

Electronic Work Instructions

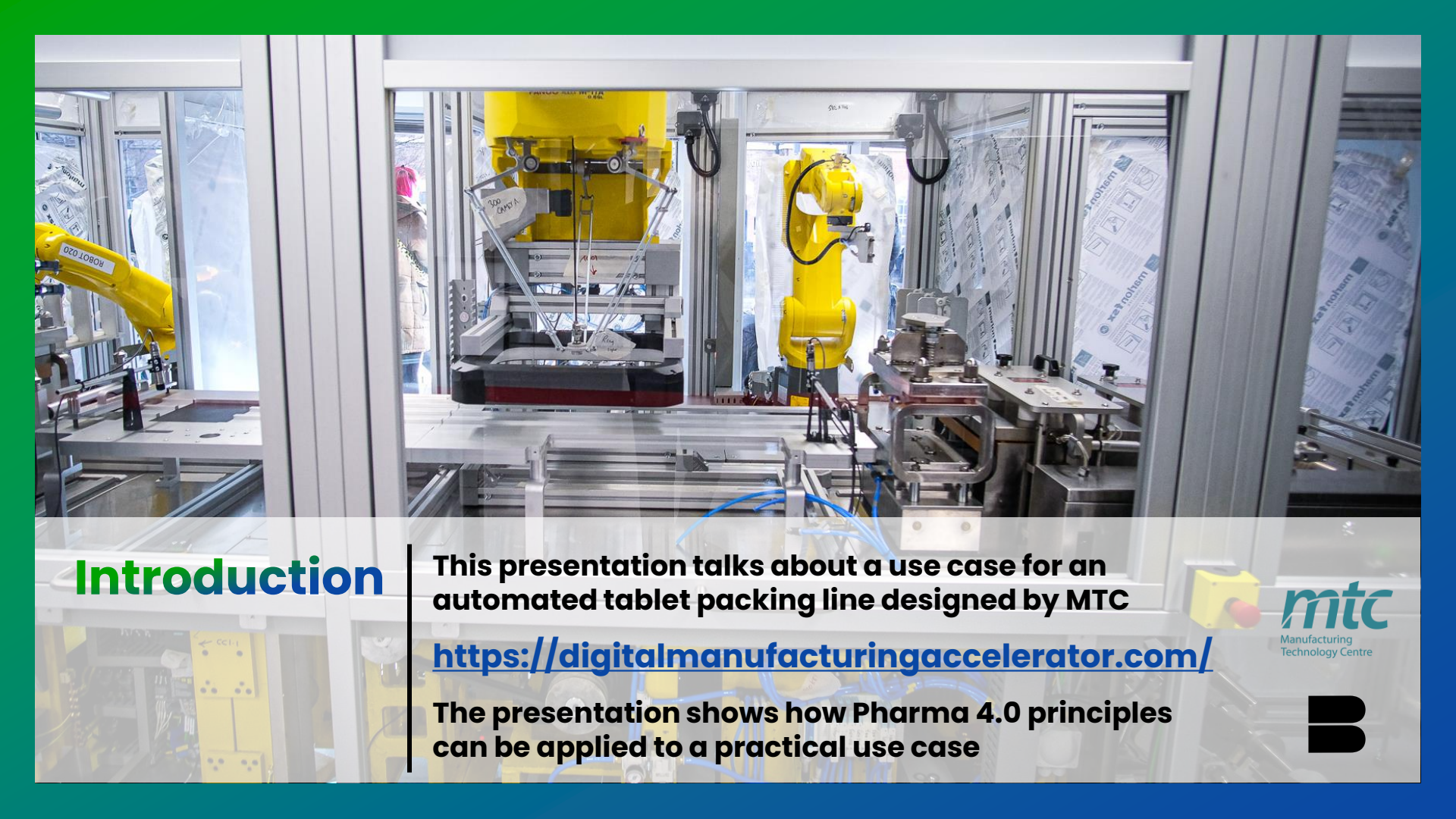
A Use Case for Digitalisation Technology

Factorytalk⁺

BATCHLINE

mtc
Manufacturing
Technology Centre

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Introduction

This presentation talks about a use case for an automated tablet packing line designed by MTC

<https://digitalmanufacturingaccelerator.com/>

The presentation shows how Pharma 4.0 principles can be applied to a practical use case



