GAF

We
protect
what
matters
most™

Accelerating Your Digital Journey

Geoffrey Jackson
March, 2023

We Are GAF

GAF is part of the largest roofing and waterproofing business in the world

GAF research and development is leading the industry forward in new and exciting ways
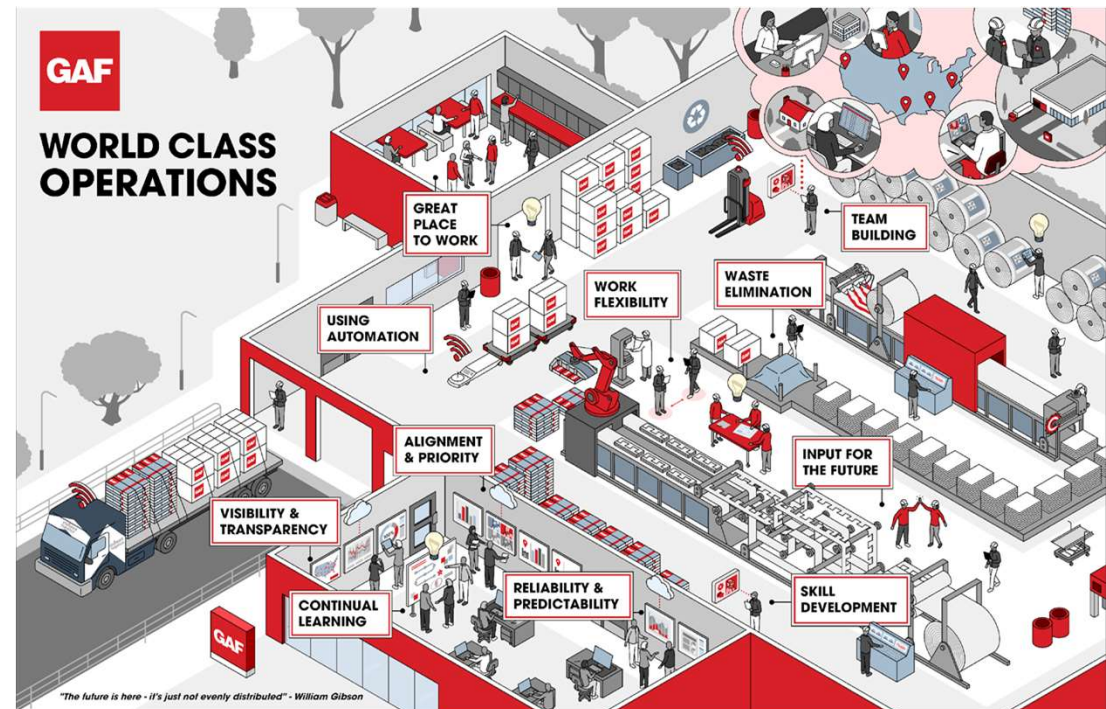
We are committed to strengthening the communities where we live and work

GAF is proud to promote sustainability in all areas of our business

Agenda

- Our Approach
- Digital Thread
- People, Process, Technology
- Automation
- Countdown to the Future
- Accelerate the Adoption

Setting the Stage

2017	2020	2022	Future
Build Strategy	**Execute Plan**	**Operationalization**	**Predict and Prescribe**
Industry 4.0 tools	Infrastructure	Incorporate tools into daily life	Build models for prediction
Digital Thread	Workforce planning	Analyze and visualize	Incorporate new visualization tools (AR/ VR)
Multi-generational approach	Digitize and connect	Adjust strategy and vision	
	Demonstrate value	Focus on user experience	
		Automate 3D Tasks	

Multiple Product Generations to Achieve Goal

Generation 1	Generation 2	Generation 3
Connect and Analyze Data/ Data visibility to all	**Automate Inventory/ Make Inventory Visible Near Real Time**	**Machine Learning/ Entire Process Visible**

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Machine Learning/ Entire Process Visible

- All critical to business apps are connected and accessible through a single, mobile user interface
- Routine business tasks are automated and managed by exception in multiple areas
- Standardize and connect data between plants for analytics and visibility
- Build roadmap for skills and competencies evolution.

