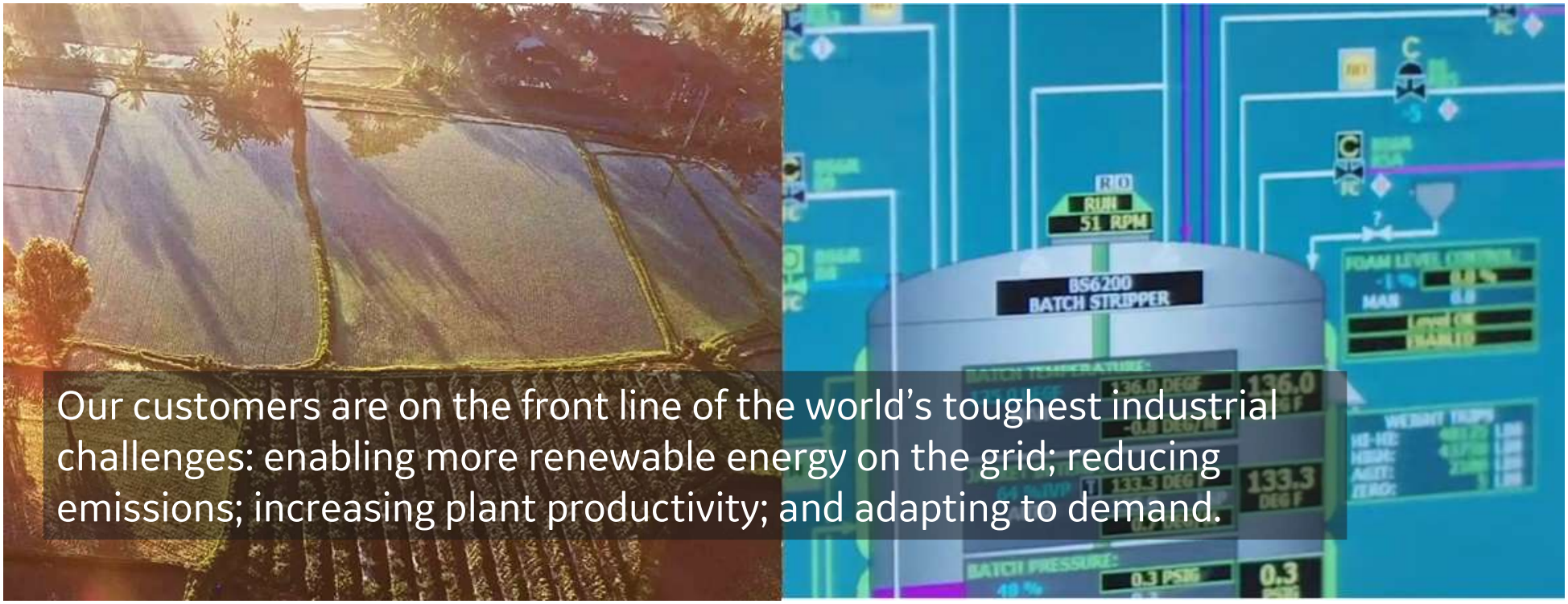
GE Digital

Struggling to achieve production agility and RFTQ*? How can a modern MES help?

Vikram Mankar – Principal Product Manager

**Right First-Time Quality*

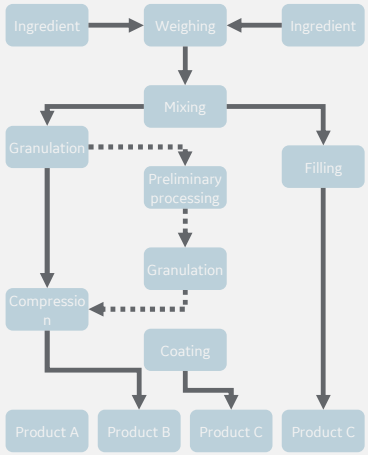
GE Digital
Putting industrial data to work

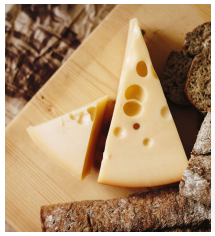


Our customers are on the front line of the world's toughest industrial challenges: enabling more renewable energy on the grid; reducing emissions; increasing plant productivity; and adapting to demand.

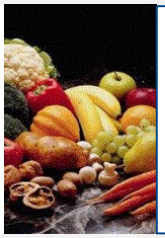
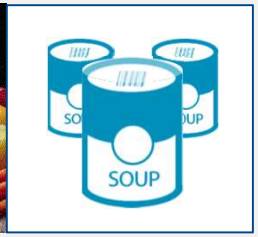
+1000 Food & Bev / CPG Customers
5 out of the **top 10 Fortune 500** use GE Software to optimize their manufacturing

- Beer & Wine
- Dairies / Cheese
- Water & Soft Drinks
- Snacks
- Pet food
- Tobacco
- Etc.