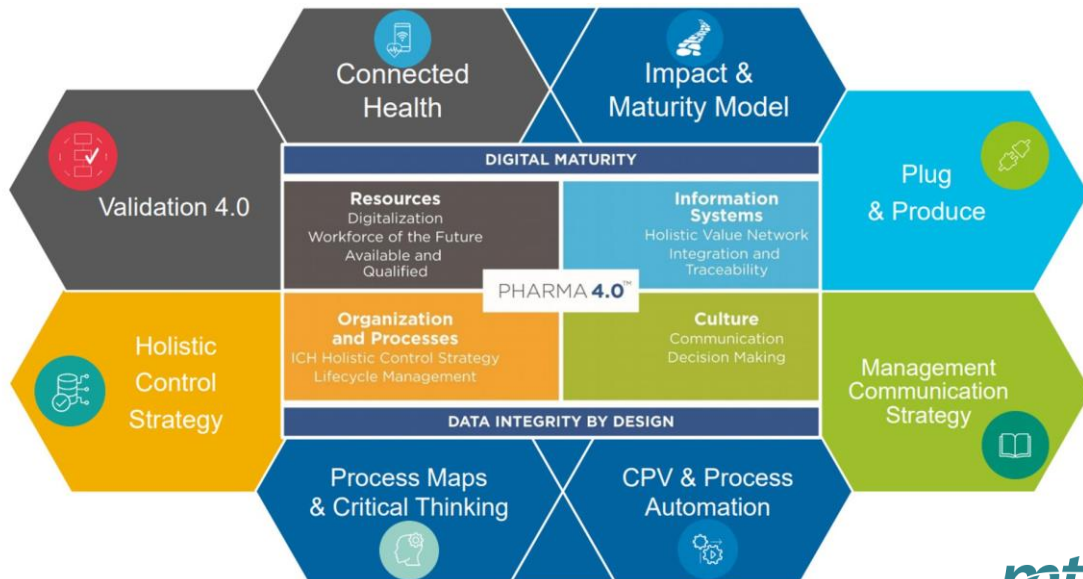
Pharma 4.0

Pharma 4.0 Model

We've used the principles of Validation 4.0 to demonstrate continuous monitoring of critical parameters and simplified validation

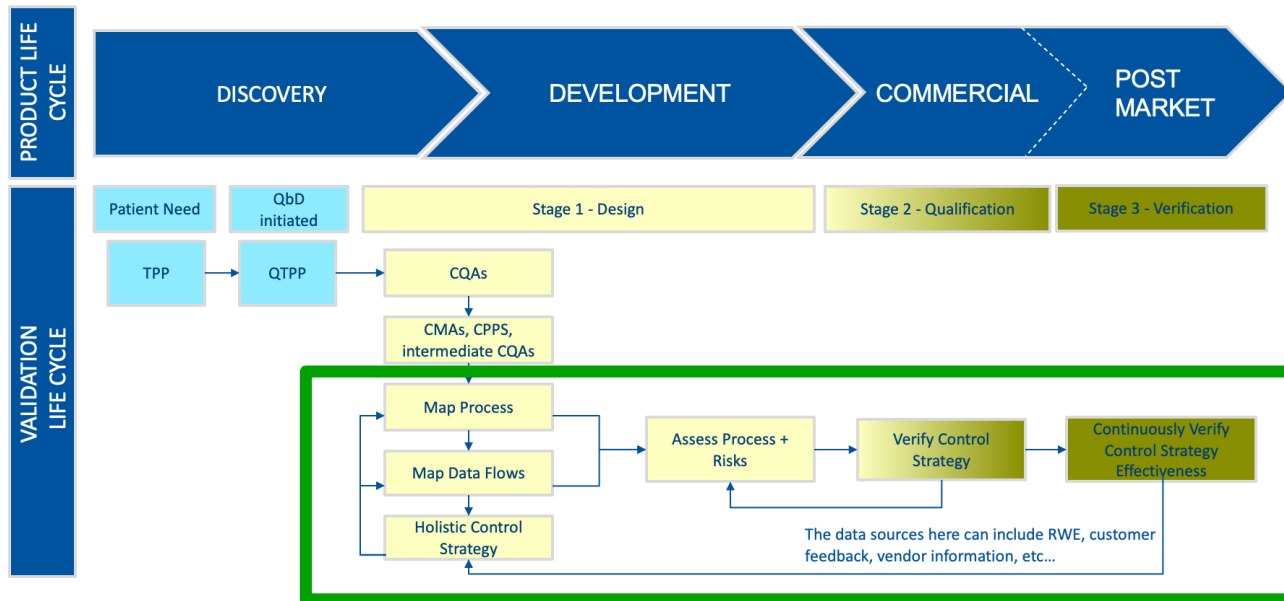
e.g.

