time
- Leaders give up on 4.0 too early
- ROI may be accelerated
 - Address all barriers early

Workforce Skills

- New technologies require new skills
 - 4.0 technologies are new for everyone
 - Market is lacking the needed skills
- Clear data strategy is needed
 - Know what skills to train



Culture

- Data empowers faster better decisions
 - Employees must be empowered
 - Lean culture is enhanced by 4.0
 - Andon principle
 - Unempowered employees hinders ROI

Strategy

- Companies put technology before process
 - Overleveraging data we already have
 - Not investing in collecting new data
- Must begin with the end in mind
 - What is the metric?
 - How will it drive action?

Take-aways



- Through this session, you should have:
 - Understood what Quality 4.0 is
 - Learned to develop a data strategy
 - Become familiar with the technology/process paradigm
 - Recognized Quality 4.0 implementation barriers

Thank You



Questions?

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Citations

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