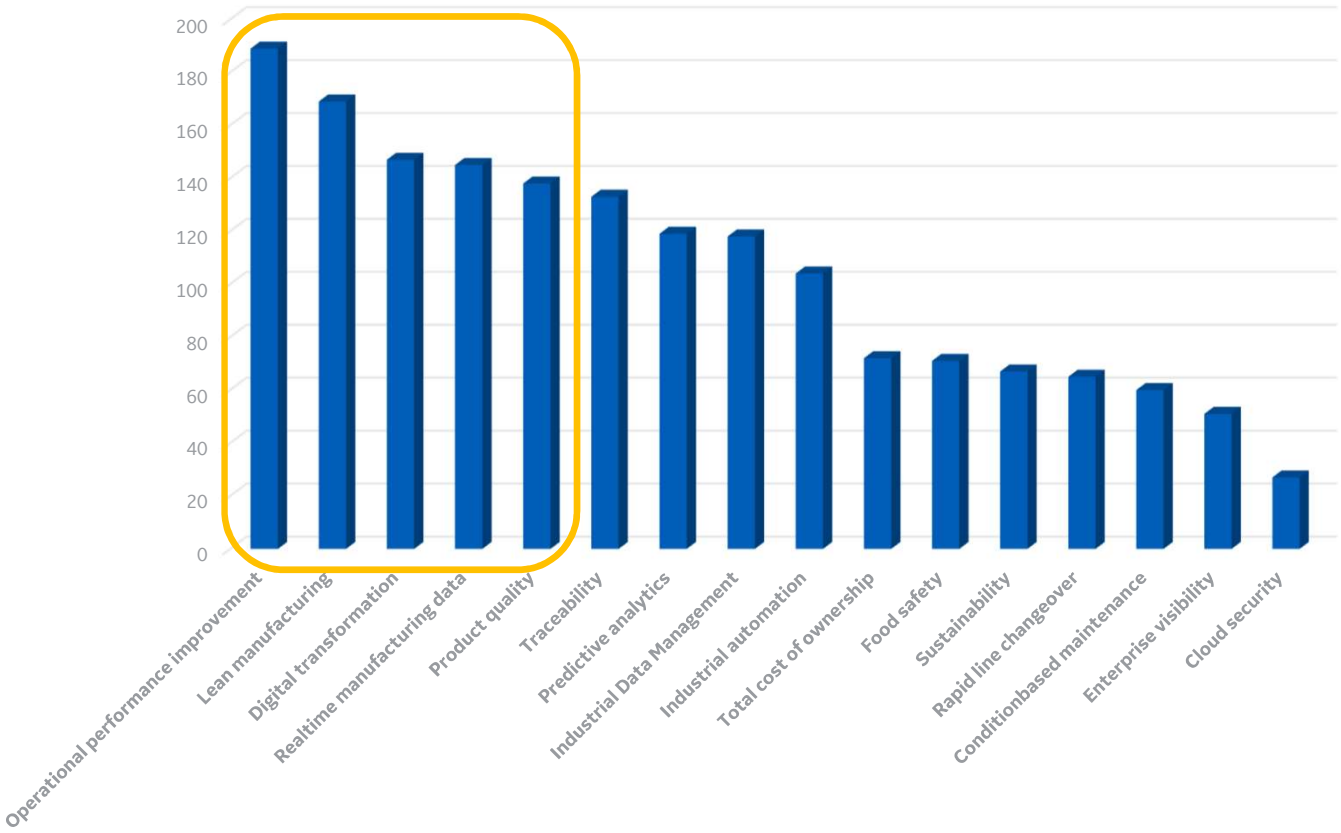






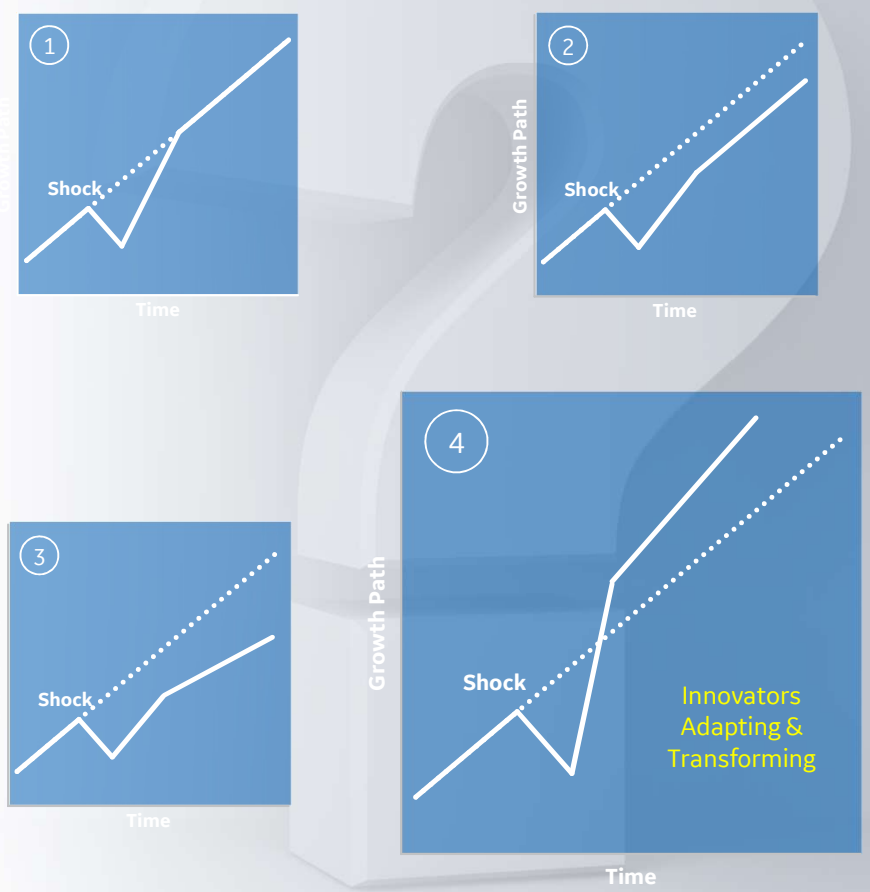
Audience Topics of Interest



COVID-19
What scenario applies to you?

Your day-to-day operations are:

- Not affected
- Somehow affected
- Broken
- We are growing!



