GLEAM NETWORK

GLEAM presents

New Technologies for Food Manufacturing - From Field to Fork

Wednesday 10th July | 08.30 - 12.00

The Hub, Peppermint Way, Holbeach

Delivered by University of Lincoln, BRIDGE, Greater Lincolnshire LEP, Business Lincolnshire

GLEAM NETWORK

Agenda

- 09.00: Introduction by Matthew Thornton, The Bridge @ University of Lincoln
- 09.10: **Introduction to LIAT and Project Butterfly: delivering rapid improvements in Resource Efficiency and Energy Efficiency (REEE) in a major food manufacturing environment** by Andrey Postnikov, LIAT, University of Lincoln
- 09.30: **Unlock your Manufacturing Potential** by Mark Cawar, Smart Manufacturing Data Hub
- 09.50: **The UK Food Valley** by Effie Warwick-John, UK Food Valley
- 10.10: Coffee and Networking
- 10.30: **Improving Productivity: The Manufacturing Support Programme** by Mike Epton, Business Lincolnshire
- 10.50: **Merging Man and Machine** by Janet Bellamy, NCFM, University of Lincoln
- 11.10: **S3 Saving Energy One Sandwich at a Time** by Thierry Batariere & Adam Przybylek, Raynor Foods
- 11.30: Wrap Up by Matthew Thornton, The Bridge @ University of Lincoln
- 11.45: Close and Optional Tour of Facilities

GLEAM NETWORK

Creating a Manufacturing Community

GLEAM
NETWORK

- The Greater Lincolnshire Engineering And Manufacturing (GLEAM) Network is an initiative founded by the University of Lincoln, Greater Lincolnshire Local Enterprise Partnership (GLLEP), and Business Lincolnshire and managed by the Bridge.
- GLEAM provides a knowledge-intensive business corridor locally at the heart of the manufacturing business in Greater Lincolnshire and is open to all manufacturing businesses in Greater Lincolnshire. Members are able to join free of charge and gain access to a range of benefits, including Affiliate Partner Membership with Make UK.

Make UK Affiliate Membership Benefit

- Join Make UK as an Affiliate Member
- Make UK Affiliate Membership is open to members of Make UK partner organisations. You'll receive industry information and insight, contribute to Make UK's policy positions and have access to events, guidance and support on issues affecting our sector.
- To register for Affiliate Membership just complete the form at: https://www.makeuk.org/affiliate-member-registration

BRIDGING BUSINESS WITH INNOVATION

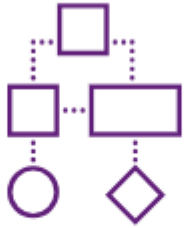
- Bridge operates from the University of Lincoln and has a dedicated team of R&D project specialists working alongside the University's academic community.
- We help businesses access technologies and methods at the forefront of research to create R&D solutions, and drive innovation.

UNIVERSITY OF LINCOLN
European Union
European Regional Development Fund
Greater Lincolnshire Local Enterprise Partnership
In partnership with
MIDLANDS ENGINE
BRIDGE

Bridge – Advanced Materials and Engineering R&D Centre

CONSULTATION AND 1-2-1 SUPPORT FOR BUSINESS DEVELOPMENT

Our process builds on an initial 1-2-1 consultation, roadmapping potential programmes from small-scale interventions to large-scale projects.



CREATION OF NEW PROCESS AND PRODUCT INNOVATION WITH OUR DEDICATED BRIDGE TEAM AND R&D PARTNERS

Bridge can address your advanced materials needs, assisting with new process creation and product innovation; providing access to world-class R&D at the interface of science and engineering through links to the University of Lincoln and a consortium of industry R&D partners.

MATERIALS RESEARCH AND INNOVATION

Bridge provides access to state-of-the-art instrumentation and laboratory workspaces. Our scientists and engineers are experienced in delivering cutting edge insight into materials

BRIDGE

Bridge – Advanced Materials and Engineering R&D Centre

EXPERT USE OF INSTRUMENTATION AND MATERIALS ENGINEERING LABORATORIES

Our dedicated team of specialists includes a community of expert Instrument Scientists. We can share that knowledge and help upskill your team by creating bespoke training packages.

BUSINESS NETWORKING AND COLLABORATION

Our dedicated innovation centre provides a quality environment for business interaction facilitating exchange of expertise and business opportunities. We host a range of networking events and seminars and our facilities are available for business-led events.

TRAINING AND PROFESSIONAL DEVELOPMENT

Bridge houses a dedicated training facility for on-site and remote learning alongside laboratory settings for at-instrument or in-lab training. Bridge gives you direct access to academic- and industry-experienced consultants to educate, develop and mentor your staff and they can upskill at our regular specialist courses.

BRIDGE

Bridge to…
Manufacturing Innovation

- With programmes designed to increase businesses' competitiveness, Bridge has delivered innovation to businesses and connected regional and international supply chains to cutting-edge materials science and engineering in the manufacturing and engineering sectors.
- Bridge has supported manufacturing businesses to access technologies at the forefront of research to deliver effective problem solving and to develop the workforce of tomorrow through accredited training.

BRIDGE

- Visit our website for a virtual walkthrough of the Bridge at https://www.thebridge-lincoln.org/

- Follow us on:
  - https://www.linkedin.com/company/thebridge-lincoln
  - https://twitter.com/thebridge_linc
  - https://www.instagram.com/bridge_lincoln/

- E. mthornton@lincoln.ac.uk

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European Union
European Regional Development Fund
MIDLANDS ENGINE
UNIVERSITY OF LINCOLN

Introduction to LIAT and Project Butterfly: delivering rapid improvements in Resource Efficiency and Energy Efficiency (REEE) in a major food manufacturing environment

Andrey Postnikov

LIAT, University of Lincoln

UNIVERSITY OF
LINCOLN

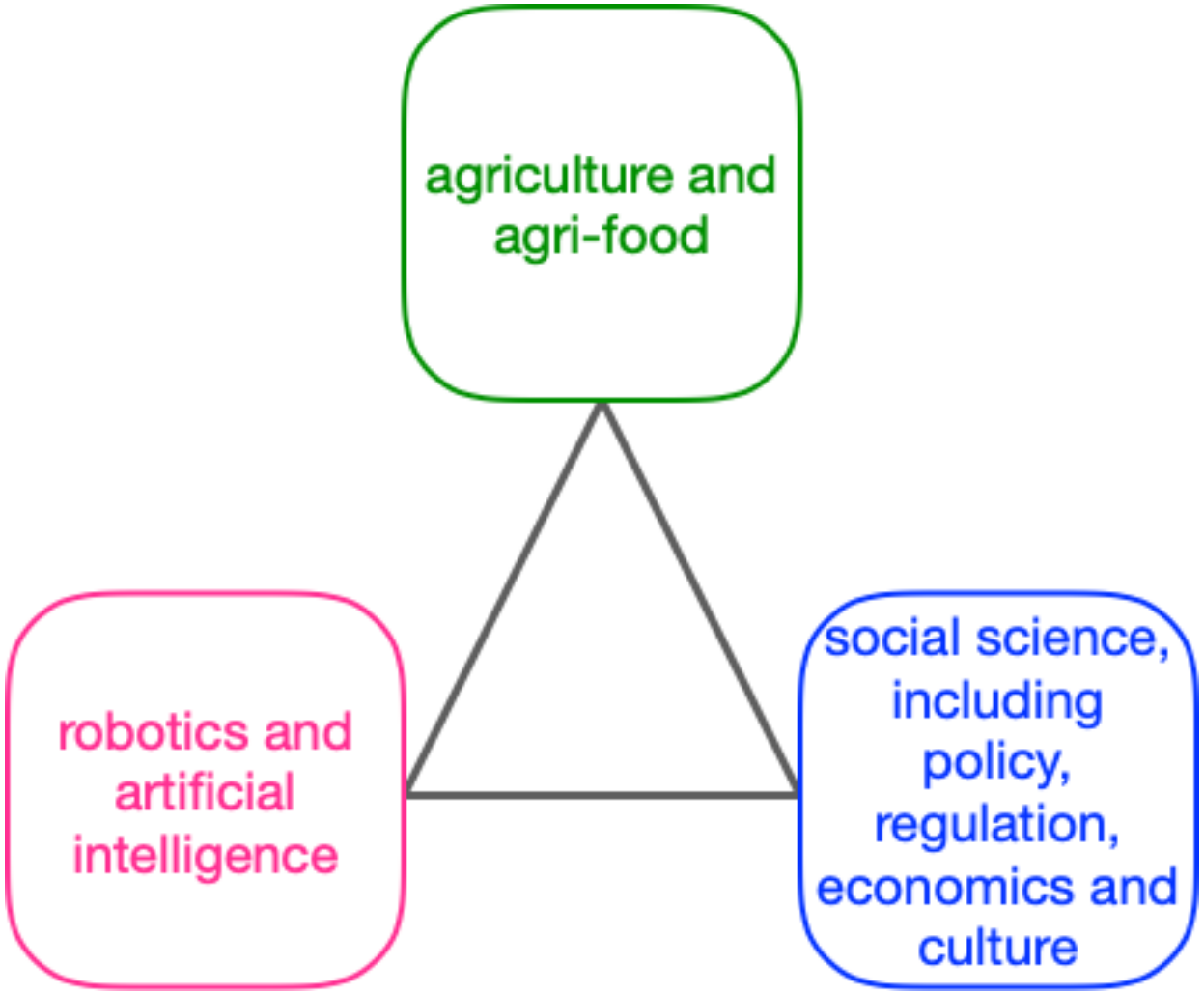
Introduction to LIAT and Project Butterfly: Delivering rapid improvements in Resource Efficiency and Energy Efficiency in a major food manufacturing environment

Dr Andrey Postnikov

Research Associate in Intelligent Systems

LIAT, University of Lincoln

"Reimagining the agri-food system and technologies to create a sustainable future"



SELECTIVE HARVESTING

- Developing systems which identify harvest-ready crops to enable reliable and consistent picking
- Employing practical engineering solutions, robotics and AI to design, develop and deliver effective, robust and consistent solutions
- For example: picking a strawberry using novel soft or non-contact grippers

ROBOTIC PHENOTYPING

- Identifying crop growth and understanding complex physiological and genetic traits of crops using robotic technologies
- Using robotic sensing and analysis techniques to measure how a plant is performing against its predicted growth plan
- For example: tracking multiple varieties of wheat

CROP CARE

- Supporting growers in maintaining healthy crops through precision agriculture
- Using novel sensing systems, AI and real-time data analysis to model the micro-environment of individual plants within a crop
- For example: identifying and removing weeds that attack individual plants while scaling to cover whole farms

CARBON & NET ZERO

- Considering the impact of carbon sequestration and ways in which soil health might be measured using applied technologies and data sciences
- Exploring innovative approaches to farming, such as agri-forestry and natural flood management

POLICY & REGULATION

- Developing policy mechanisms to deliver for the future, public, private, PPPs, QPPPs.
- Regulatory measures that are developed through co-creation, and inclusive approaches to enable trust networks and agile and resilient governance architectures to develop and thrive.

ECONOMICS OF AGRI-TECH

- Economic drivers and enablers of agri-tech adoption.
- Economic barriers to adoption
- Agribusiness models for the future delivering food and natural capital.
- Green finance and carbon farming

CULTURE & AGRI-TECH ADOPTION

- People, plant, profit in the context of agri-technology adoption and practice change.
- Transitions, transformations and the mediating role of the human technology interface.
- Rural and urban connectivity, visibility and interoperability (technical and cultural).
- Unlearning and organisational forgetting.