- CPV includes continuous checking of heat seal and print quality
- MES records and displays CPV
- The MES provides the capability to run a fault batch



Our focus, applying Val 4.0

Validation 4.0 model



Scope of Line:

Blister Packing

Val. 4.0 Tasks:

Process mapping

Design Envelope

PRA

Identify Controls

Continuous monitoring

Traditional Val:

Initial Validation prior to continuous monitoring.

e.g. Vision seal checks

WHAT IS THE DIGITAL MANUFACTURING ACCELERATOR?

The Digital Manufacturing Accelerator (DMA) is an initiative that was launched in 2018, in partnership with the Liverpool City Region Combined Authority, and brings world leading manufacturing research, technology and experts together.

Embarking on a ten year mission, the £15 million funded programme aims to accelerate the implementation of innovative physical and digital manufacturing technologies into UK manufacturing and supply chains.

Based in the heart of Liverpool, the project will build a state-of-the-art 'reconfigurable factory environment' and a 'digital factory environment' across two linked sites.

In partnership with



Liverpool City Region
Combined Authority
Governmental body



Reconfigurable Factory Environment



Liverpool Science Park

- ▶ Rapid reconfigurable and modular
- ▶ Facilitate small batch production
- ▶ Smart Factory applications
- ▶ FMCG and Pharma oriented
- ▶ Delivered by supply chain

Digital Factory Environment



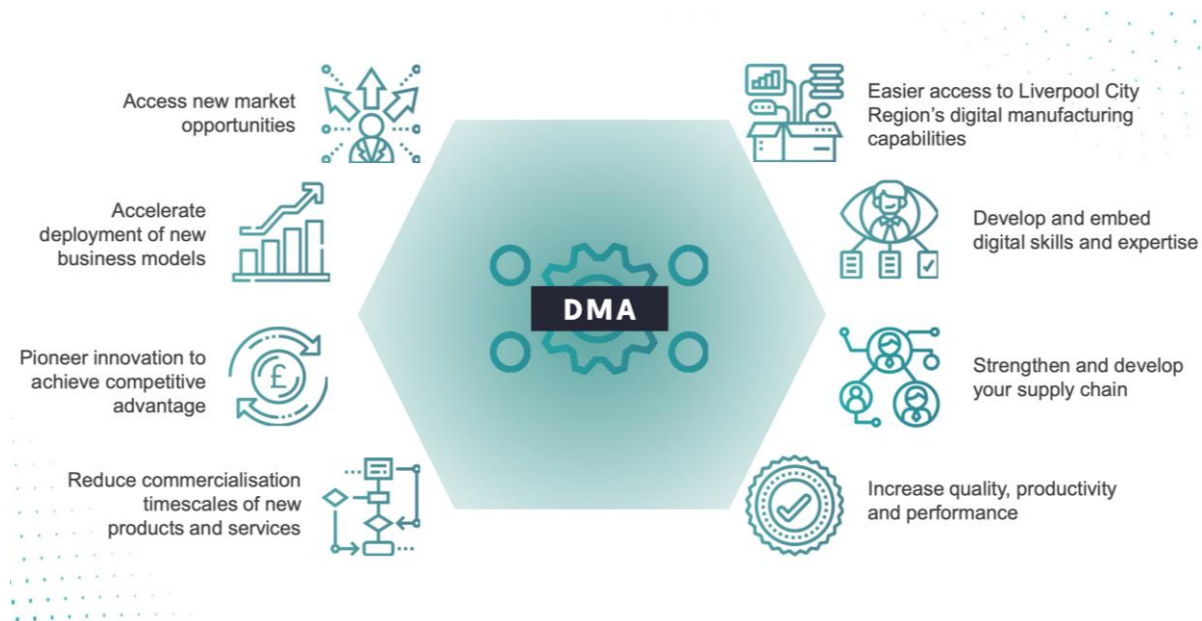
Daresbury Computing Centre

- ▶ Flexible and scalable
- ▶ Deliver new industrial digital infrastructure
- ▶ Digital Factory applications
- ▶ Sector agnostic
- ▶ Delivered by supply chain