Production Agility & Right First Time in the COVID-19 World

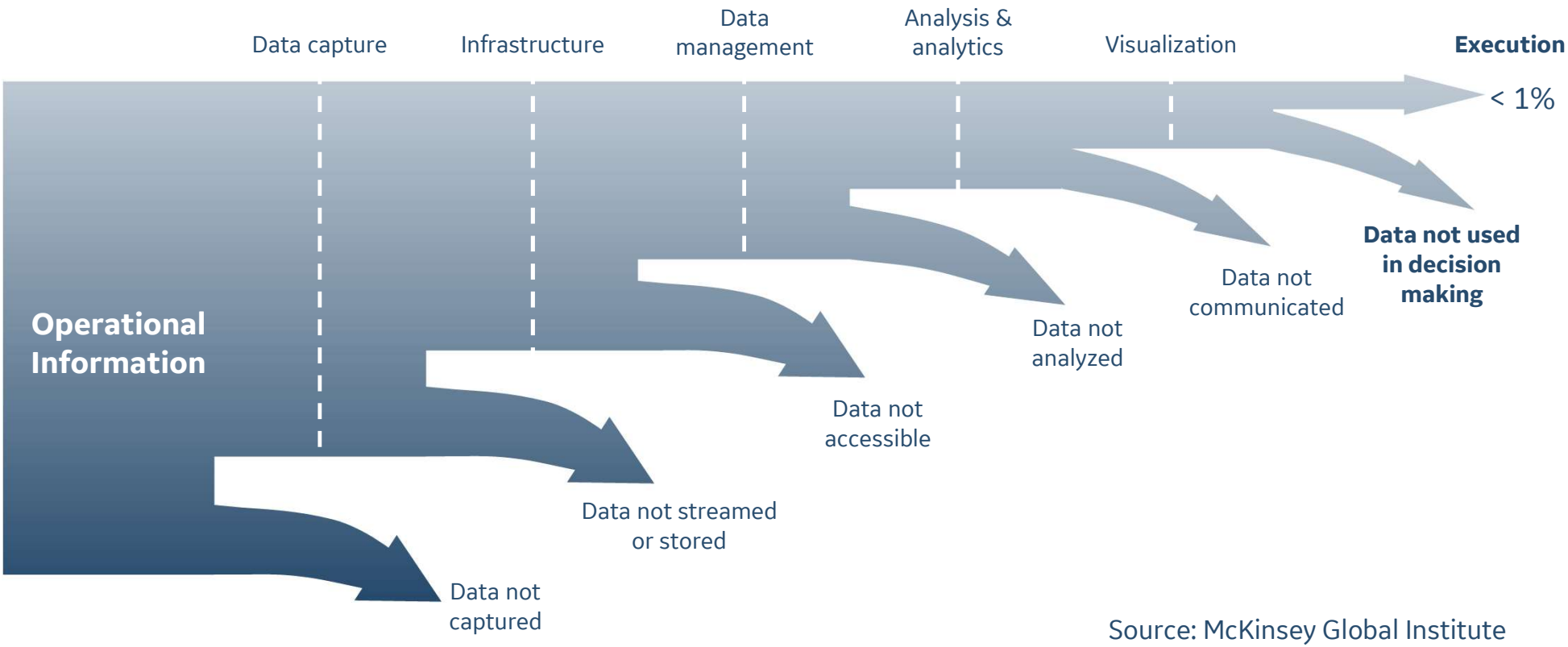
Food & Beverage challenges

- Innovation under pressure (from beer to hand sanitizers)
- Disruption of Supply Chains at multiple levels
- Labor disruptions
- Demand slumps and critical product shortages
- Traditional Distribution Channels disrupted, Direct to Consumer on the up
- Regulations & Food Safety

Maintain – or increase – operations efficiency,
while keeping cost under control and reducing waste,
with no-compromise on product safety and quality?

It starts with data (connected machines & people), however …

Most companies use only a fraction of their data



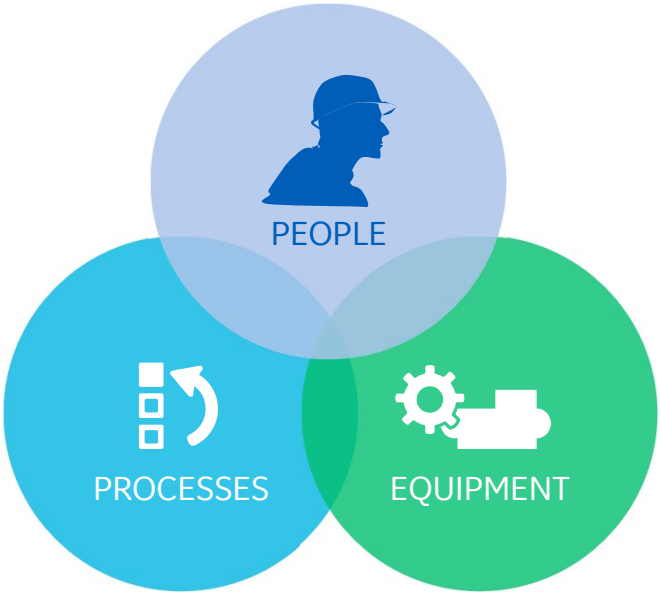
Source: McKinsey Global Institute

Production Agility

- Know what's happening & what has happened