FOOD SAFETY

- Food safety management systems fit for the future
- Transparency, traceability and digitalisation
- Smart food systems and data trusts
- Food safety issues associated with climate change and the introduction of alternative processes, ingredients and foods into the diet

SOCIAL CONTEXT

Manipulation for Horticulture, Aquaculture and Tree Nurseries

Human-Robot Coordination for Labour Efficiency and Safety

In-field Plant/Weed Identification for Crop Care

In-field Autonomous Navigation for Horticulture and Agriculture

Innovation: Barclays Eagle Lab

- Joint Partnership with Barclays
- Incubation space for Agri-tech start ups
- Supports both businesses on site and virtual working
- Provides access to research facilities
- First UoL spin-out on site
- Bridges the journey between ideation, productisation and commercialisation.

https://labs.uk.barclays/our-industries/agritech/

BARCLAYS Eagle Labs

Headline Research Funding

Biotechnology and Biological Sciences Research Council

Engineering and Physical Sciences Research Council

Innovate UK

Research England

Recent projects include: Digital Sandwich, Robot Highways, First Fleet, GRASPBerry, RASBerry, Tesco Refrigeration, FSA Data Trust, How to prevent food fraud, Cultured Meat, NELMS, Novel Plastics, FRUITCAST, VEGCAST, ROBOFRUIT, GANS, AGARICUS, LASERBOOM, Blueberry, Waste to Packaging, ARWAC, GARFORD, eHUB, Co-Farm.AI, AI Unleashed, Co-FRUIT, AGRI-OpenCore, NUE Profits, Miscanthus AI, SUSTAIN and many more

ACKNOWLEDGMENTS

UNIVERSITY OF LINCOLN

Project Butterfly

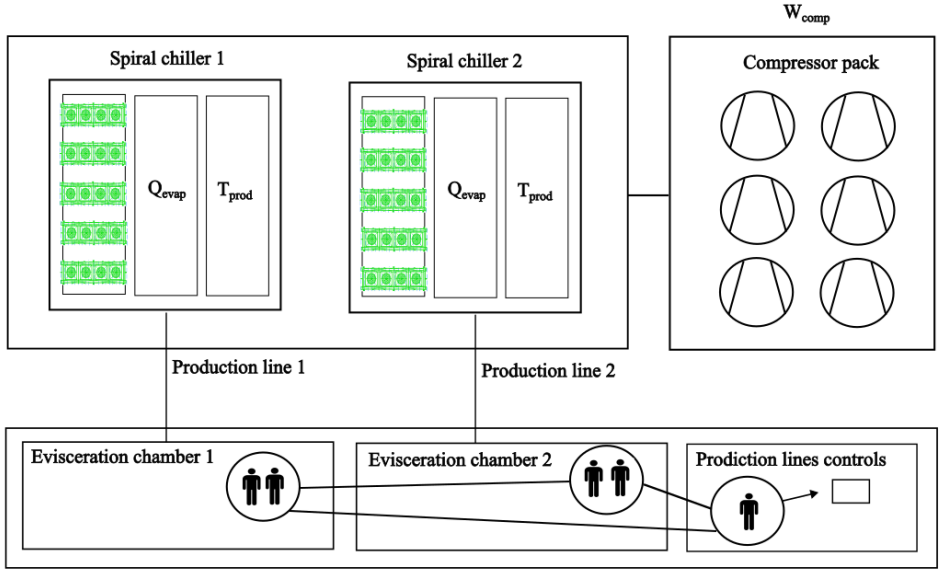
- Use of agent-based modelling to deliver rapid improvements in REEE in a major food manufacturing environment (Moy Park chicken factory)
- Complex high energy flow processes within heritage installations
- Model and integrate the behaviour of discrete agents in a manufacturing system (e.g., any production process / machine / operative / managers)
- Dissemination of results will target the computer science, AI and MAS academic communities.

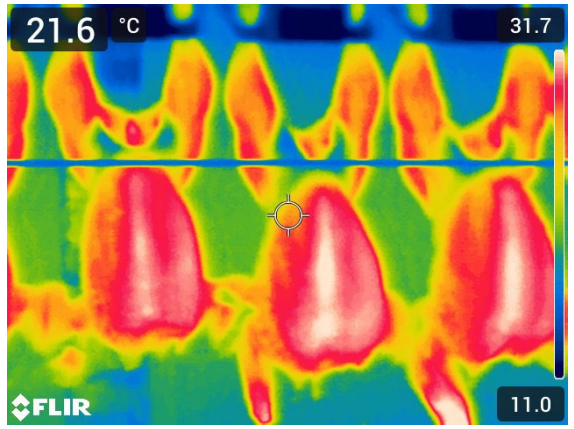
Problem statement

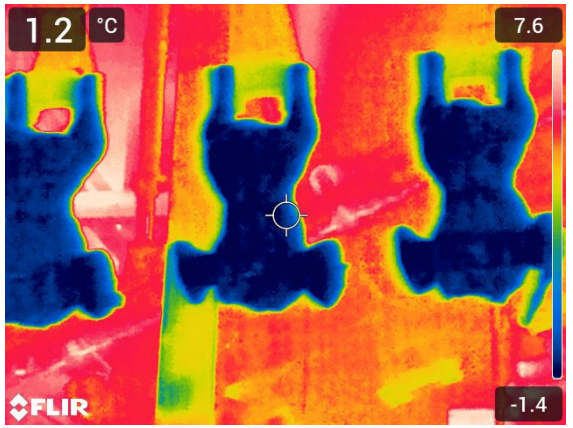
- Spiral chilling identified as high energy process within the heritage installation.
- There are currently 2 Spiral chillers at the Anwick site, birds enter at 44 degrees and leave at 4 degrees. The whole process averages 2 hrs and 40 mins.
- One chiller has a combination of air and water cooling whilst the other is air only. The temperature and speed of the chillers are controlled through manual adjustments that are made by operators in the plant.
- The weight and grading of birds are monitored before chilling but core temperatures are not.

Anticipated Solution

- Data capture of core temperature of birds entering and exiting the spiral chillers.
- Data profile of energy usage of both types of chillers and cooling efficiency/cost.
- Data comparison on efficiency/cost of air chilled vs. water/air chilled.
- Agent-based model (NetLogo + Python wrappers) to control the flow rate through the spiral chillers to create an optimum cooling and energy/cost ratio.







REEE impact

- The outcomes are a whole system model that will be used to optimise REEE across a whole production plant.
- The current process shows a disparity between the existing spirals that with alignment would generate a 32% saving based on the business information supplied.
- Spiral chillers are used extensively across food and beverage manufacturing.
- University of Lincoln has close connections with both installers and end users and any knowledge gained could be disseminated across that supply chain base to improve REEE scope 3 emissions.

Route to market and knowledge sharing

- Moy Park would release the benefit of the model developed across their other UK sites. The methodology used during the project could also be applied to other areas of chilling and freezing to drive optimum energy utilisation and cost reduction.

- The mapping, algorithms and ABM would be available for factory operatives as a decision-support tool.

- Benefits and solutions will be shared across project partners to advance state of the art within real-world settings.

- Dissemination of results will target the computer science, AI and MAS academic communities.

Unlock your Manufacturing Potential

Mark Cawar

Smart Manufacturing Data Hub

MADE SMARTER INNOVATION | SMART MANUFACTURING DATA HUB

Unlocking the Value of Shared Data in Manufacturing

Introduction to the Smart Manufacturing Data Hub

GLEAM

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Unlocking the Value of Shared Data in Manufacturing

The Digital manufacturing Challenge

& where to begin !

Digitalisation in the manufacturing sector – the requirement

- More output from less people
- Supply chain disruptions
- Skills shortage
- Global competition
- Move towards net zero

Digitalisation in the manufacturing sector

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Industry 4.0

Robotics

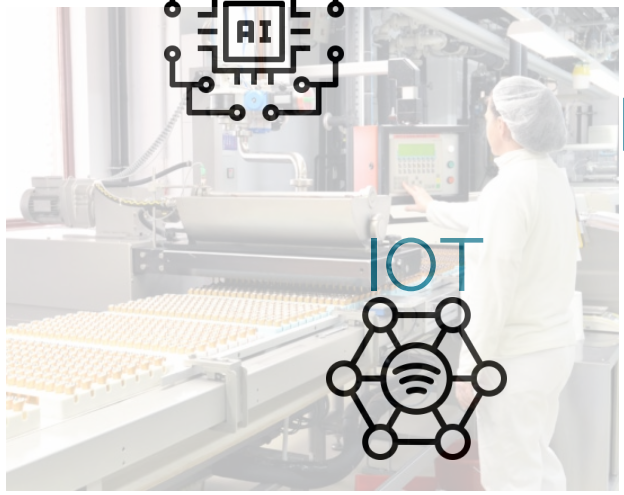
Machine Learning

Sensors

Digital Twin

Cobot

AI



Virtual Reality

Manufacturing testbed

IOT

Additive Manufacturing

The Intervention Journey

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EXPLORE

- WEB SITE
- E-NEWSLETTERS
- TASTER SESSIONS
- VIRTUAL HUB

INSIGHT

- INSIGHT WORKSHOPS / USE CASES
- ROADMAPS
- DIAGNOSTICS
- BENCHMARKING

SUPPORT & GUIDANCE

SUPPORT

- TASTER / INSIGHT WORKSHOPS
- MASTERCLASSES
- BOOTCAMPS
- ONLINE SURGERIES

PATHWAYS

- DATA DRIVEN SENSORISATION SOLUTIONS
- PROCESS, PERFORMANCE & CONDITION MONITOIRNG
- ACCESSING / CAPTURING EXISTING DATA
- VISUALISATION, SIMULATION & AUTOMATION

IDENTIFY > SPECIFY > DESIGN > DEPLOY > SCALE

TRAINING

- DATA / DIGITAL ROLES
- SKILLS SETS
- TRAINING PATHWAYS

Smart Manufacturing Data Hub – Data Value

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MANUFACTURING DATA

Excel spreadsheets
ERP system
MES system
Paper system
Sensors
Wireless devices
Software logs
Managers head?

Equipment data

Process data

Quality data

Sensor / IoT data

Energy data

Legacy data

Business Change

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Unlocking the Value of Shared Data in Manufacturing

Introduction to the Smart Manufacturing Data Hub

What is the Smart Manufacturing Data Hub?

MADE SMARTER INNOVATION | SMART MANUFACTURING DATA HUB

SMDH will support and enable small and medium-sized manufacturers, like you, to become more competitive by harnessing the power of data from your factory.

Key objectives:

- ✓ Increase Productivity
- ✓ Raise the adoption of digital technology
- ✓ Use your data smarter
- ✓ Get real value from data available

Moving companies away from non-data gathering manual systems

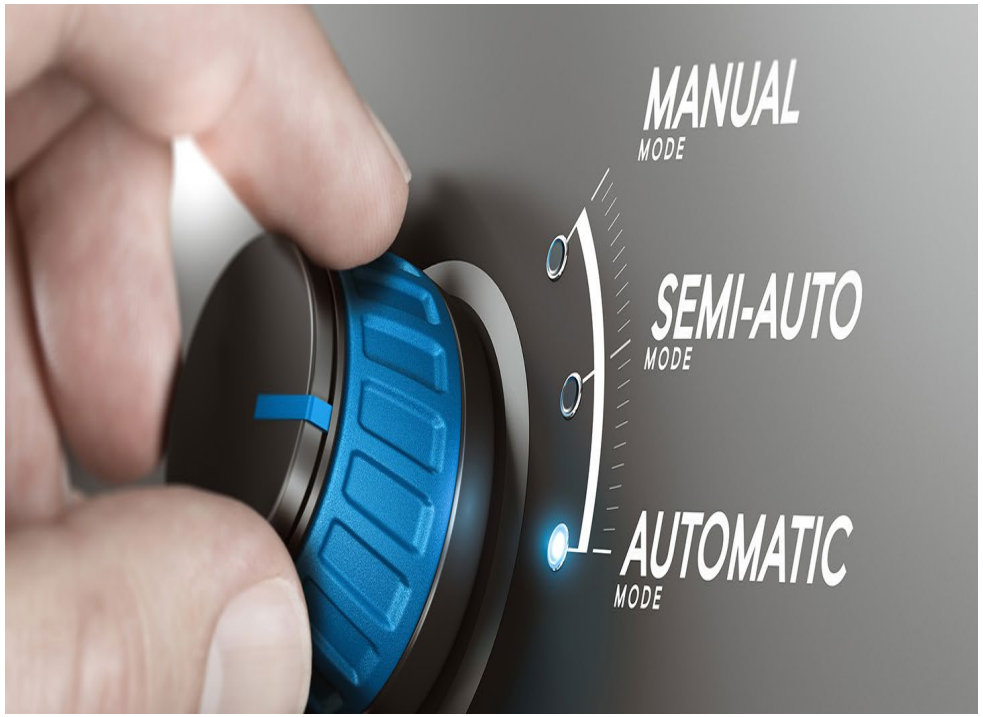
AI & ML informed production manufacturing systems

Data in the manufacturing sector – the value

Company Categories:

Every SME understands the benefits of data and the value it can provide. However, each business is at a different stage on their data journey. Different challenges face these companies which delays their advancement.