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- Real time raw material consumption in select plants
- Automated cycle counting at reduced frequency based on raw material consumption
- Automated production processes where it makes sense
- Business rules between systems automated and managed by exception

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Machine Learning/ Entire Process Visible

- Fully integrated data with all functions to make strategic decisions
- Real time inventory consumption in all plants
- Machine automation of routine tasks
- Use of VR/ AR and other electronic resources for troubleshooting, training, and other use cases

The Digital Thread

Product identification created which ties all relevant information together

Product Health | Determined by visual inspections and testing, conformance to finished good specifications

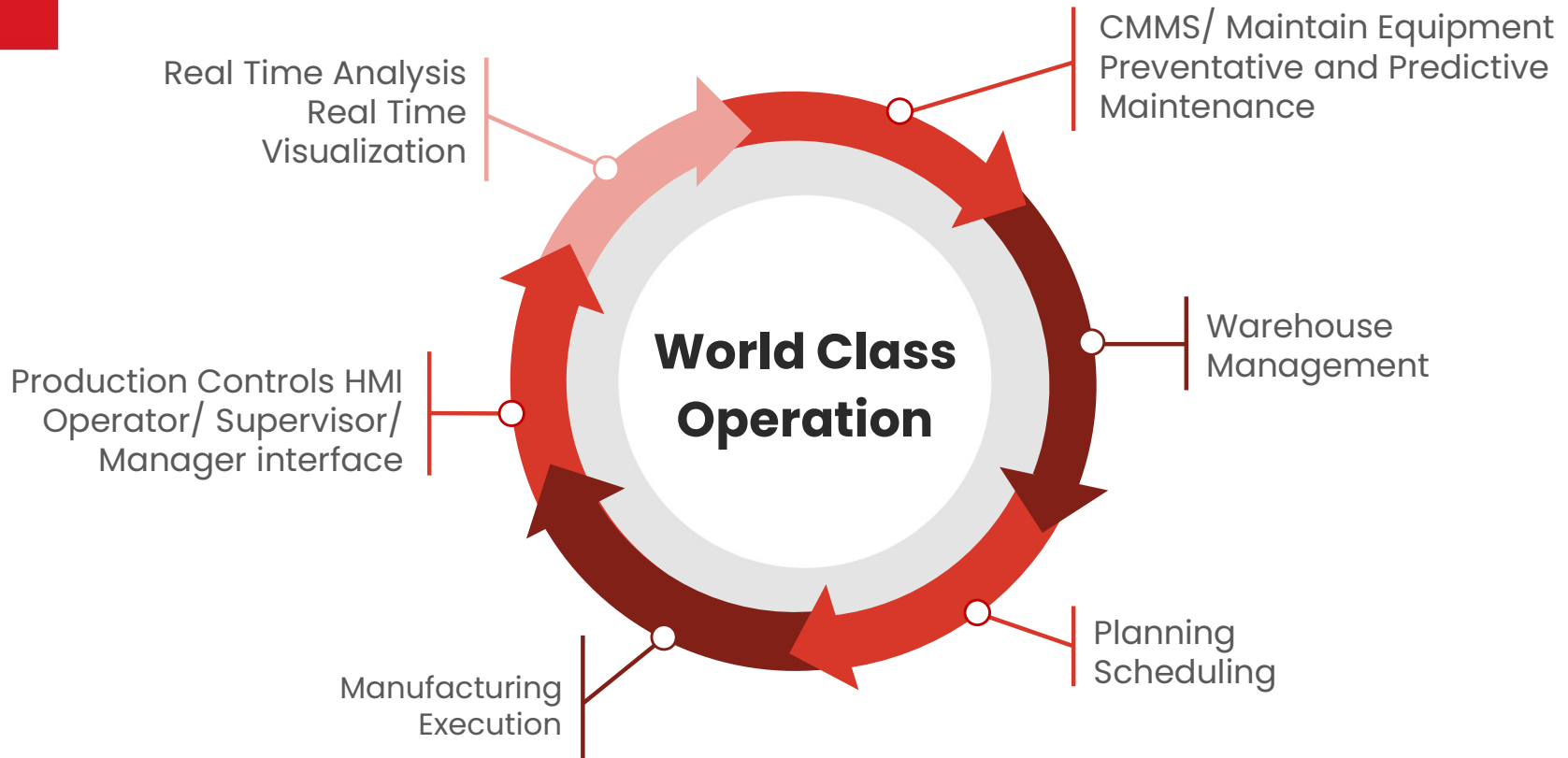**Process Health** | Process setpoints and actual values

