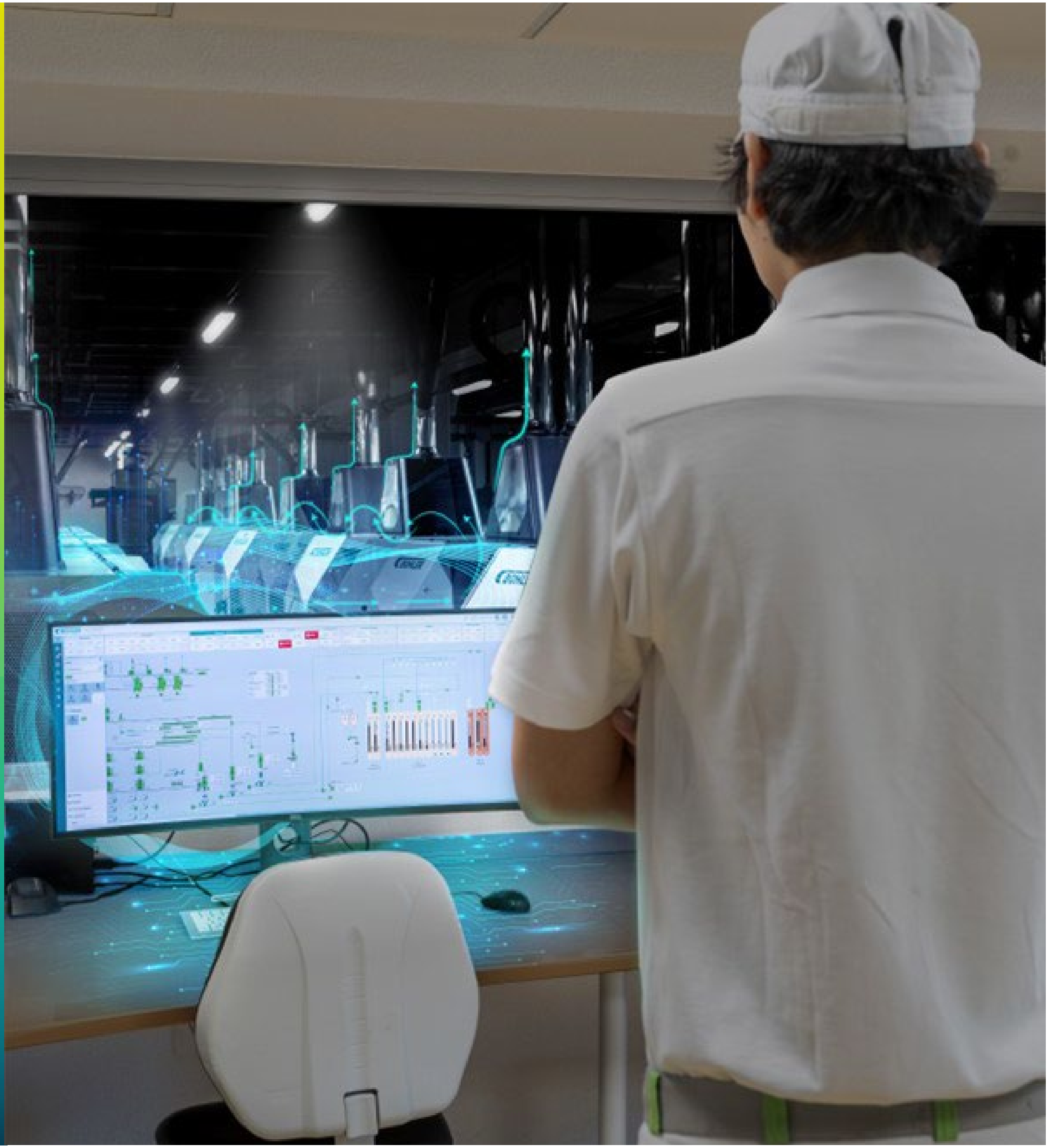
Digitalization & Automation Retrofits in Flour Milling