DMA Use Case: Blister Line

Value Benefits

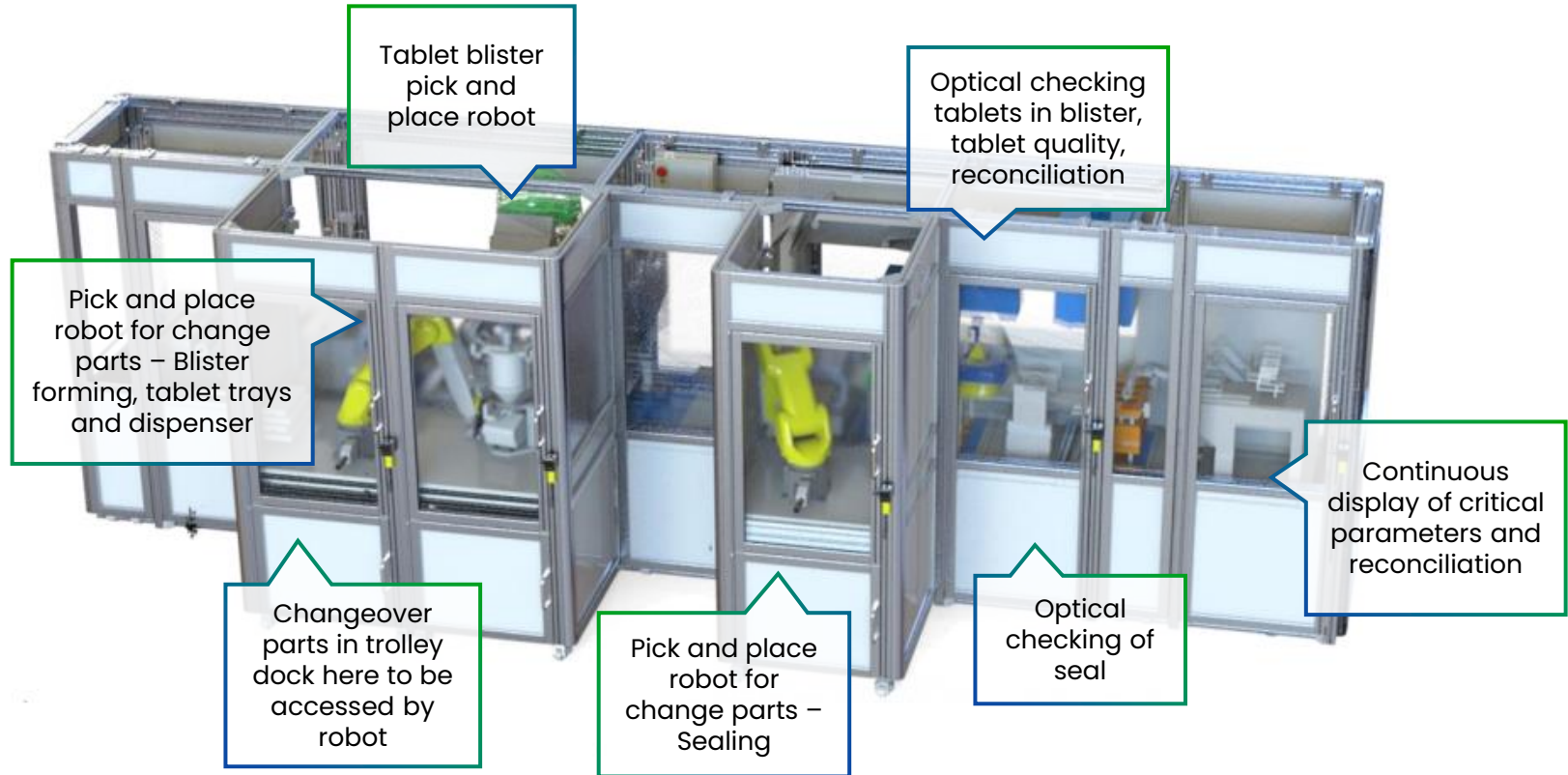


Reconfigurable Factory Environment



- Rapid reconfigurable and modular
- Facilitate small batch production
 - Smart Factory applications
 - FMCG and Pharma oriented
 - Delivered by supply chain