Machine Health | Drive/ motor conditions, condition-based monitoring, lifecycle management, utility (compressed air, colling, HTM, etc.) information
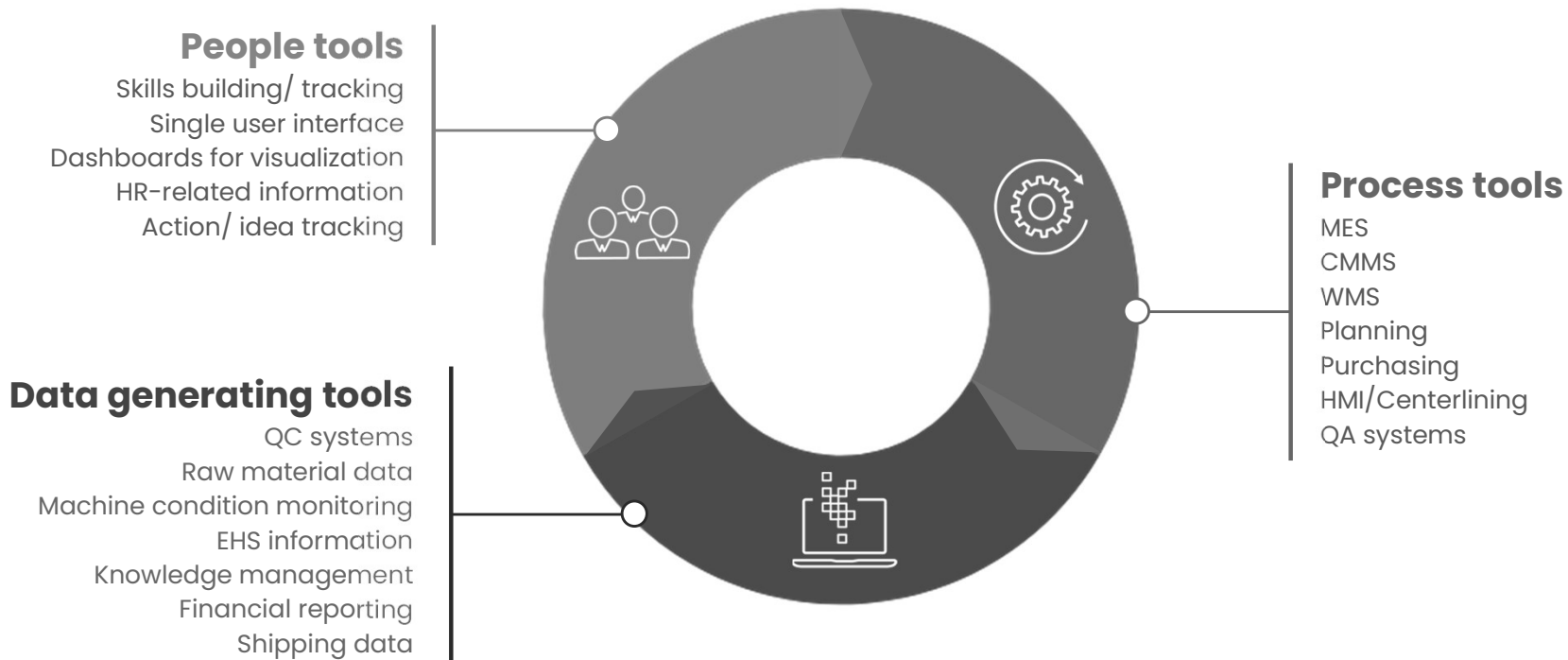
Material Health | Captures conformance to RM specifications, storage, handling and usage, physical properties, CofAs, receiving information, usage

When raw material and process traceability extends beyond the receiving dock and through to the end user, issues can be easily identified and properly analyzed using all data.