Agenda

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Roles:

- Business Development Manager for Automation and Digitalization
- Senior Sales Advisor for Automation and Digitalization
- Head of Sustainability in the business unit ‘Milling Solutions’

Education:

- Eidg. Dipl. Ingenieur FH Systemtechnik, NTB Buchs
- Master of Business Administration, FH St.Gallen
- MAS Innovation through IT, HSG St.Gallen

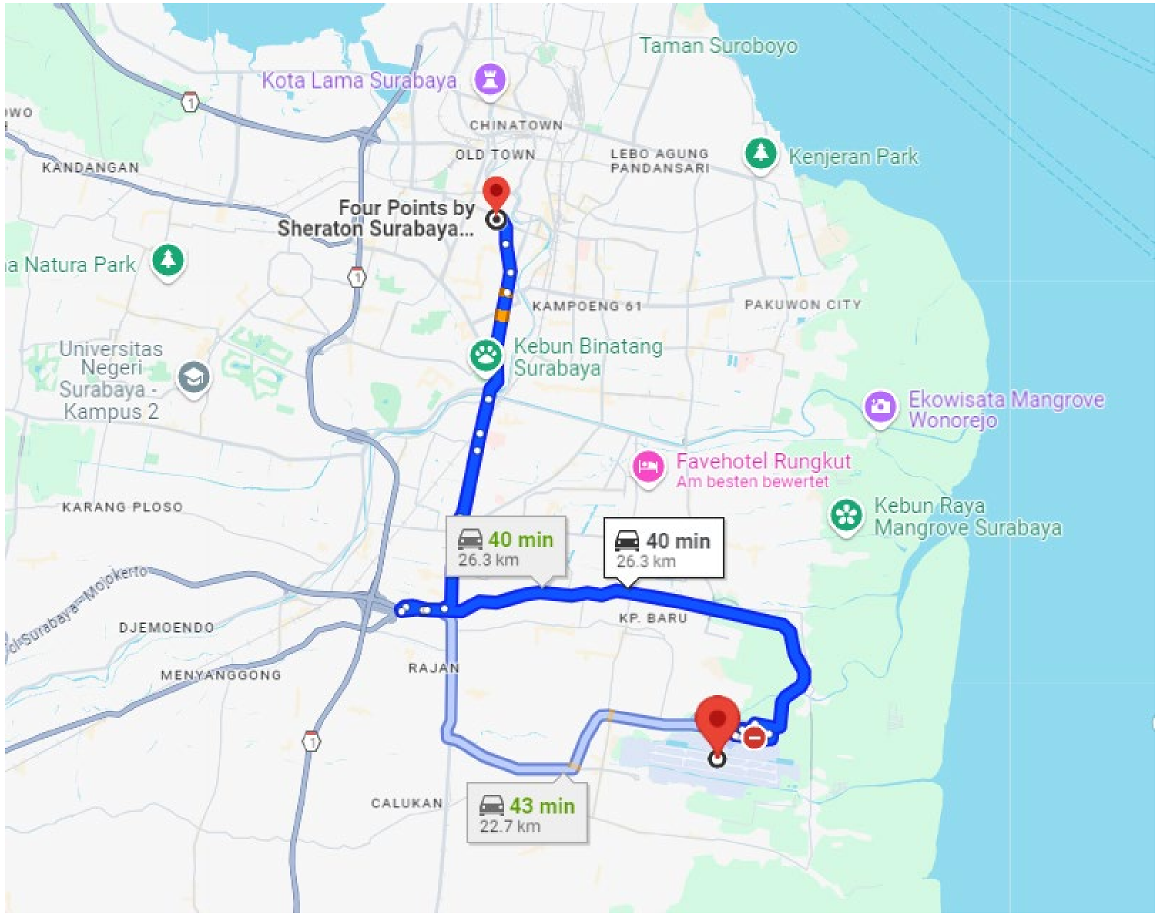
01

Not effective and inefficient operations

Google maps launched on 8th of February 2005

How did we find our way 20 years ago?