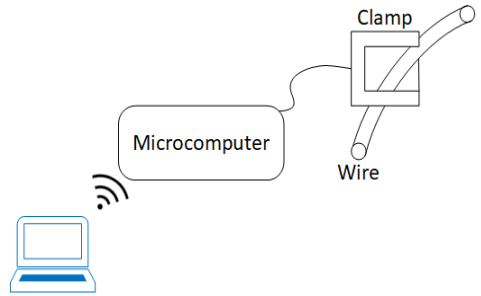
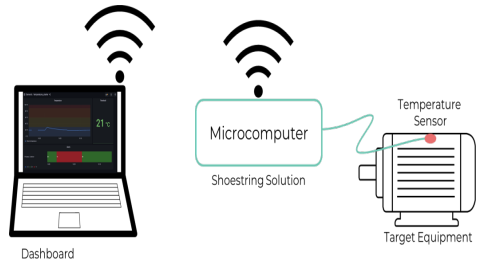
- No data or no idea how to use data effectively – unsure where to start on a digital journey (Overwhelming thought)
- Some data which is not been used properly. Not accessing value from data available – lacking time/expertise
- Lots of data with some person in the company taking responsibility – driven by reams of excel sheets which is time–consuming to analyse



Data Solutions in the manufacturing sector – the value

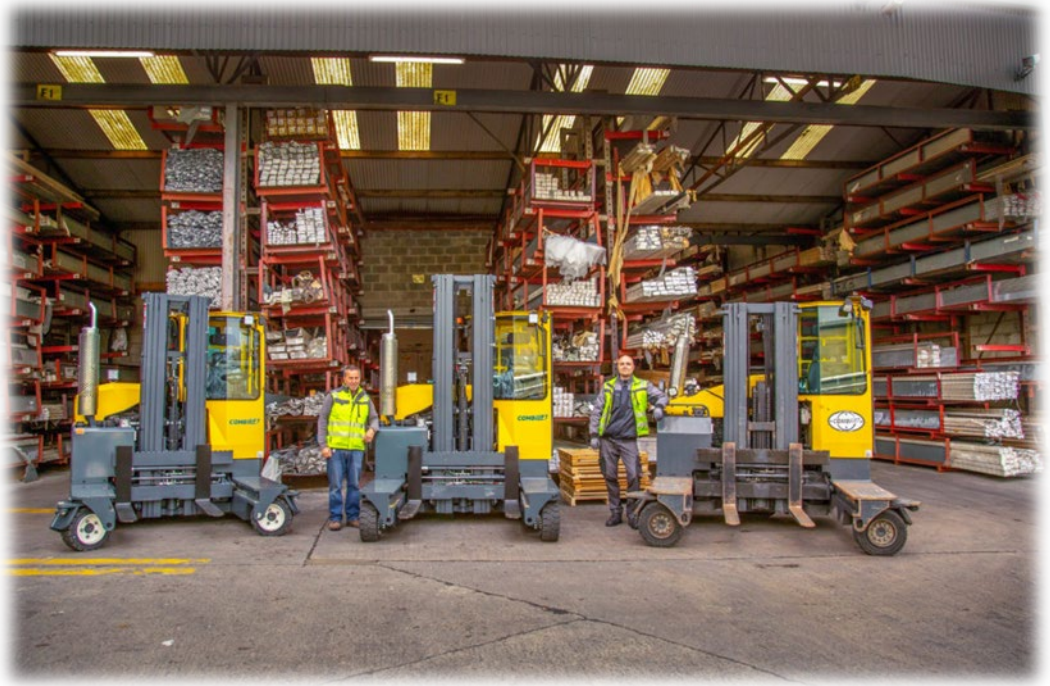
1. No Data / paper based systems

We provide technology (sensors) into the company. A (free) introductory solution to let the company see the benefits of gathering data live from the factory floor.
Examples of sensors available:

Senor	Description	Features	Benefits	Set-up
Power	Displays live/historical current, apparent & active power on a dashboard using a current sensor clipped around AC wire.	• Non-intrusive – current sensor simply clips-on around AC wire. • Calculates power • Doesn't alter the power consumption equipment	• Determine production / energy efficiency • Machine monitoring - track performance remotely • Helps Schedule maintenance	
Temperature (Equipment)	Monitors the temperature of device or process	• Records historic temperature and alerts over a period of time • Local data storage	• Provides updates on equipment temperature and can send alerts if gong over threshold	

No Data – Case Study (Exitex overview)

- Exitex approached the SMDH looking support to introduce ways to become more efficient through the use of data
- They currently gathered all data manually but didn't use it
- Exitex wanted some way to be able to monitor the Power consumption of their CNC machine.
- Energy Costs were rising – they had no idea how much it costs to run each machine
- How could they gather such data and where would they start?



No Data – Case Study (Exitex –data driven sensorisation)

- Power sensor to monitor energy consumption would be installed
- Working with a partner IFM a prototype solution was developed for this purpose.
- This sensor was immediately linked up to their network and live data was being generated
- Power usage of the CNC was now displayed on a dashboard directly to management
- The digital journey had begun

Identify non-optimal energy usage –Phantom load dashboard.

Made specifically for Manufacturers

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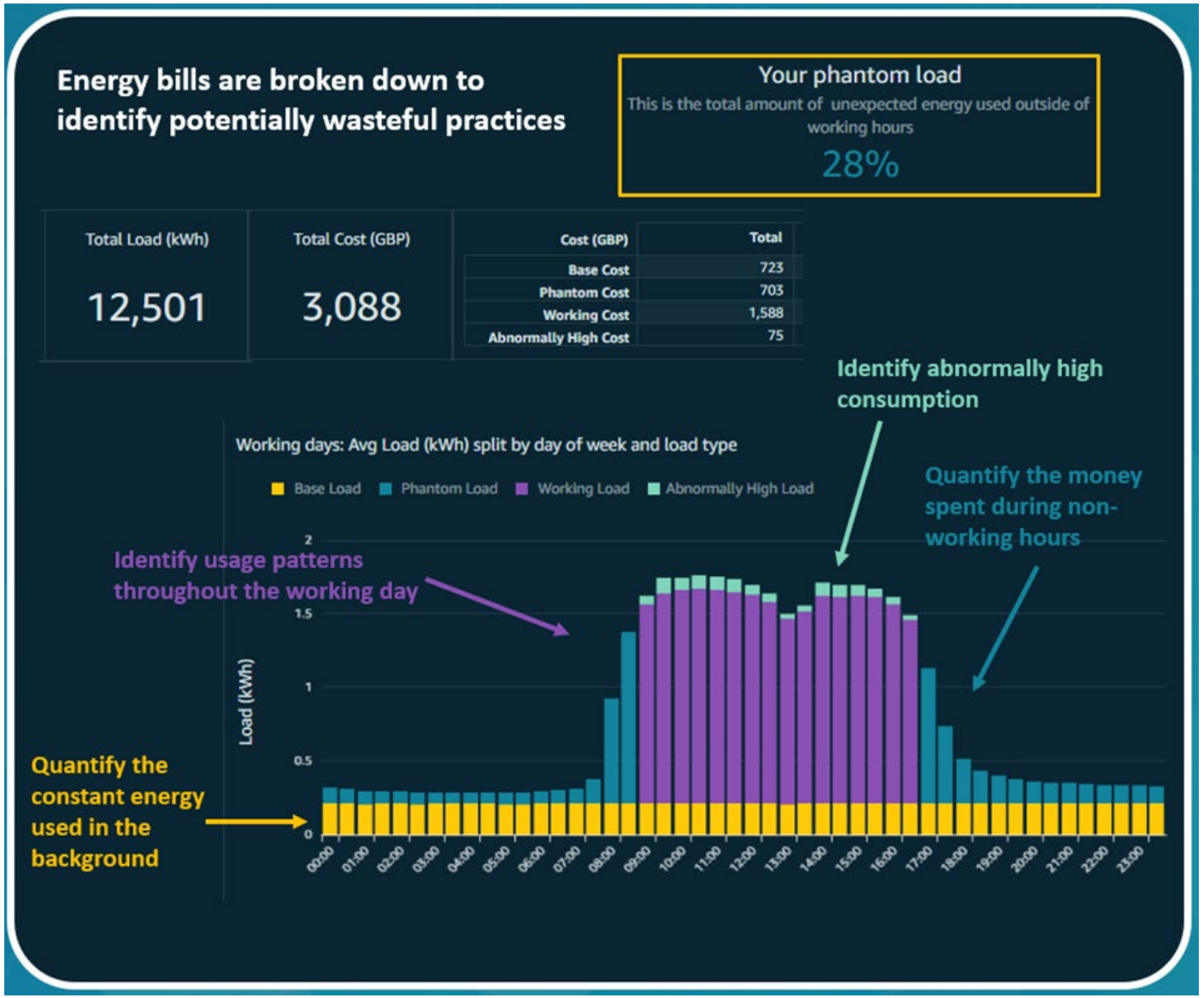

Phantom Load, simply put, is your 'unproductive' energy use.

This could come from …

- Energy used by "always-on" equipment
- Energy used by equipment when idling (or when someone forgot to turn it off)

Our Phantom Load dashboard provides a measure of your base load consumption which is the constant, background energy usage, and any extra energy usage on top of this outside of your working hours.

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Unlocking the Value of Shared Data in Manufacturing

Highlights available

IOT Sensor Solutions for Enhanced Productivity

Optimize Your Operations with IoT Solutions

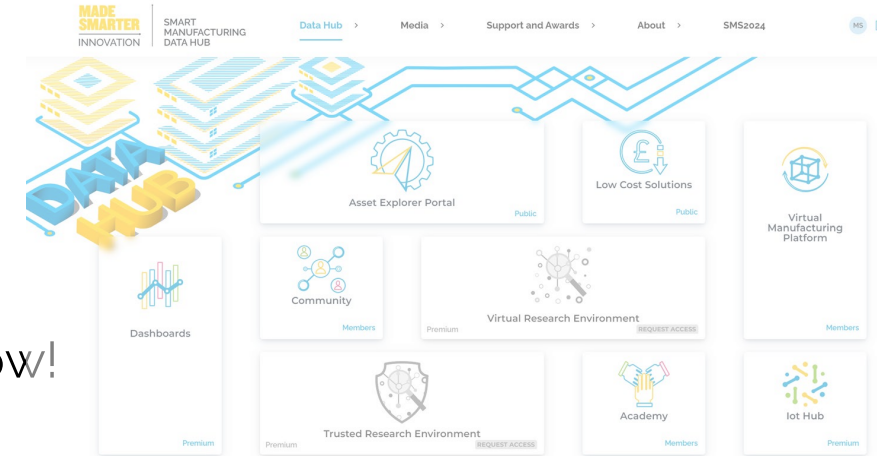
- Power Monitoring: Track equipment usage.
- Temperature Monitoring: Ensure optimal conditions.
- Air Quality Monitoring: Maintain safety standards.
- Downtime Capture: Minimize production halts.
- Job Tracking: Streamline production flow.
- SMDH MultiSense: Comprehensive data integration.

Lighthouse Awards

- DevTank – IOT Sensors and test equipment
- Output Industries Ltd – Busroot – Performance Monitoring Tool
- Flowlens – MRP Solutions
- Total Control Pro – Realtime Operational Visibility AI ready

https://smdh.uk/digital-innovation-fund-awardees

Contact Mark for **More Information**



Interested in these opportunities?

- Energy Insights is free
- IOT sensors – up to 5 free
- Data Projects – up to 15 days support free
- Larger IOT/Data Projects implements – funding available now!

- https://smdh.uk

- Email: M.Scattergood-Cawar@smdh.uk

- Don't miss out on transforming your manufacturing business!

https://smdh.uk

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Data Hub › Media › Support and Awards › About › SMS2024

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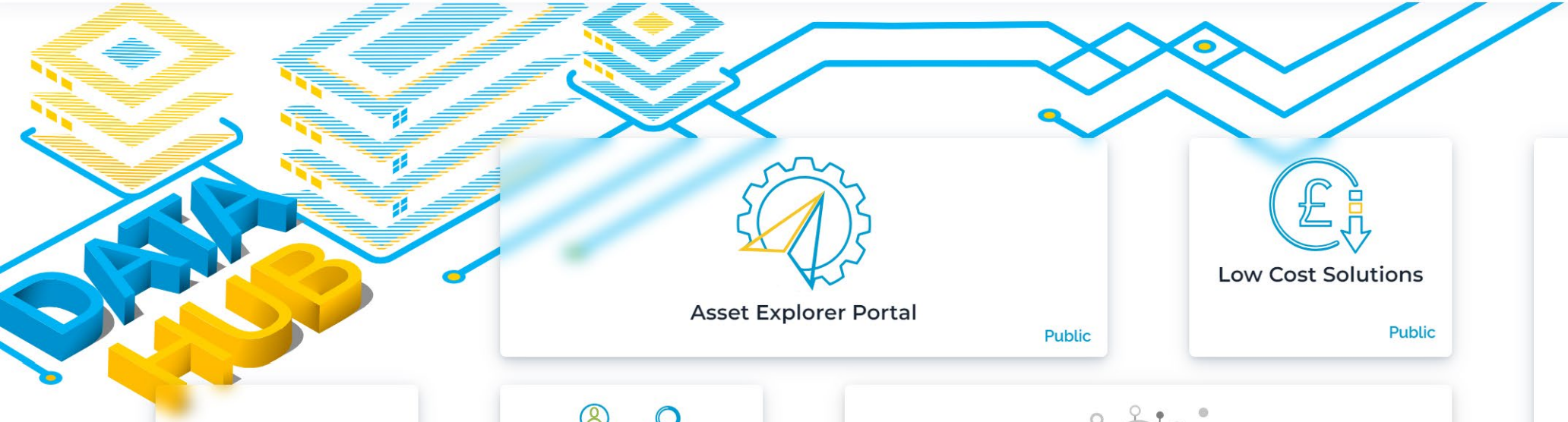