  - Situational Awareness
- Fast Changeovers / Short runs
- React in real-time

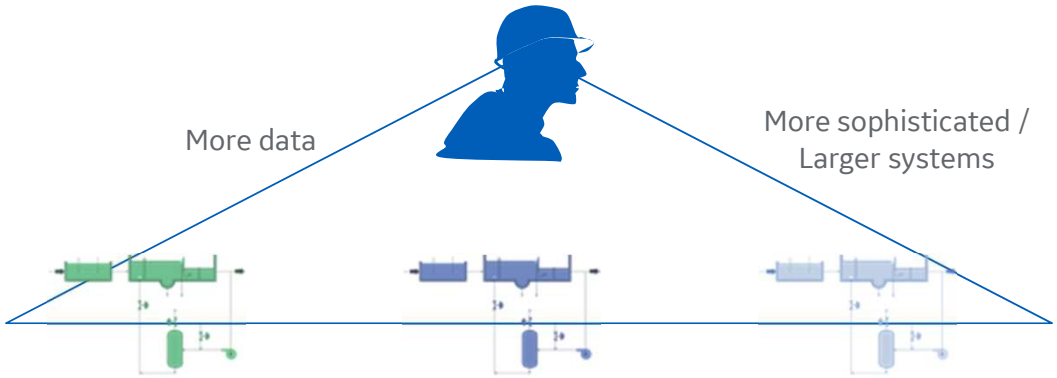
Know your plant

- Metrics that matter:
  - **OEE** (Overall Equipment Effectiveness)
  - **TEEP** (Total Effective Equipment Performance)
- Process Reliability
- People, Equipment & Processes
  - Common systems, processes, tools – faster to implement changes and new paradigms
- Capacity: hidden factories
- Culture



The right information at the right time
Visualization and analysis of data

- Persona-based visualization - Get operational information in the hands of the people who need it
- A single source of truth, from operators to managers
- Equip your workforce with mobile devices – for increased efficiency
- Provide a holistic view of the performance, increase collaboration