Today



Yesterday

How do we control a mill today?
How did we control mill’s 20 years ago?

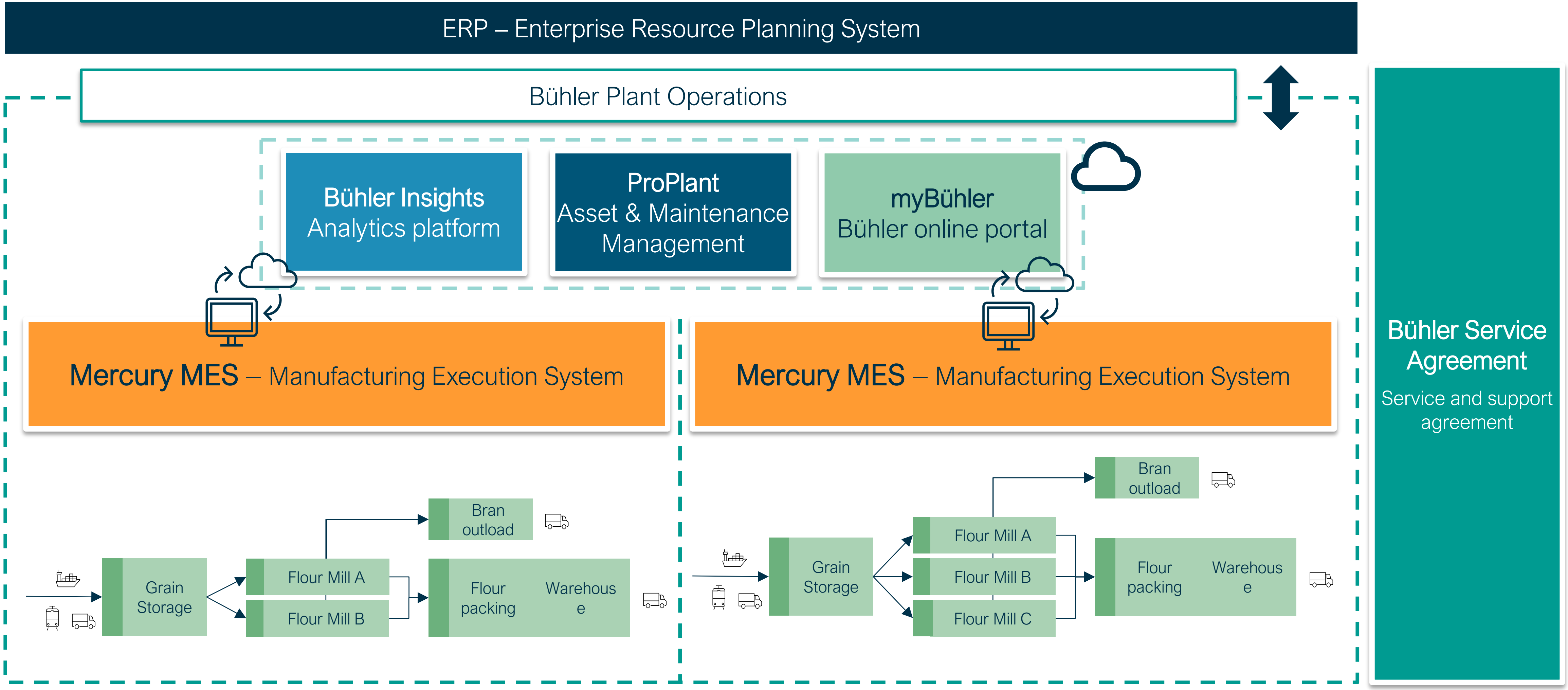
Today

Yesterday

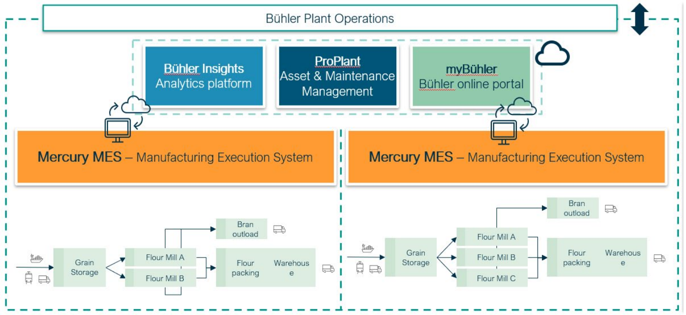
02

Operation excellence through smart interfacing

Bühler Automation & Digitalization
Bühler Plant Operations



Example 1; Seamlessly interfaced
Effective maintenance with efficiency measurements