Asset Explorer Portal

Public

Low Cost Solutions

Public

Virtual Manufacturing Platform

Members

Dashboards

Premium

Community

Members

Virtual Research Environment

Premium

REQUEST ACCESS

Trusted Research Environment

Premium

REQUEST ACCESS

Academy

Members

Iot Hub

Premium

The UK Food Valley

Effie Warwick-John
UK Food Valley

GLEAM
NETWORK

UK FOOD VALLEY

10/07/24

GLEAM – New technologies for food manufacturing – from field to fork

Effie Warwick-John, UK Food Valley Programme Manager

We are pioneering the UK's food industry

Greater Lincolnshire
Local Enterprise Partnership

Position the cluster as a **global top 10 food cluster**

Co-ordinated support to help business:
invest, thrive & grow

World-Class Agrifood Businesses & Industry

Greater Lincolnshire Food Chain has scale, depth & breadth, specialisms in:

- **Seafood**
- **Fresh produce**
- **Poultry & meat processing**
- **Plant proteins**
- **Logistics**
- **AgriFood Technology**

Growing sector with investment > £500m per annum & rising

>90 International agrifood companies

Investment:

- Over 130 £1m+ investments since 2016
- Over 30 investments >£10m
- Over 10 investments >£50m
- Most investment in fresh produce, greenhouses, food processing & supply chain (especially cold stores)

Food Chain Scale & Growth

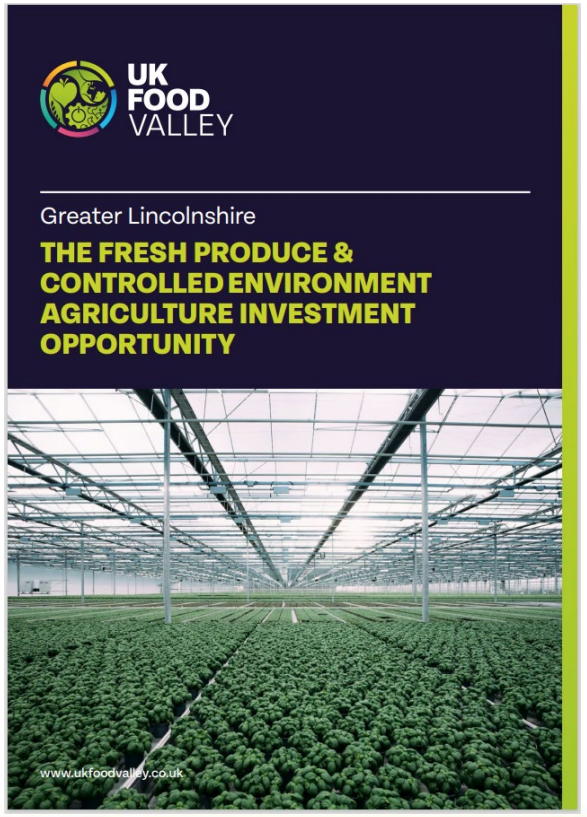
Greater Lincolnshire:
Agriculture, Food Processing, Wholesale, Logistics & Input Suppliers
75,000 jobs, GVA of £3.7bn, GVA = £49,000/job

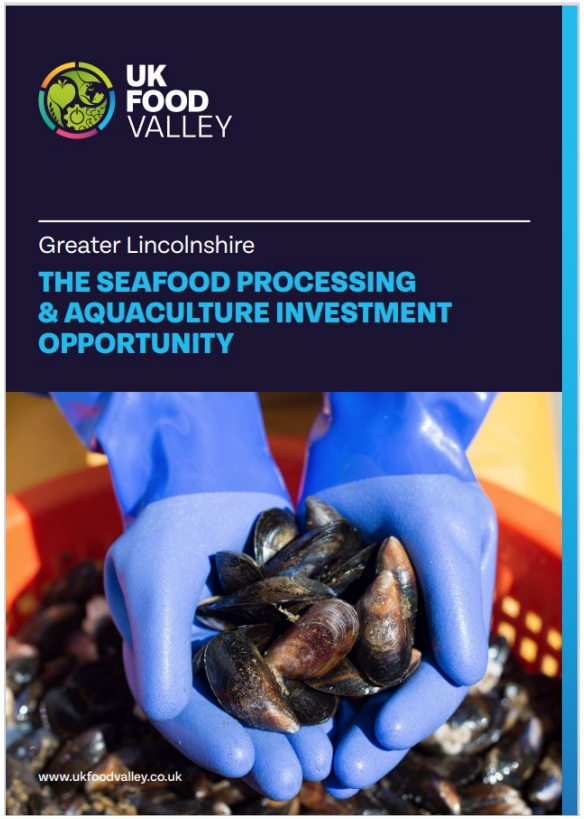
Farm to Fork supply chain

Investment last 5 years:
> £2.5billion & > 7,000 new jobs

AgriFood Propositions for Key Sectors

UK Food Valley sector growth potential seen as being focused initially in 3 main sectors, with cross cutting technologies underpinning all three – propositions launched November 2021 for:





UK Food Valley Big Bets for the food chain

- **Food Chain Automation & Digitalisation** – lean supply chains & productivity
- **Low Carbon food chains** – leadership on the route to Net Zero by 2030
- **Naturally Good for You Foods & Protein Transition** – health & market growth

Challenges in the agri-food sector…

Food waste

Traceability

Labour shortages

Productivity

Reducing inputs

Understanding variation

Crop utilisation

Energy costs

Process monitoring

Carbon emissions

Reliability of technology

Food safety

Worker safety

Robotics and AI used in the agri-food sector

Example 1: HarvestEye Ltd

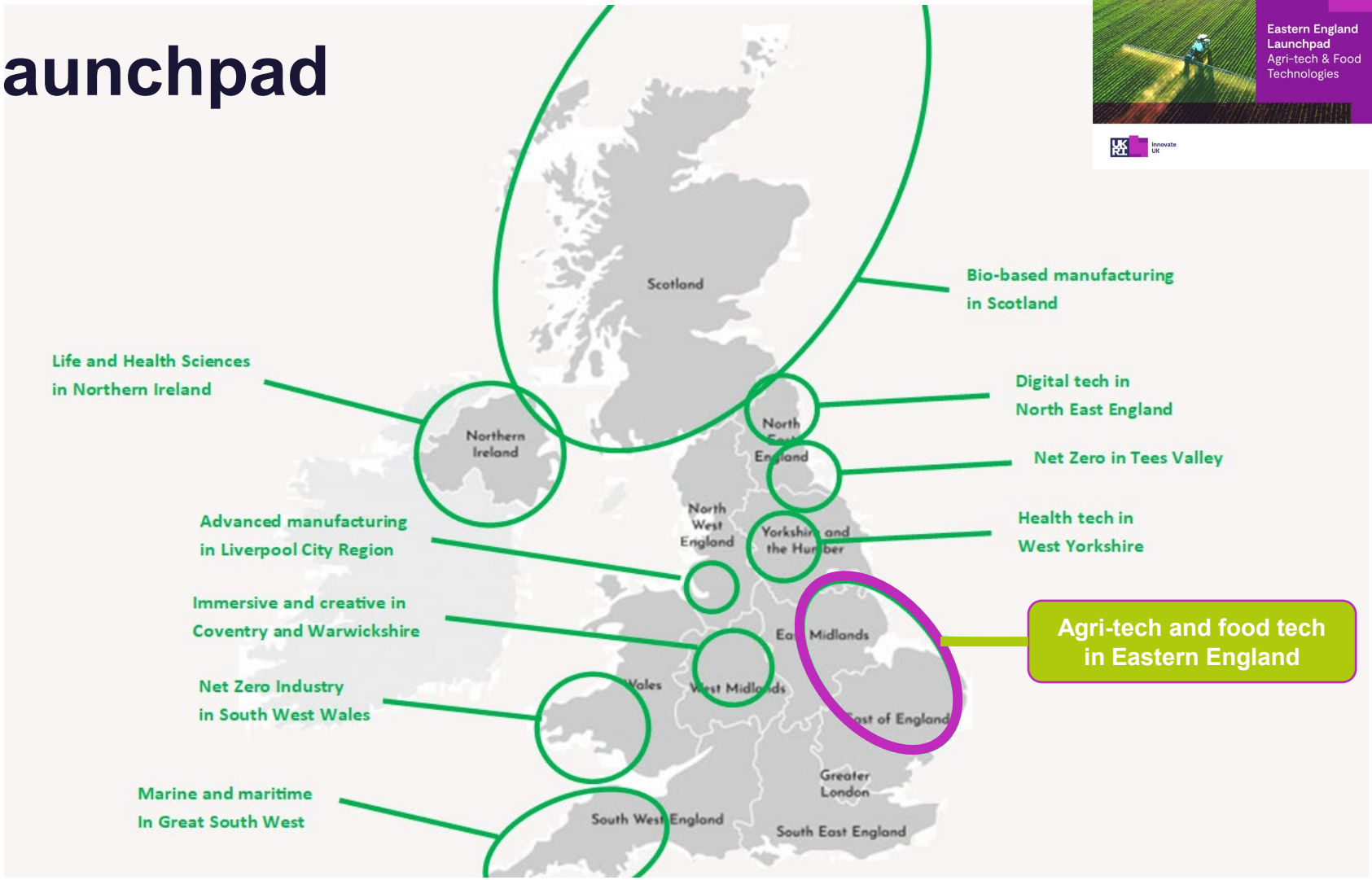
Example 2: FruitCast

UK FOOD VALLEY

Greater Lincolnshire Local Enterprise Partnership

Eastern England Launchpad

£7.5m regional investment by UKRI in industry led agritech & food R&D projects across Greater Lincolnshire, Cambridgeshire, Norfolk and Suffolk



What the programme is funding

Innovate UK

Agri-tech **Food-tech** **Bio-tech** **Seafood processing & aquaculture**

- enhancing the productivity of primary crops, the bioeconomy, livestock, aquaculture or ornamental plants
- biotechnologies related to agriculture, food and nutrition
- food that promotes safe, healthy and nutritious diets
- resource efficient production methods for low emission foods

Funded examples

Developing bio stimulants for the berry sector

Incorporating AI and digital tools to automate product development and optimise production in a factory setting

Developing an automated blueberry harvester

Remote sensing for precision spraying in the UK fruit sector

Developing novel aeroponic systems for horticulture production

Using AI and omics biomarkers to improve crop breeding processes

Improving efficiency of livestock feed

Novel bio-repellents for crop pests

Novel ways to enrich food & drink products with fibre

UK FOOD VALLEY

Effie Warwick-John
effie.warwick-john@lincolnshire.gov.uk

www.ukfoodvalley.co.uk

We are pioneering the UK's food industry

Greater Lincolnshire
Local Enterprise Partnership

Refreshments and Networking

Back at 10.30

Improving Productivity: The Manufacturing Support Programme

Mike Epton

Business Lincolnshire

GLEAM NETWORK

Funded by UK Government

Business Lincolnshire
The place to go for business growth

Manufacturing Support Programme

Mike Epton
CMBD

The Challenge of Improving Productivity

Funded by UK Government

Business Lincolnshire
The place to go for business growth

Source. House of Commons Library
Productivity: Key Economic Indicators.
Published 24/5/2024 by Daniel Harari

Funded by
UK Government

Business Lincolnshire
The place to go for business growth

Two main causes

Chronic under investment across all but hi-tec sectors

Inadequate diffusion and adoption of productivity enhancing practices

Funded by
UK Government

Business Lincolnshire
The place to go for business growth

The result of poor performance

Combined with rising cost = Reduced profit

Reduced profit = less investment and ability to grow

Which = Less tax being paid

Funded by
UK Government

Business Lincolnshire
The place to go for business growth

How do we improve productivity?

Investment:

- Replacing worn out or outdated equipment
- Adoption of digitization and computer aided process

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The place to go for business growth

How do we improve productivity?

Run your organisation, business, department or team with purpose. Have a Strategy. Have a Plan.

That focuses on performance

Stable, repeatable controlled processes.

Eliminate waste and non-value added activities.

Ensure each element of the operation is fit for purpose and aligns with matches customer needs.

Maximise your people potential.

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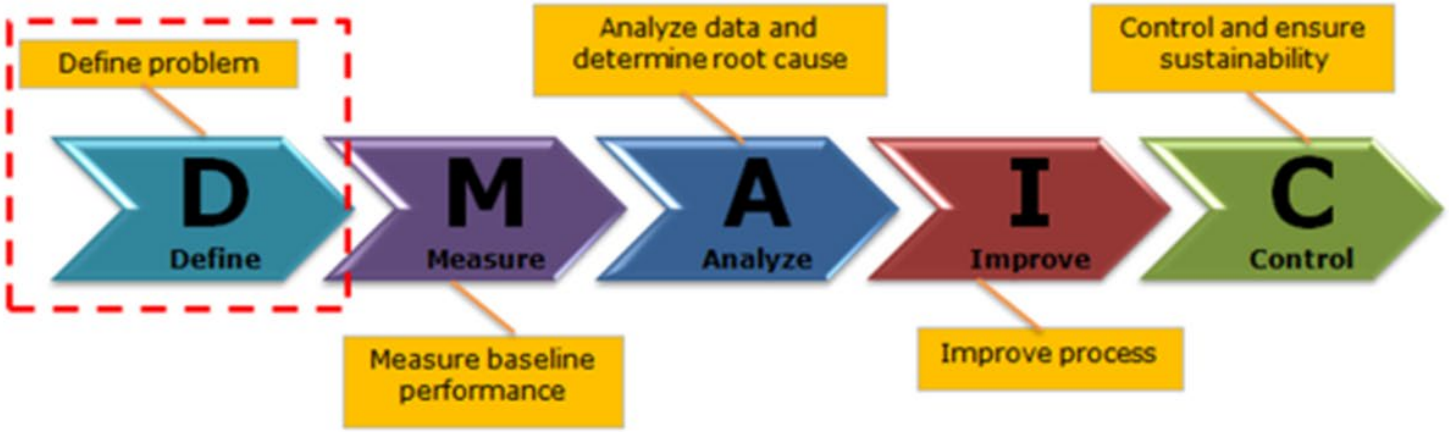

Six Sigma

The aim of the six sigma methodology is to create a stable, predictable, measurable and repeatable process aimed at helping a business maximise profitability, improve efficiency, reduce problems and delays resulting in predictable performance.