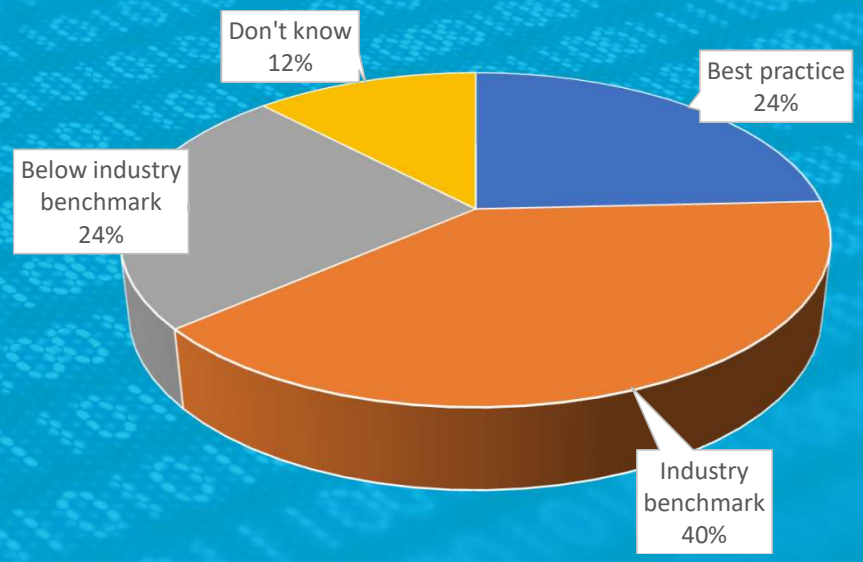


Poll Question #1 with results

Please choose one of the following:

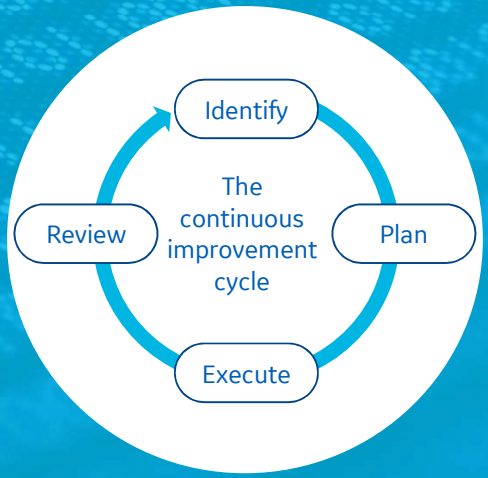
Considering your **Operational Performance**, do you consider it:

1. **Best practice** – we outperform most of our peers
2. **Industry benchmark** - we are at about the same level as our peers
3. **Below Industry benchmark** - we are struggling to attain the same level as our peers
4. **Don't know**



Right First Time Quality

Lean methodology: the fundamental principles are based on eliminating all forms of **waste**



The five pillars of quality & RFT

Data collection & consolidation

Consolidate data from heterogeneous sources – no data gap

- Shop floor (automation) systems
- LIMS systems
- ERP data (Financial, production, etc.)
- Etc.

Contextualization

Put data in context and provide a structure / model

- Tip: Use the S88/S95 models
- Map to the equipment
- Batch
- Product family/grade

Analysis & Analytics

- Real-time quality monitoring
- Condition-based quality alerts
- Process analytics using AI/ML
- Analyze data across sources, for ex. across production sites (centerlining)
- Ad-hoc reporting

Visualization

- Deliver information to the right stakeholders for fast action
- Create visual summaries (ad-hoc) of the data to alert decision makers
- Call attention to the most important information of the moment.

Information Broadcast

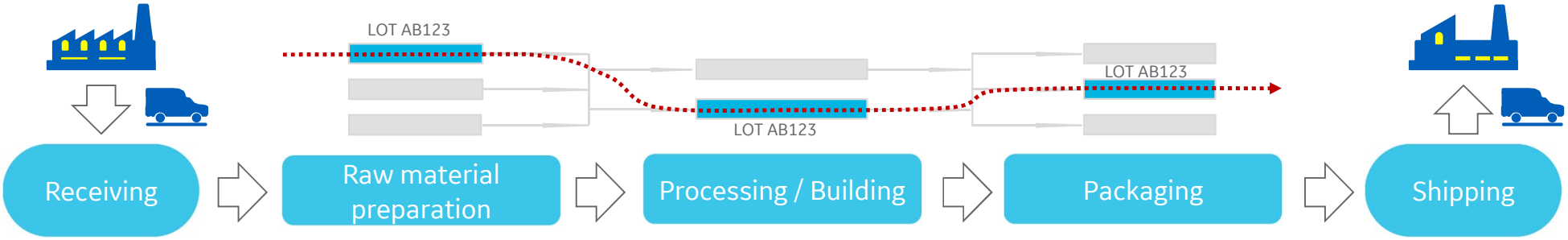
- Close the loop on analytics for improvement
- Automatically transfer& receive information (to/from the plant floor, to/from the enterprise systems)