Rapid Reconfigurable Packing Line



Rapid Reconfigurable Packing Technology

Factorytalk Solutions



EBR

(Electronic Batch Record)

Web based Electronic Batch Recording

- Replace paper Batch records
- Automated production processes
- Built-in Analytic and Reporting
- QA Review by exception
- designed for GxP regulated manufacturing



Front Line Operations Platform

Manufacturing Application Platform

- Automatically collect and visualize Shop floor processes data
- Connect with IOT equipment, machines, sensors and SW integrations hub
- Replace paper processes

Other Supplier Solutions

DATAHONE

MOM

ULTIMO

CMMS

Dundas BI

QA Dashboard

Integration

- Smart sensors monitor line
- OPC UA Server links systems
- Tulip MES collects and displays production data
- BatchLine EBR receives Quality data

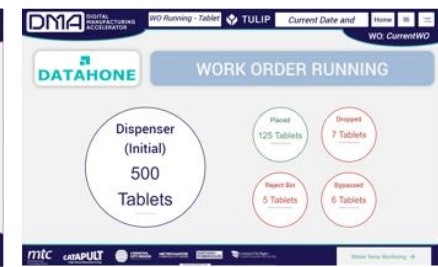


MES

- Cloud based, No Code IIOT Platform.
- Developed a selection of apps in collaboration with Factorytalk.
 - ERP replacement apps to facilitate easier maintenance of the demonstrator
 - Inventory management
 - Production execution
 - Interactive work instructions
- Integrated with Datahoney, BatchLine and DMA Virtual Factory



Interactive Work Instruction



Production Execution

Virtual Factory

- ICT solutions developed in Tulip to enable the demonstration of the Virtual Factory capabilities.
- Software in the Loop Simulation
- Blister Temperature Control
- Adaptive Scheduling



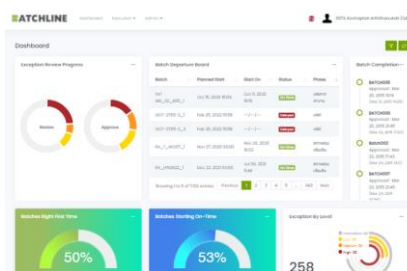
Blister Temperature Control



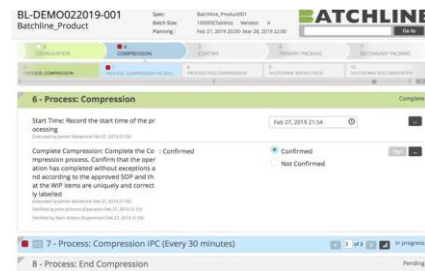
Adaptive Scheduling

EBR

- Cloud based Electronic Batch Record (eBR) system.
- Implemented by Factorytalk
- Designed specifically to meet requirements for GxP regulated production
- Integrated with Tulip production execution app



Batch Dashboard



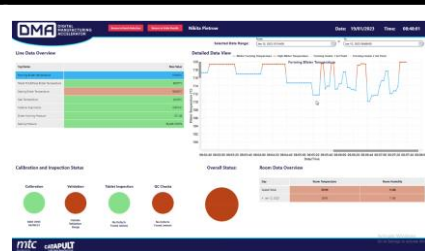
Example Batch Record

QA Dashboard

- Developed on DundasBI platform
- CPI supported the requirements capture, design and data content
- Allows review and interrogation of process data associated with a batch.
- Enabler for real-time batch release.



Batch Selection



Line Data Overview

What you can get from the DMA

- See demo's of the new tech. – Robots for changeover and tablet blister packing
- Rapid changeover with automated reconciliation
- Specify your own demos
- Sandpit to trial technology and products/systems
- See the technology described here

Summary

We have talked about a use case for an automated tablet packing line designed by the Manufacturing Technology Centre (MTC)

<https://www.the-mtc.org>

This is part of the Digital Manufacturing Accelerator (DMA) project. This shows how digitalisation is built in to allow full automation of the operation and collection of data.

The DMA is an initial 10-year partnership between the Liverpool City Region Combined Authority and the MTC to invest in and develop UK manufacturers and their workforce to successfully build global competitiveness.

Factorytalk+

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