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Lean Thinking - 7 Wastes

Overproduction – making, doing, serving more than is required

Waiting – Whether is a factory bottleneck, waiting for a delivery or customers standing in a queue, waiting costs somebodies time and money and is not an ideal situation.

Unnecessary motions – Human and layout, eat time and capacity which can always be more profitably spent.

Transporting – This can never be fully eliminated but all unnecessary movement or transporting is waste.

Over-processing – or Inappropriate processing, this could be using a hammer to crack a nut or delivering a Rolls when the customer paid for a mini.

Unnecessary Inventory – It all has to be paid for but if its not needed it not earning anything and worse it's using a resource that would be more use elsewhere.

Defects – Directly cause scrap, rework, lost capacity, warranty work, repairs, wasted time, loss of management focus, field service and ultimately lost customers.

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- Typical Activities

  Support with defining and implementing a plan.
  Identifying waste and opportunities for improvement.
  Identifying and eliminating non-value added activities.
  Process Mapping and process implementation.
  Improve communication.
  Improve quality of product and service.
  Reduce Lead-times.
  Training.
  Project planning.
  Coaching, encouraging and support.

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And what else?

Marketing.
Sales development.
Finance and Financial Management.
Net Zero, Going Green, Circular Economy.
Energy Audits and Environmental Efficiency.
Business Resilience.
Workforce Development. Recruitment & Training.
Innovation and IP.

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Why bother?

A £1m T/O business that improves efficiency by 1% will make an extra £10,000 profit.

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Further Information.

Visit our webpage Manufacturing Support Programme

Or to discuss how it might help your business contact,

Mike Epton - email mike@cmbd.org.uk
- telephone 07733 107238

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Merging Man and Machine

Janet Bellamy
NCFM, University of Lincoln

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Merging Man and Machine – Running on Autopilot !

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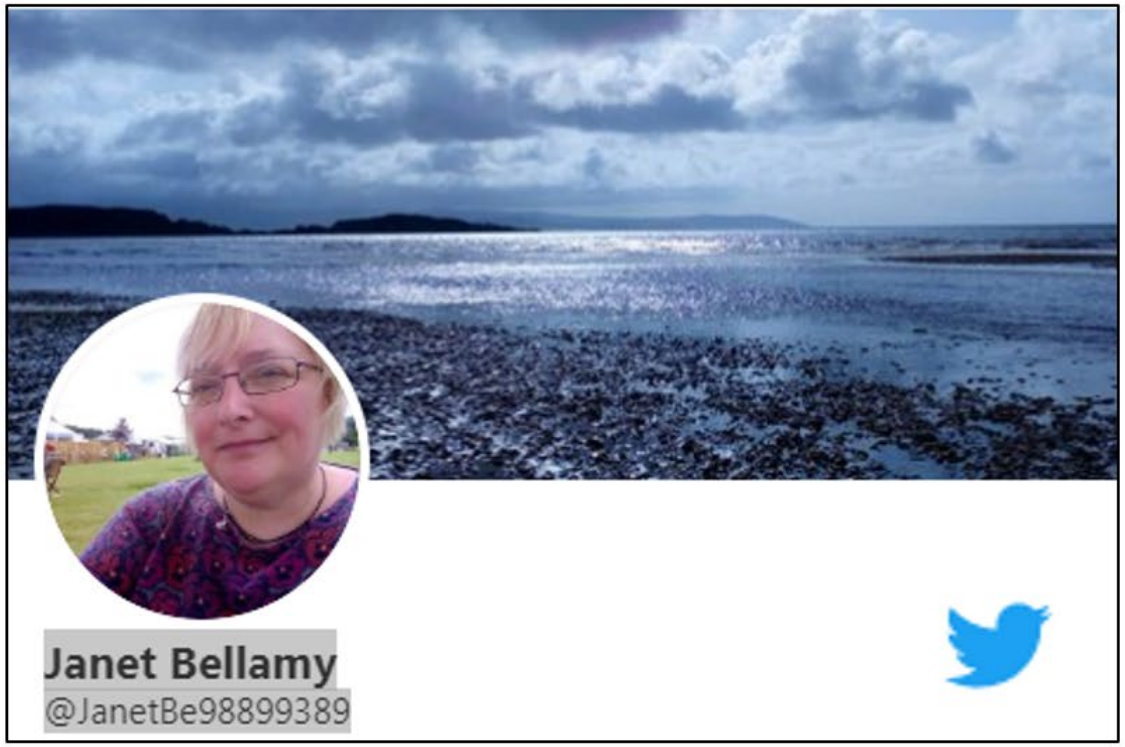

Contact details

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When was Autopilot Invented?

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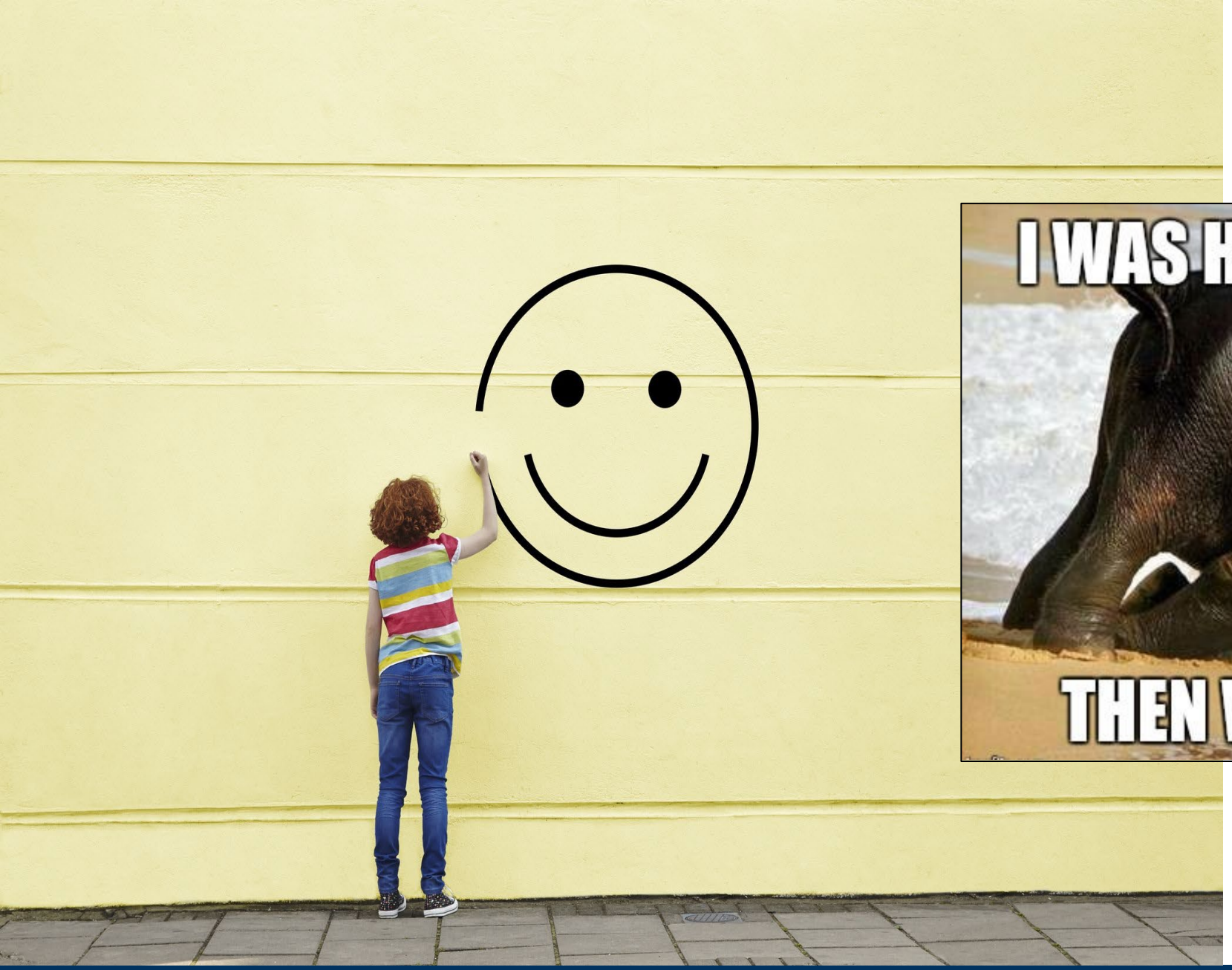

What does a good day at work look like?

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What does a good day at work look like?

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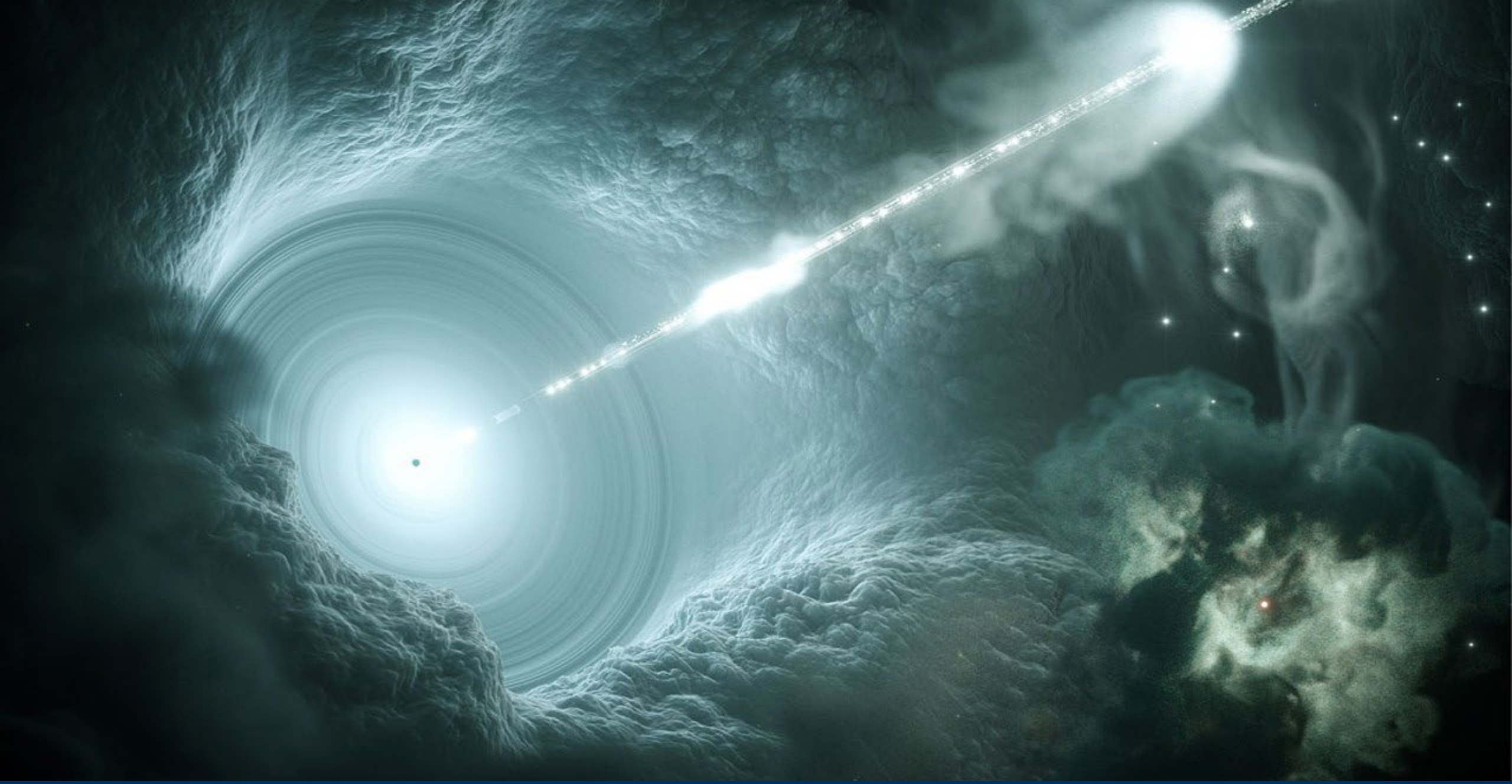

What does a good day at work look like?