End-to-end traceability

- To ensure compliance with existing food safety regulations & new local regulations deployed during the crisis
- To accurately document what has happened during all phases of the production

REQUIRED CAPABILITIES

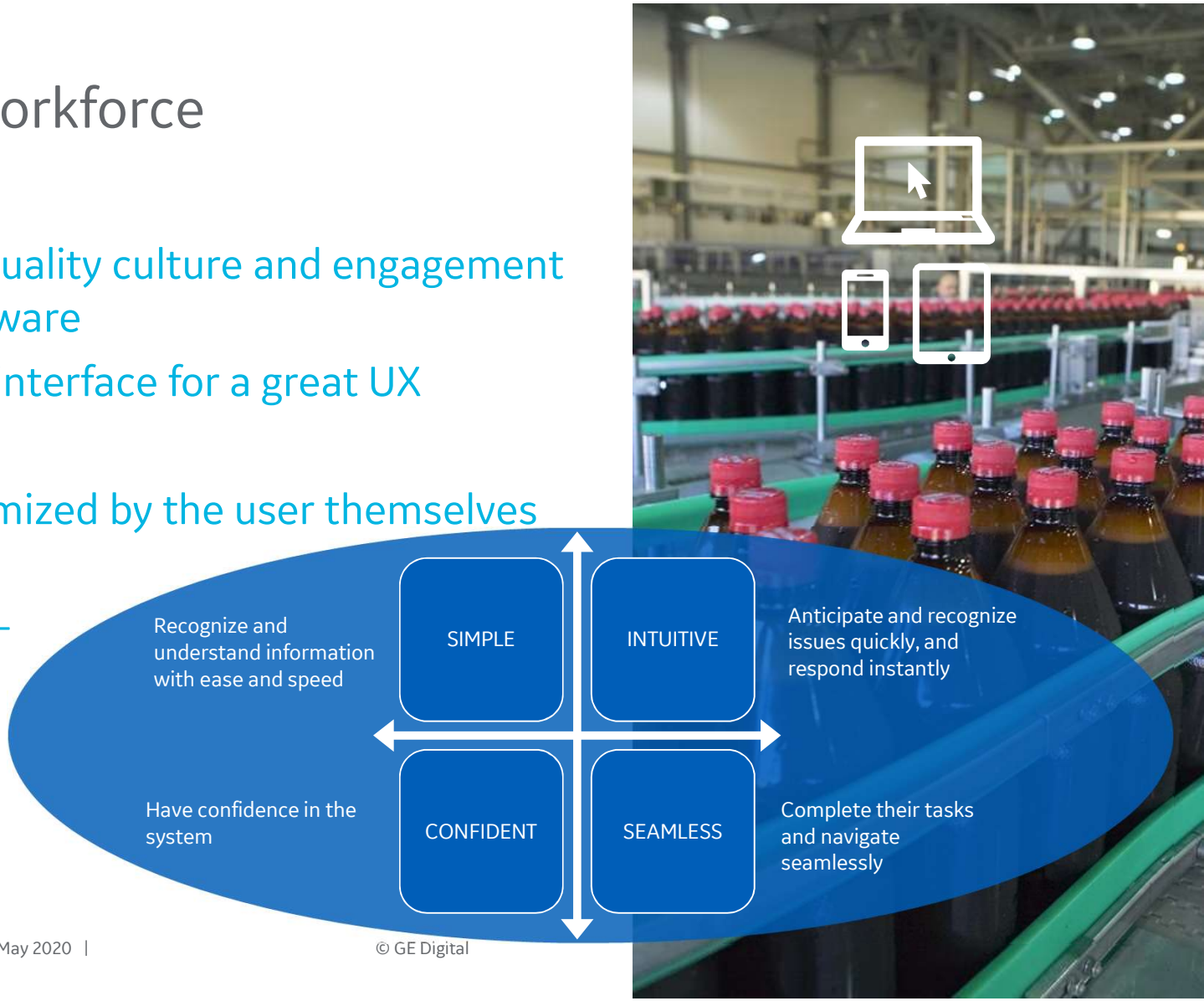
- Holistic data collection & storage
- A structured model – data in context (batch, product type, grade, ..)
- Enforced digitized work processes / SOPs
- Software should provide complete collection of relevant data **(OT and IT)**