CMMS/ Maintain Equipment
Preventative and Predictive
Maintenance

Real Time Analysis
Real Time
Visualization

Warehouse
Management

**World Class
Operation**

Production Controls HMI
Operator/ Supervisor/
Manager interface

Planning
Scheduling

Manufacturing
Execution

Building World-Class Operations

Our framework for innovation, sustainment and continuous improvement

People tools
Skills building/ tracking
Single user interface
Dashboards for visualization
HR-related information
Action/ idea tracking

Process tools
MES
CMMS
WMS
Planning
Purchasing
HMI/Centerlining
QA systems

Data generating tools
QC systems
Raw material data
Machine condition monitoring
EHS information
Knowledge management
Financial reporting
Shipping data

How the Apps Match the Digital Thread

Product Health

Quality testing

Inventory levels and location

Life-cycle management

Raw Material Health

Incoming quality testing

Inventory levels and location

Process Health

Planning/ scheduling

Manufacturing
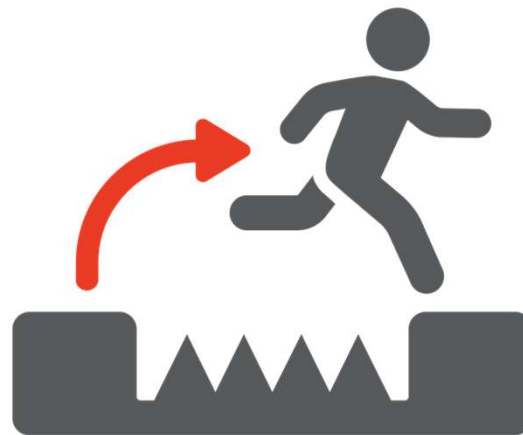
Shipping

Machine Health

Condition-based monitoring

Automate to Eliminate 3D Tasks

What is a 3D Task? Any task that is:

Dull **Dangerous** **Dirty**

Countdown to Factory of the Future

We want people to…..

Know the **4 Healths**	Be free from the **3D tasks**	Use the **2 Models**	
Process	Dull	Predictive and	**Enjoy the 1 Factory of the Future**
Product	Dirty Dangerous	Prescriptive	
Material			
Machine			

Where Does BrainCube Fit in the Stack?

- **Process Health-** Hyperlift capability with cross-rank and correlation capability
- **Centerlining-** BrainCube Live used for workstation display of critical process parameters including both direct and calculated variables
- **Process Dashboarding-** Consolidating data from multiple sources to create a single pane of glass for operators, supervisors, engineers, and managers
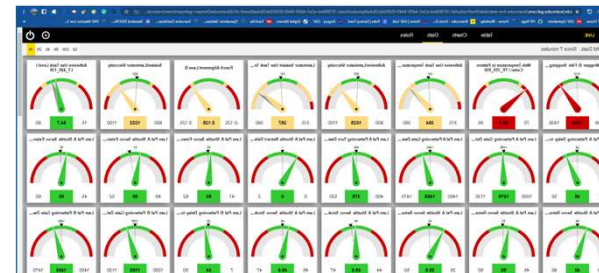
Accelerating Adoption

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- ***Cultural Shift to Digital Mindset*** from traditional operational philosophy. Change from ***Who*** to ***Where*** data exists and ***How*** to use it to solve problems

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- ***Know the Digital Maturity-*** Not every organization or facility is at the same digital maturity level. It is important to consider the experience and comfort with digital tools in general when selecting sites for deployment.

Thank you

Questions?

GAF

WORLD CLASS OPERATIONS

GREAT PLACE TO WORK

TEAM BUILDING

WORK FLEXIBILITY

WASTE ELIMINATION

USING AUTOMATION

ALIGNMENT & PRIORITY

INPUT FOR THE FUTURE

VISIBILITY & TRANSPARENCY

RELIABILITY & PREDICTABILITY

CONTINUAL LEARNING

SKILL DEVELOPMENT

"The future is here - it's just not evenly distributed" - William Gibson