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What does a good day at work look like?

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Freedom to create!

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Modus Operandi……

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Saving the World every day

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Industry 4.0- Digital Transformation

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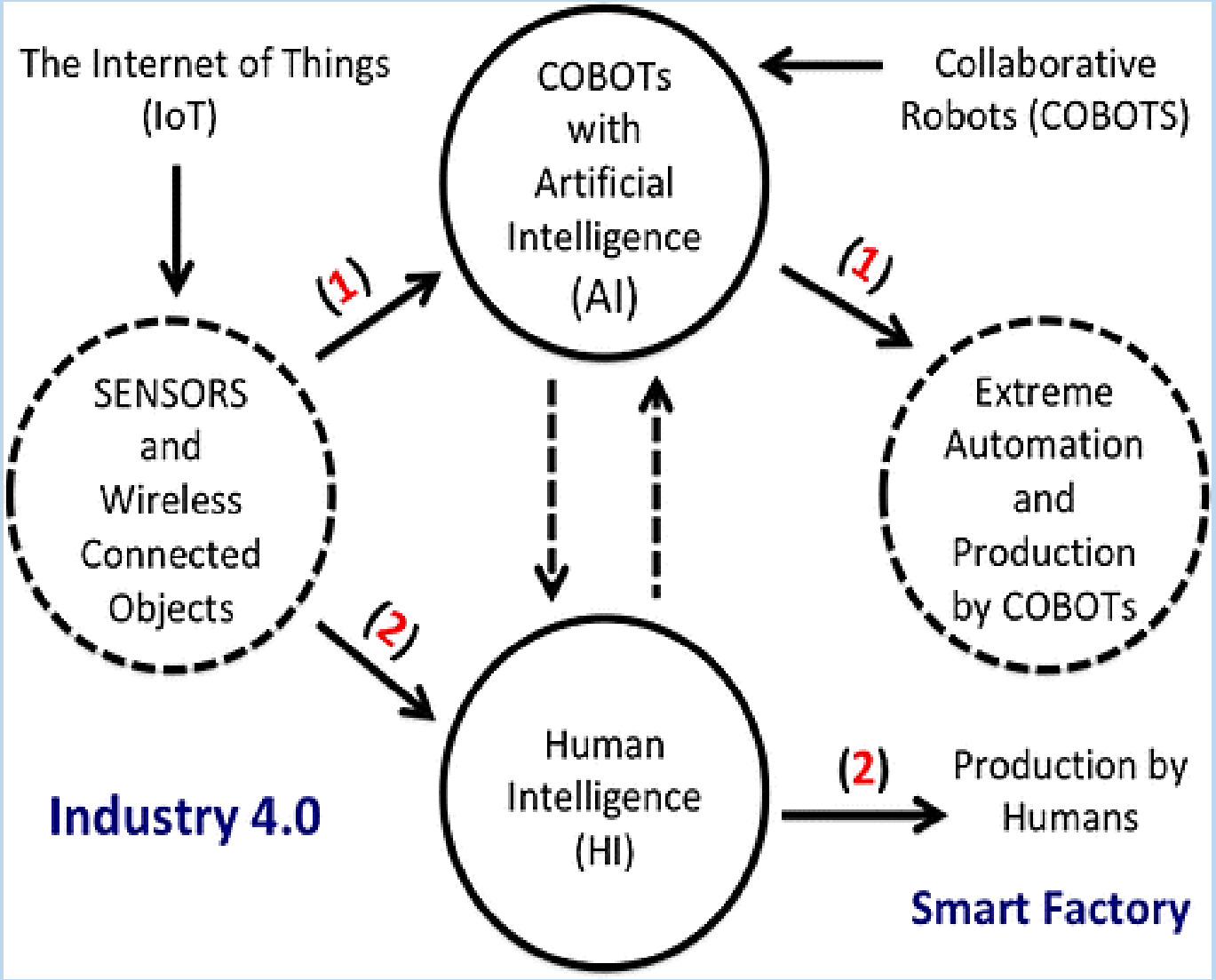
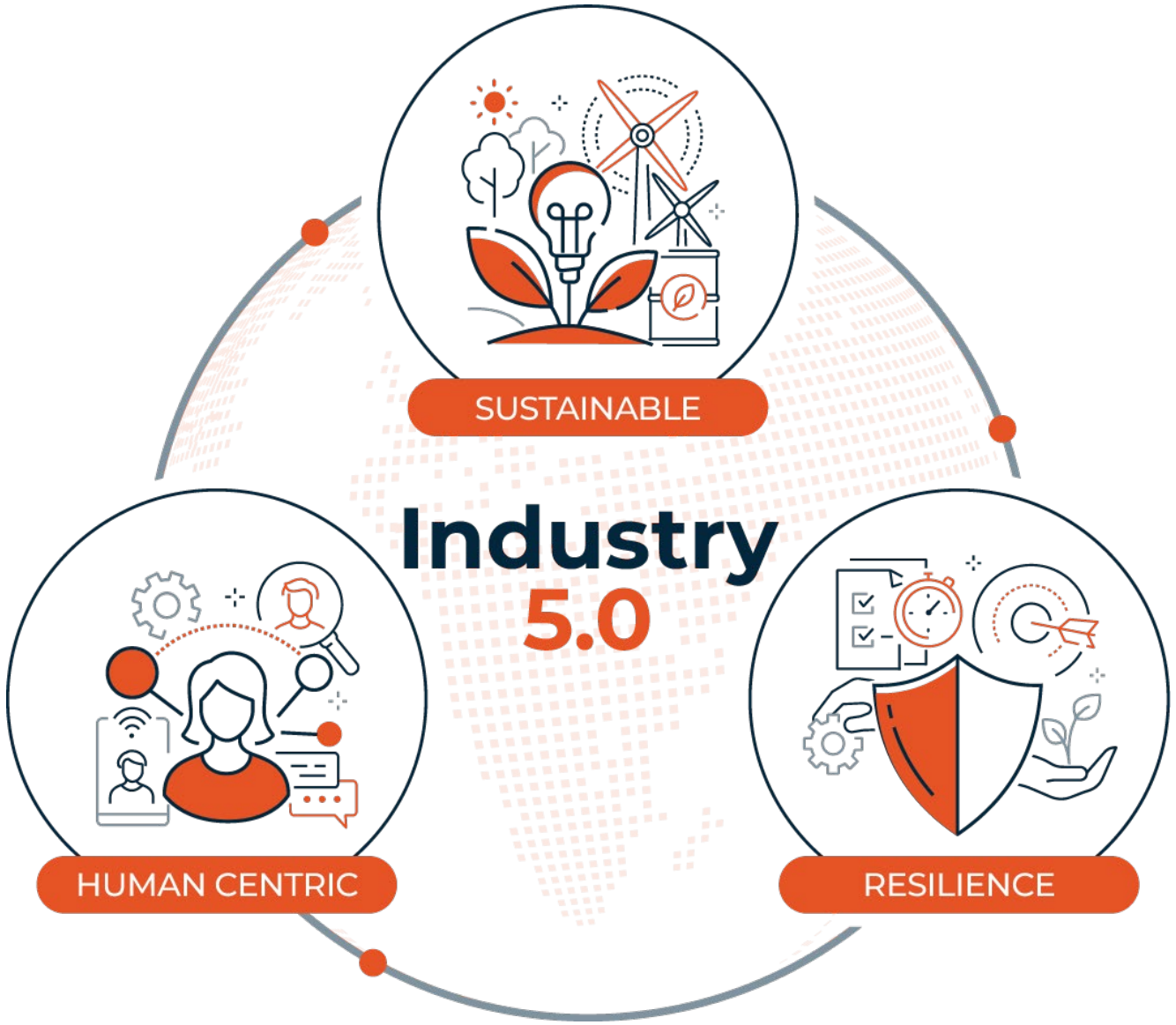


Industry 4.0 – Smart Factory



Bringing Empowered Humans Back to the Shop Floor

Roadmap for change

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Connect and Monitor

- Connect critical assets
- Gain operational transparency
- Take actions to optimize performance and to maximize production and profits

Analyze and Predict

Use integrated data sets and modern data analysis to derive deep, predictive insights about asset health and performance.

Digitalize and Transform

Build targeted applications that are key to developing new business models and products.

Start small , THINK BIG!

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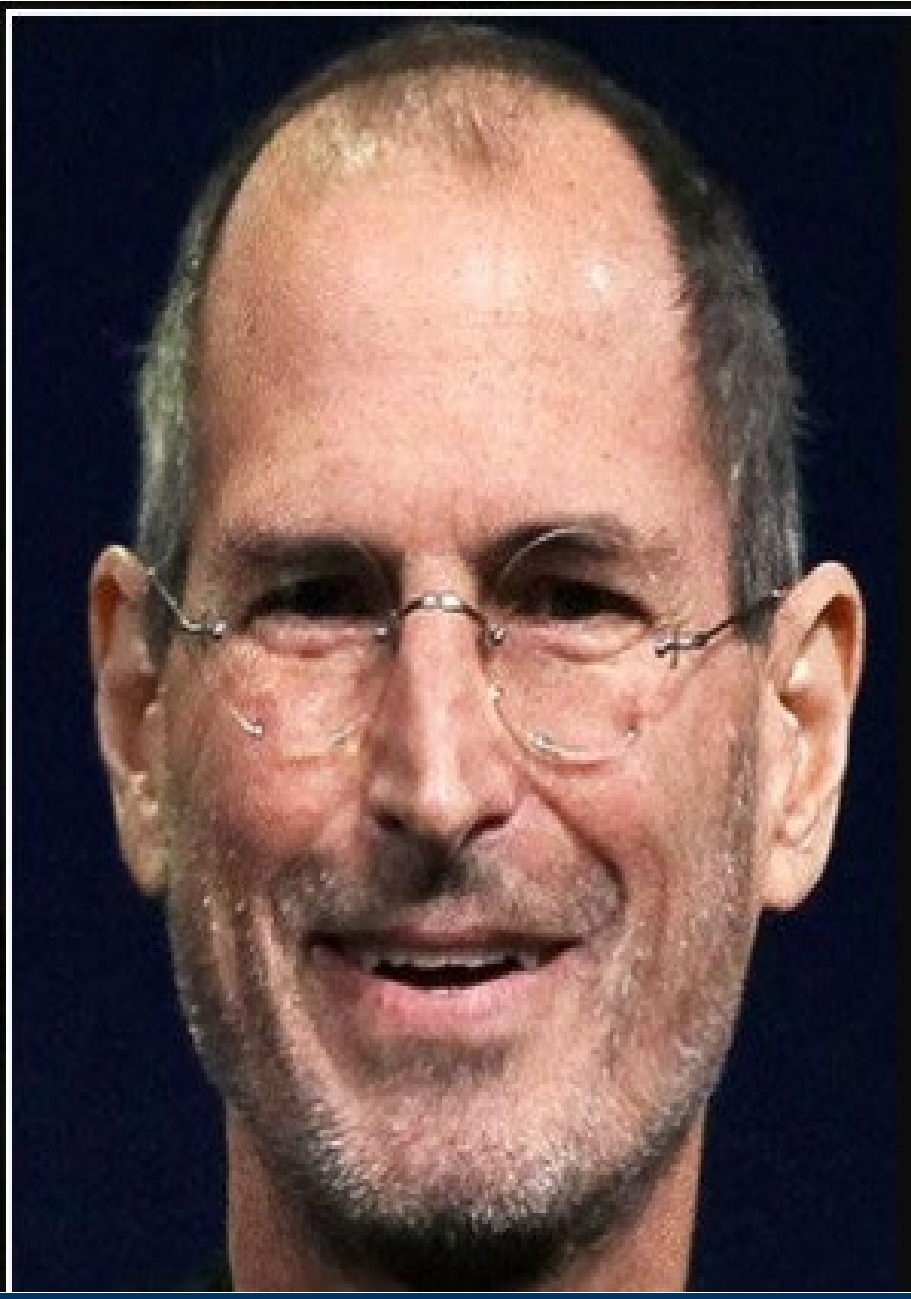

Start small, think big. Don't worry about too many things at once. Take a handful of simple things to begin with, and then progress to more complex ones. Think about not just tomorrow, but the future. Put a ding in the universe.

— Steve Jobs —

Industry 5.0 – Put a Ding in Your Universe!