Empowering your workforce

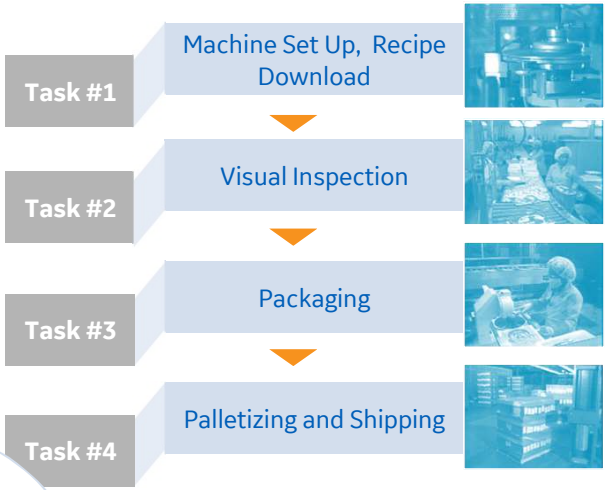
Achieve a right first-time quality culture and engagement using the appropriate software

- High performance user interface for a great UX
- Digitize work processes
- Tools that can be customized by the user themselves
- Information anywhere, any time on any device – mobility

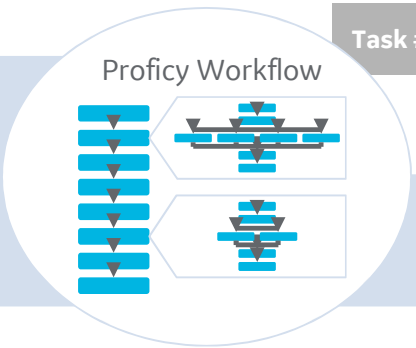


Digitize procedures to ensure consistency, repeatability, compliance with food safety laws and regulations

- Encapsulate the knowledge – make each operator the best operator
- Give operators structured documents & common working references – Work Instructions, SOPs, Policies, etc.
- Fill a gap in the information chain – for more effective analytics and a holistic view of processes



Reduce variability,
ensure accountability
& make users more efficient

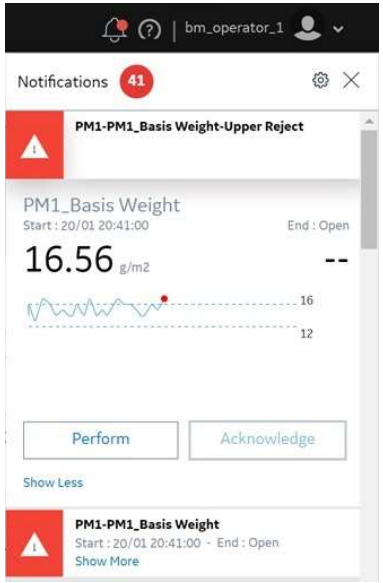


Quality Management – how MES can help

Part of a framework for quality that ties together **people, processes, and technologies** that spans the value chain

Condition-based quality management with MES

- Real Time product & process quality analysis & control
- Alarms based on conformance limits
- Ad hoc KPIs and dashboards
- Etc.



Benefits

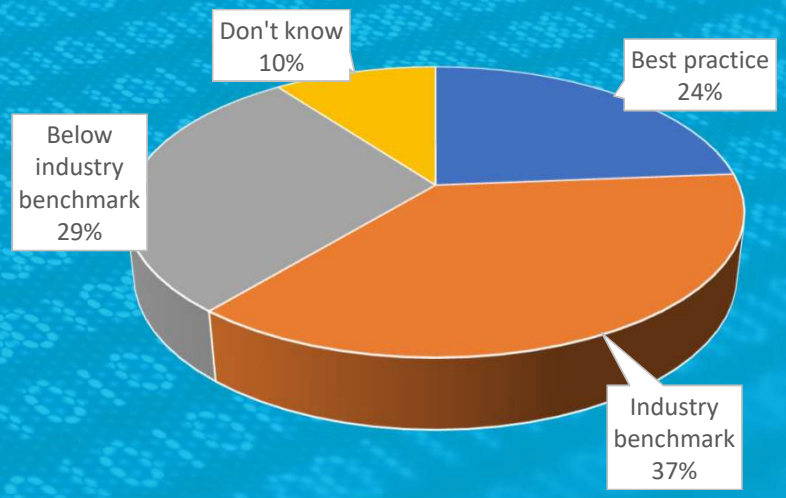
- **"Right First Time"**
- Improved product quality
- Lower production waste, scrap & recall cost

Poll Question #2 with results

Please choose one of the following:

Considering your **Quality Measures** do you consider it:

1. **Best practice** – we outperform most of our peers
2. **Industry benchmark** - we are at about the same level as our peers
3. **Below Industry benchmark** - we are struggling to attain the same level as our peers
4. **Don't know**



MES is your plant's heartbeat!