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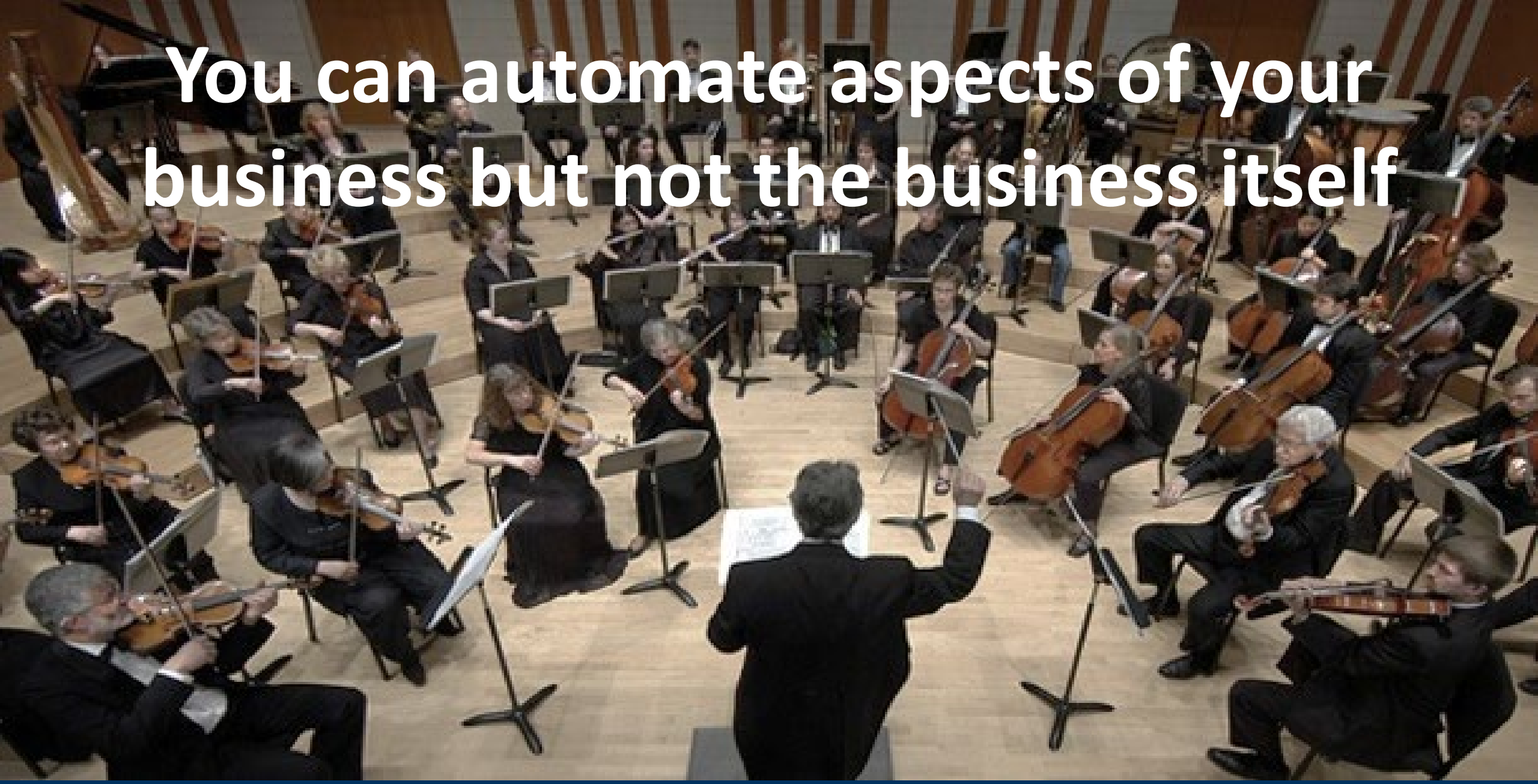
You can automate aspects of your business but not the business itself

Inventors need time to Invent!

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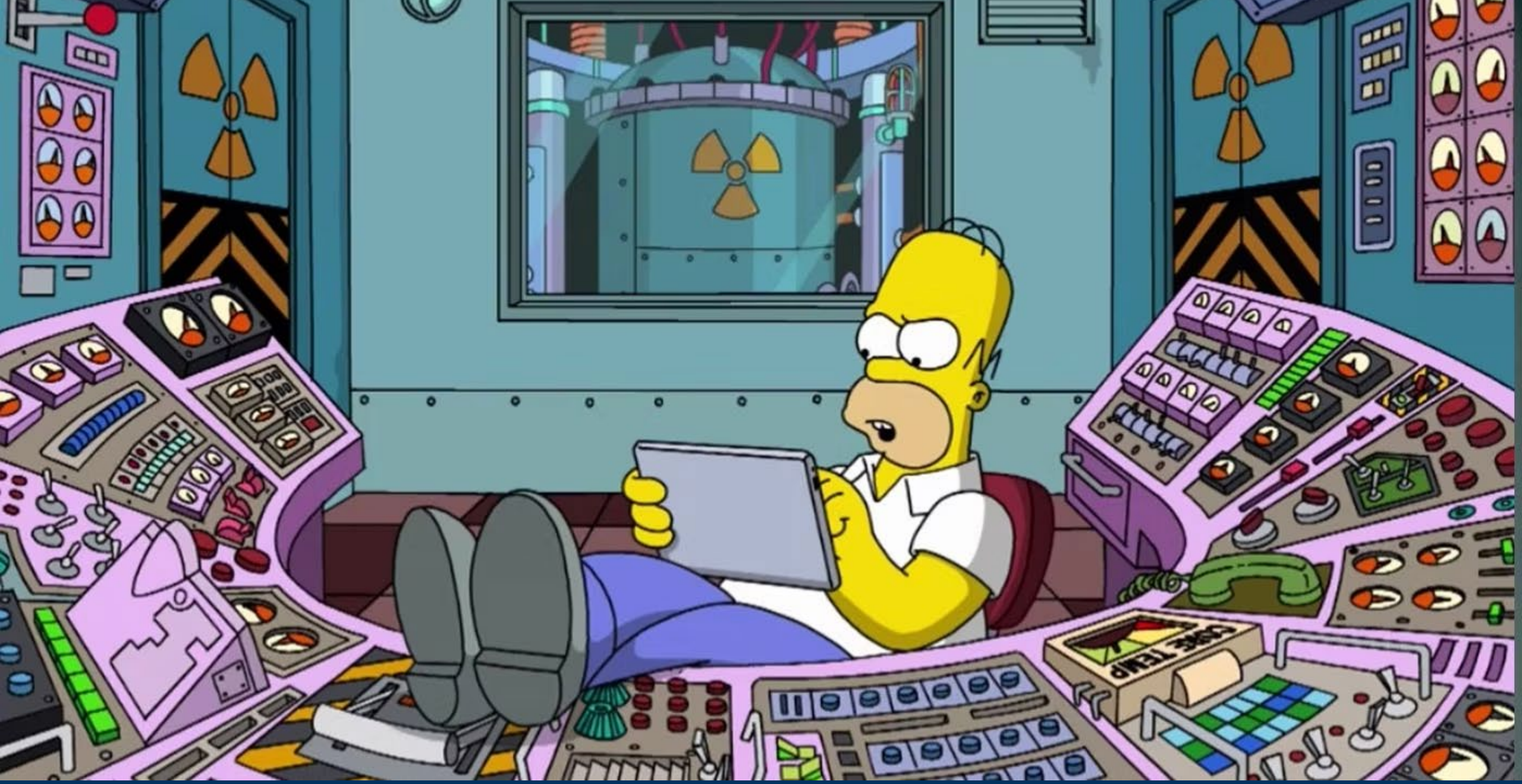
Merging man and machine makes businesses….



Be more Like Homer!

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Be more Like Homer!

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Change your outlook!

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What do we do already?

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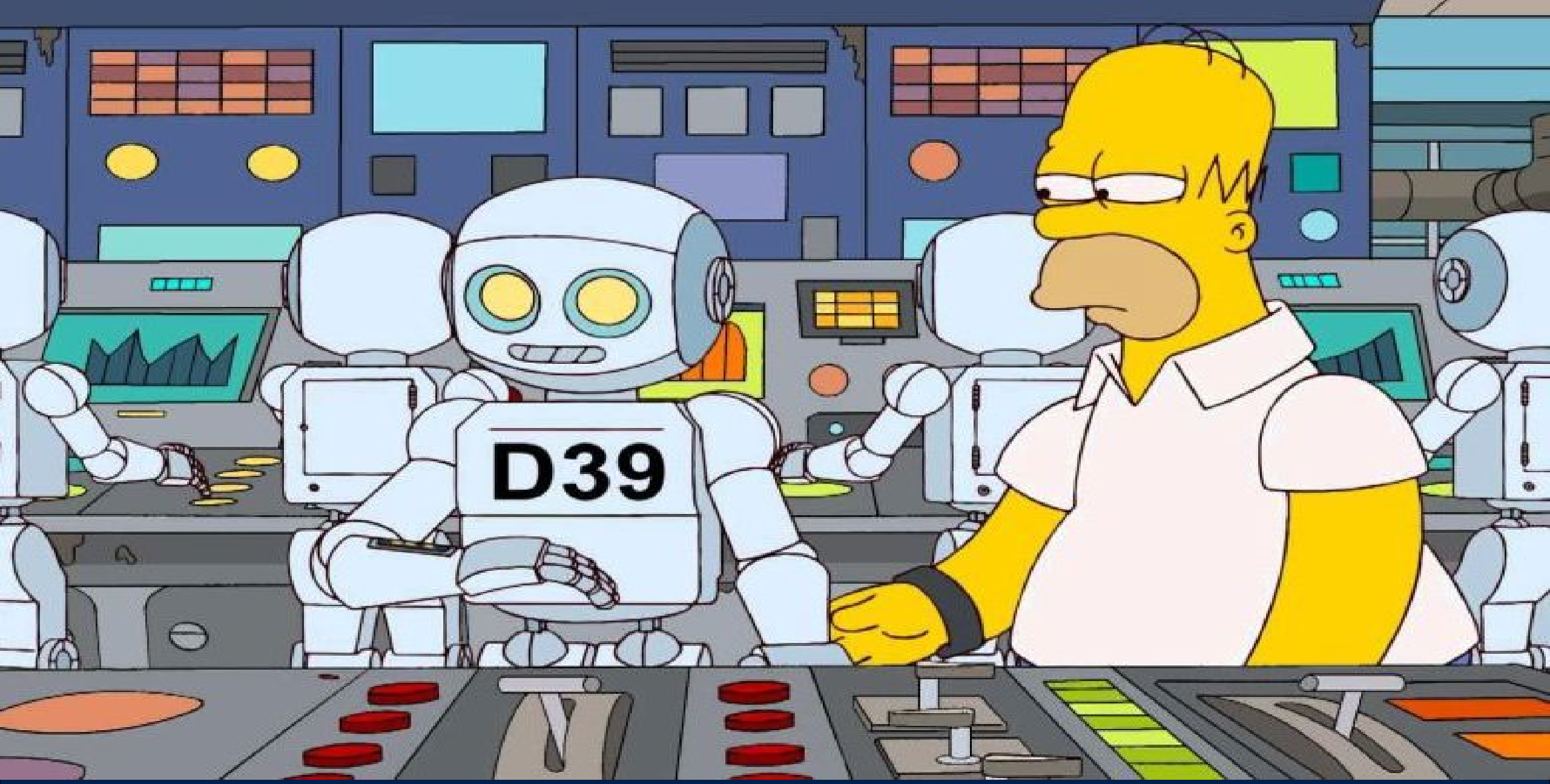

Autopilot– Homer style!

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Give your teams the freedom to fly!

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Give your teams the freedom to fly!

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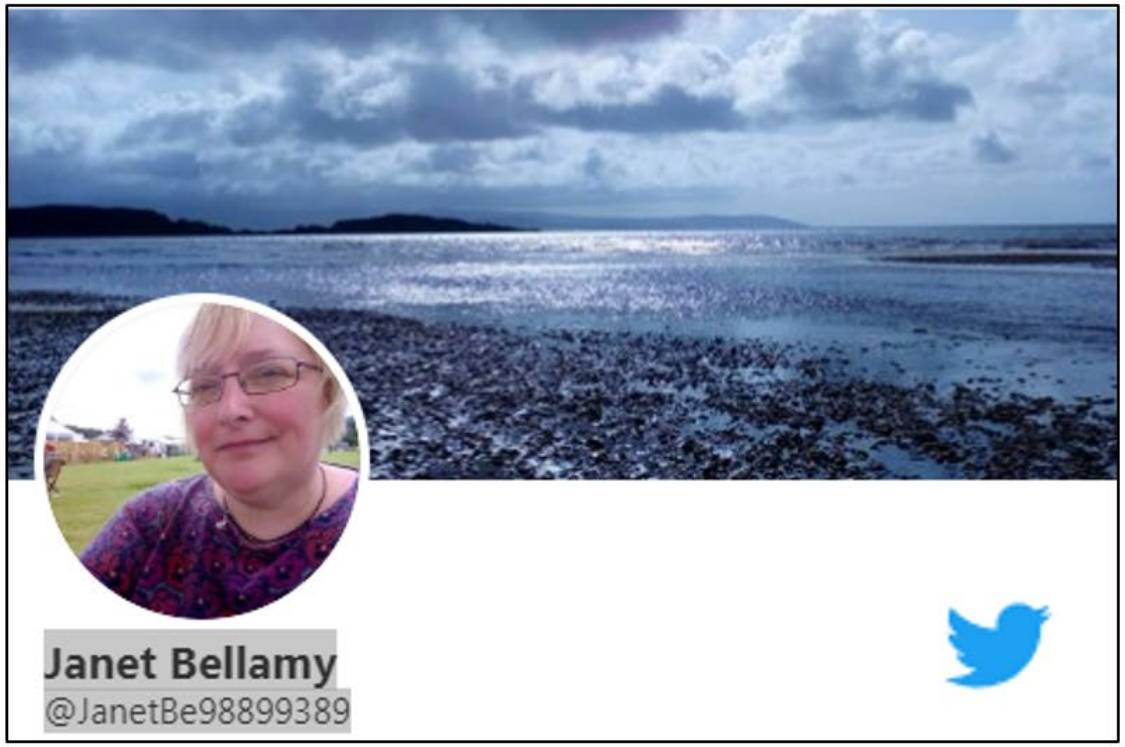

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S3 Saving Energy One Sandwich at a Time

Thierry Batariere & Adam Przybylek

Raynor Foods

GLEAM event | 10 July 2024

S3 – Saving energy, one sandwich at a time

Raynor Foods
Engineering and Innovation

Adam Przybylek
Engineering Manager

Thierry Batarière
Innovation Project Manager

smart people · **smart** process · **smart** factory

A demonstrator and living lab where IDT-collected data on every resource in a manufacturing workflow is interpreted by AI and gamified. This will motivate and empower staff to optimise material use and reduce carbon output.

A collaborative innovation between Raynor Foods Ltd, Software Imaging Ltd, University of Cambridge and the University of Lincoln.

A journey to deliver 30% energy & CO2e reduction in real time

Energy saving

Increase efficiency

Reduce waste

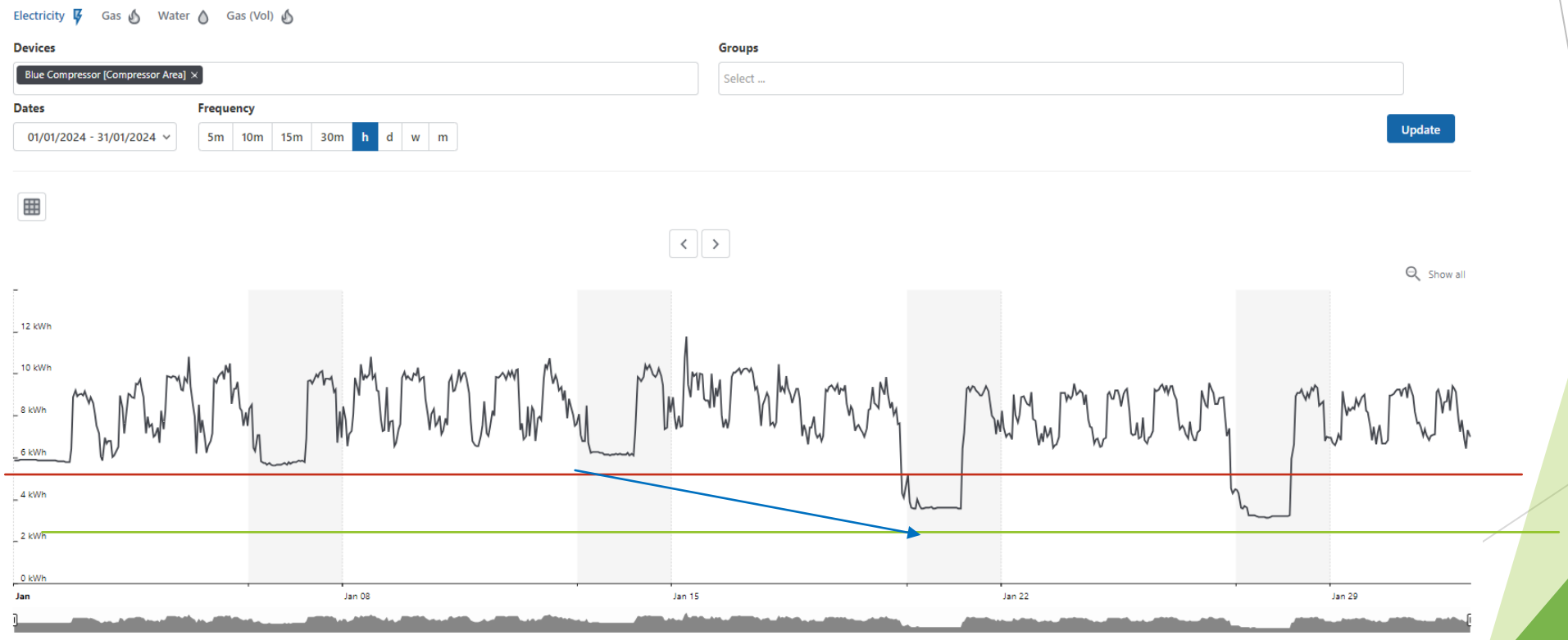
Teams engagement & welfare

The first step to save…

- To save energy, we need to know where we are using it and when:
  - The initial step of the project was to map all areas that need to be monitored.
  - Then, the CT (current transducers) and pulsed output water meters were installed.

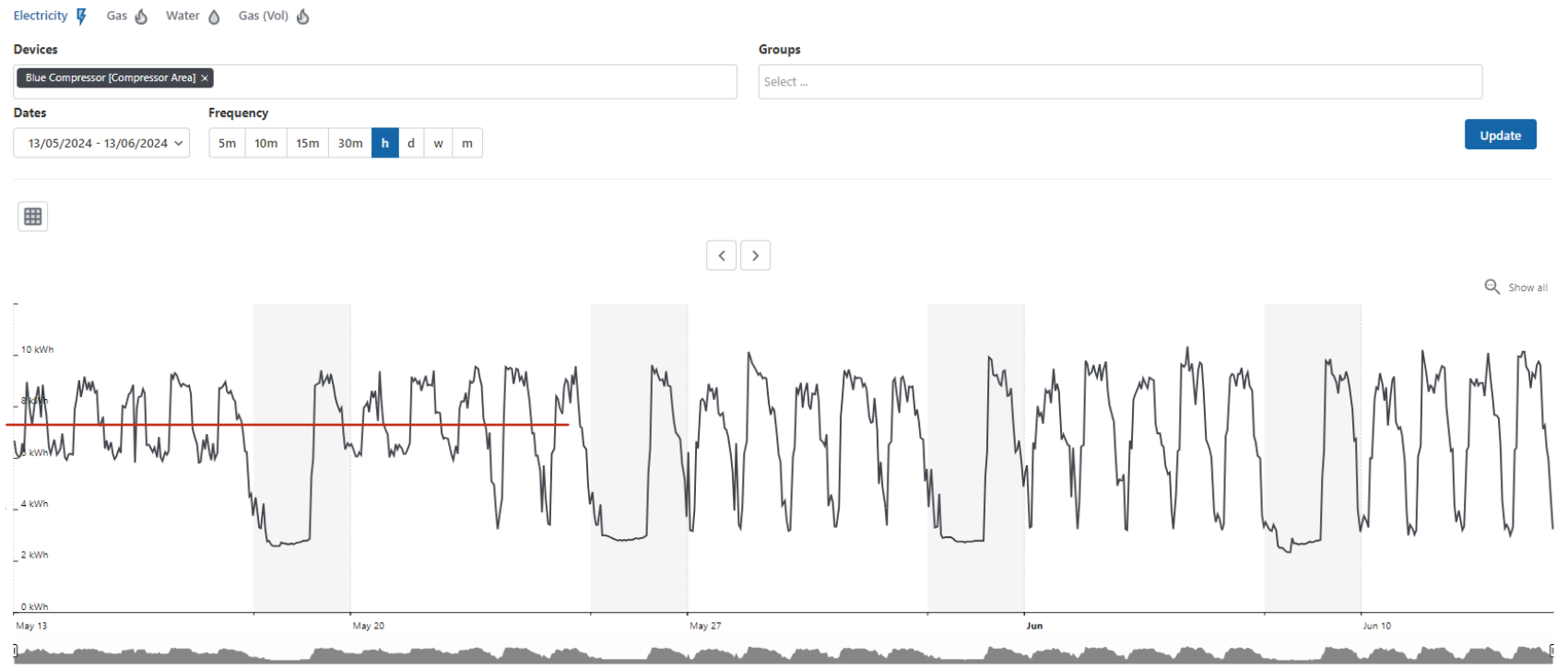
Analysing and adjustments

- Analysing the compressors' energy use, we found we can reduce the energy use during the weekend when air is not needed in full volume.
- By rescheduling and balancing pressure output, we reduce the energy used by compressors by almost 40% over the weekend and during non-production periods (monthly savings of 4.6%).



Analysing and adjustments

- Further analysing the manufacturing process and air demand shows us another opportunity to reduce energy use during the night.
- Another rescheduling and balancing pressure output reduced the energy used by compressors during the night shift by nearly 50%. (monthly savings of 5.3%)

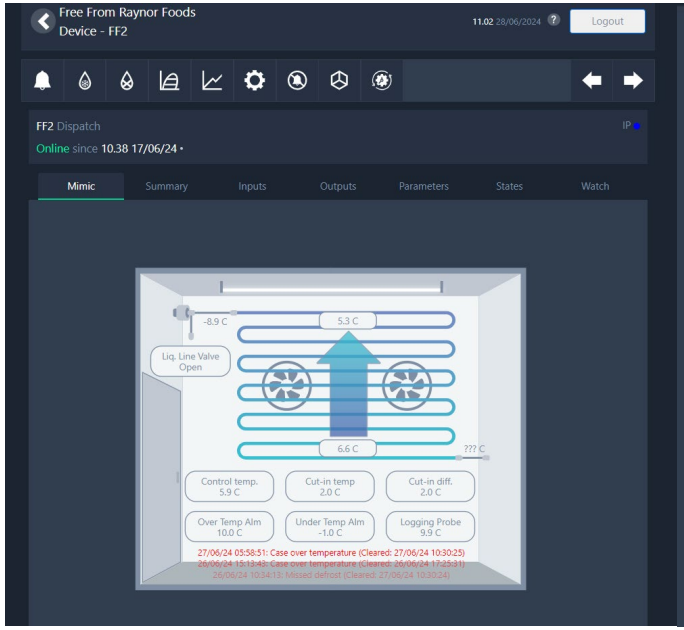


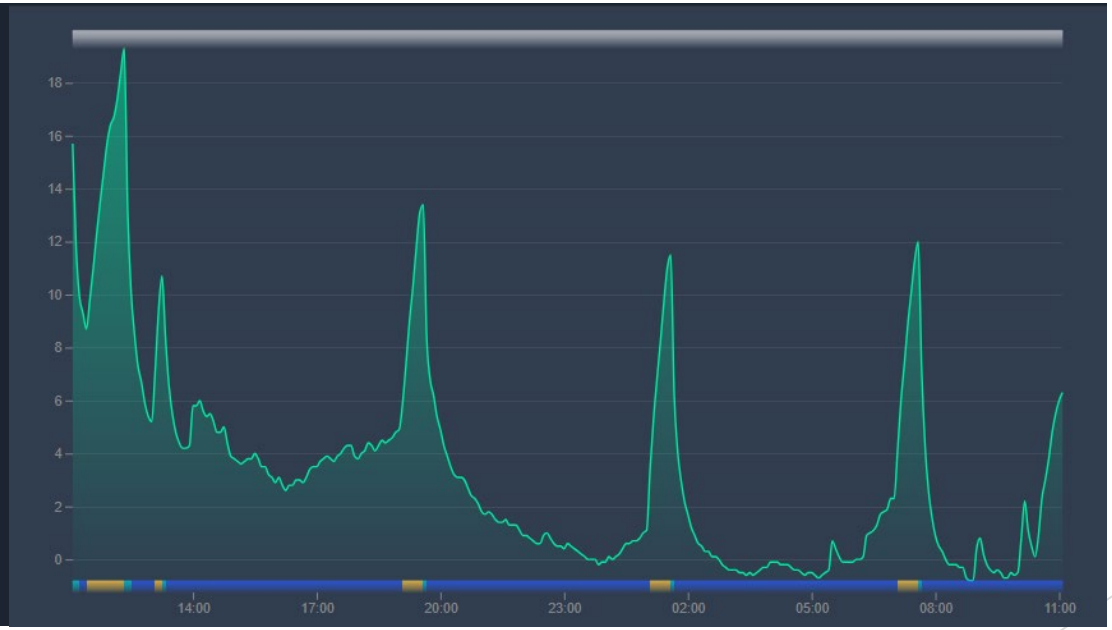
Analysing and adjustments

- Energy use by refrigeration systems.
- Reducing defrost cycles from 8 to 6 times per 24 hours was followed by long-period monitoring to make sure the system was not icing.

Further improvements

- We are currently in the process of installing a refrigeration control and management system that will allow us to monitor and make changes remotely.
  - Opportunity to reduce energy by adjusting the temperature accordingly to the production needs.
  - Live comparing process - energy use to the temperature and refrigerator status.





Thank you.

Any questions?

Wrap Up & Tour led by Claire Hall