Drive your agility and RFTQ journey with a modern MES

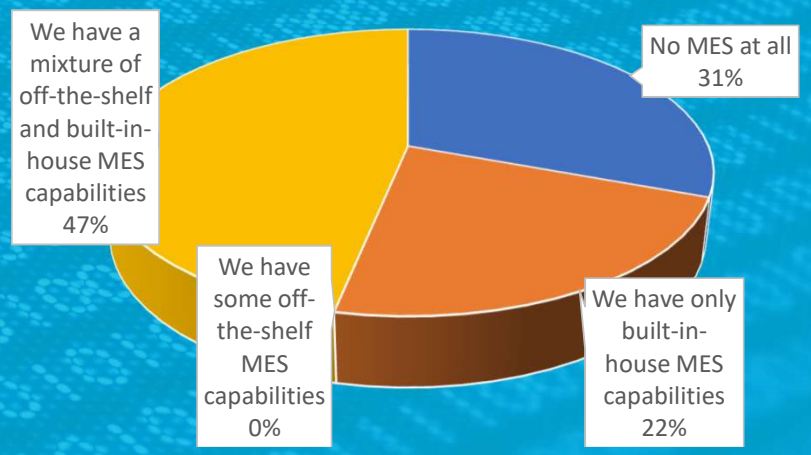
Technology Trends – What's buzzing

Technology Trends	How MES fits / coexists?
IoT / IIoT	Platforms don't run plants, business applications do. MES can plug into IoT platforms for powerful persona based (cross business) apps.
Digital Transformation	MES is an enabler! Strong foundation for Digital Transformation in manufacturing.
Augmented (AR) / Mixed Reality (XR)	MES is an enabler and provides the context to the "reality"
Lean / Six Sigma	MES is foundational to continuous improvement, both from a data as well as enablement/empowerment perspective.
Artificial Intelligence / Predictive Analytics	Data alone does not tell the whole story. Context is king! Need MES to provide the "good bias" (context).
Cloud / Fog / Edge	Modern MES systems like Proficy from GE Digital can run in the Cloud / Hosted environments as well as on the edge

Poll Question #3 with results
Please choose one of the following:

Our plant(s) currently have:

1. **No MES** at all
2. We have **only built-in-house MES** capabilities
3. We have **some off-the-shelf MES** capabilities
4. We have a **mixture of off-the-shelf and built-in-house MES** capabilities



“But MES is so hard to implement!”

Lessons learned

- When possible, stick with an out-of-the-box solution.
- Get alignment and buy-in from stakeholders. Clarify who needs the data and what roles and responsibilities team members have related to it. “Let operations know that this is a project for the whole plant and they’re going to play a role in that.”
- Good data is critical to success. “Avoid the garbage in, garbage out quandary.”
- Share the tools early in the process. Make data easily accessible.
- Don’t overcomplicate the solution. “There are times when 95% is better than trying to be 100%.”

Give operating teams the digital tools to improve their results

Power in the hands of the people

- Early adopter of digital tools
- Chose a scalable solution
- Operating teams have easy, flexible access to their manufacturing data for decision making
- Mobile devices for real-time interaction

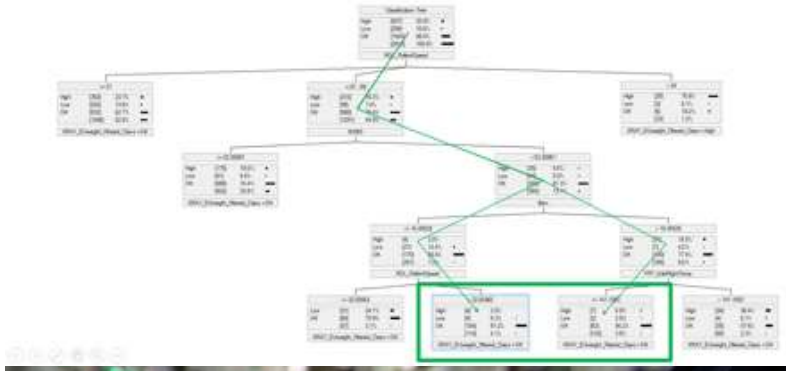
Aggregate data for increased insights & turn it into value

- Consolidate and transform manufacturing data across plants for cloud storage, analysis, and analytics.
- Detailed, data-supported view into their manufacturing processes provides insights that drive efficiencies.
- Better meet data compliance regulations and reduce storage size on premises

£820MM Food Company

Identify operations settings that lead to optimal weight

Analysed combined raw materials, process & final product quality data and gained insight on how to improve product quality & reduce waste



Benefits achieved - *More with less*

- Reduced Product Waste 75%
- Improved Quality
- Reduced Raw Materials cost
- Improved OEE by 9%
- $240K/year savings (2g/unit)
- Customer complaints down 38%
- $65K/year savings

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Time for Questions