ProPlant

Asset and Maintenance management

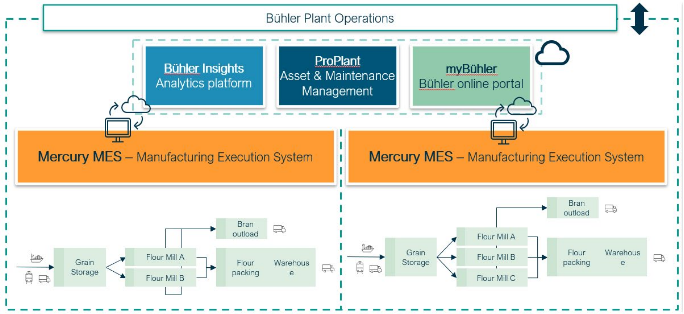
Mercury MES

Factory automation system

Bühler Insights

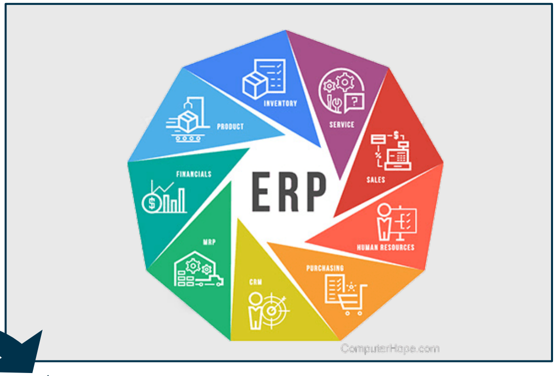
Analytics platform

Example 2; Seamlessly interfaced
Quality assurance and interface elimination



Mercury MES

Asset and Maintenance management

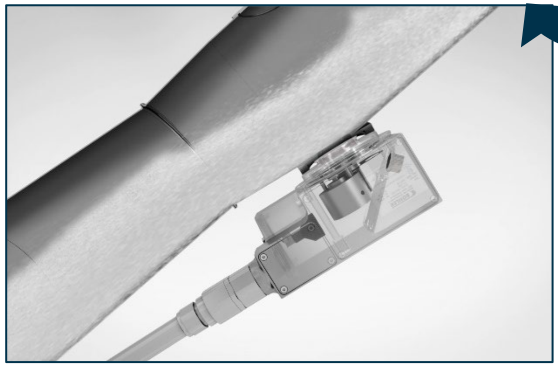


ERP

Asset and Maintenance management

Online multi NIR

Online quality sensor

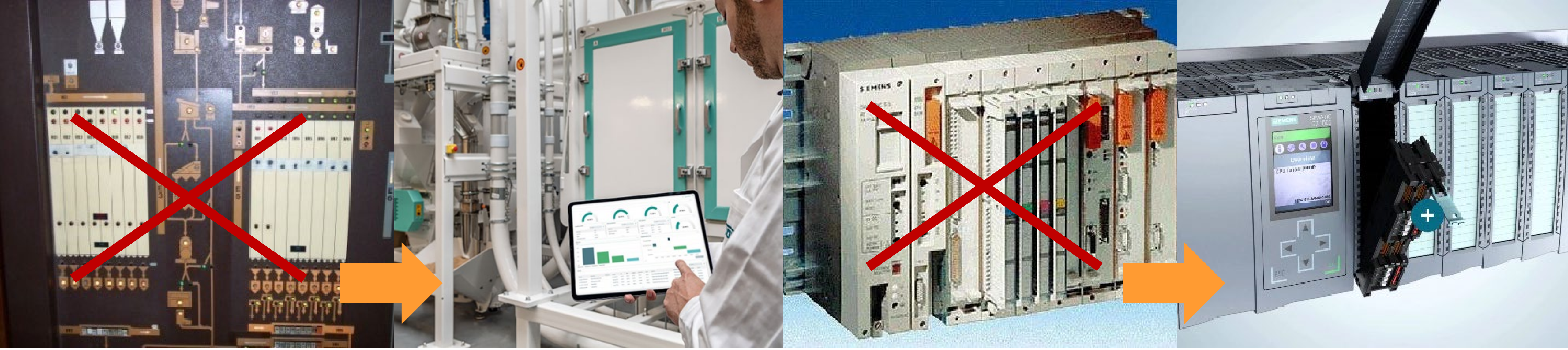


Laboratory equipment and/or LIMS

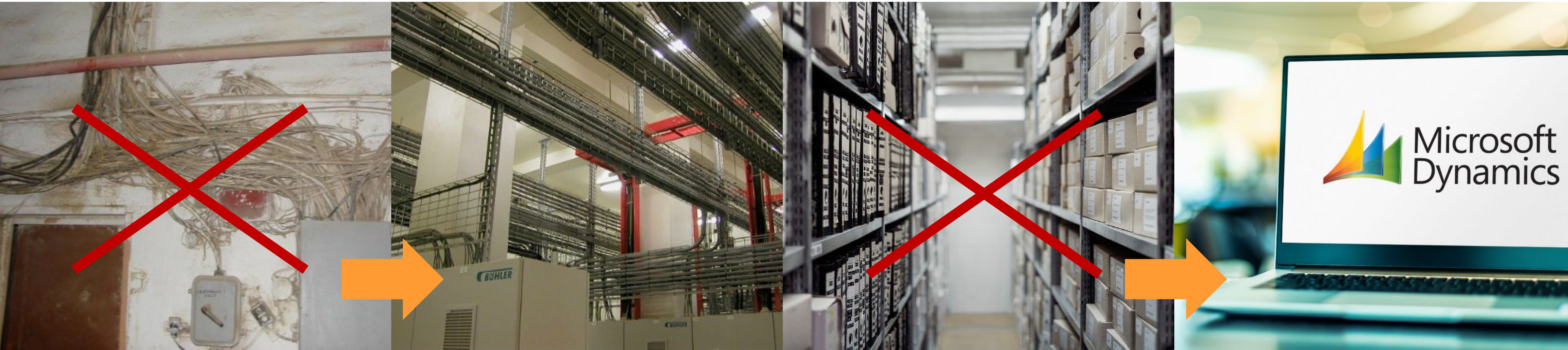
Asset and Maintenance management

03

Automation Retrofits



Automation modernization and services.
Why and when retrofit?



Automation Modernization
What skills are needed?

- Planning capabilities
- Execution capabilities
- Commissioning's within record times
- Local service engineering’s
- Local and online support 24/7

- Milling technology know
- Automation technology knowhow
- Milling business knowhow

Additional benefits as:

- Machine replacements
- Maintenance services
- Energy improvements
- Operation excellence

04

The SmartMill and its prerequisites

The SmartMill vision

SmartMill is a journey.
A journey to reach the target of **self-optimized mill**, aiming to achieve:

Self-optimize
Self-optimized processes combined to reach SmartMill vision

Assist
Reduced human intervention thanks to self-optimized key processes

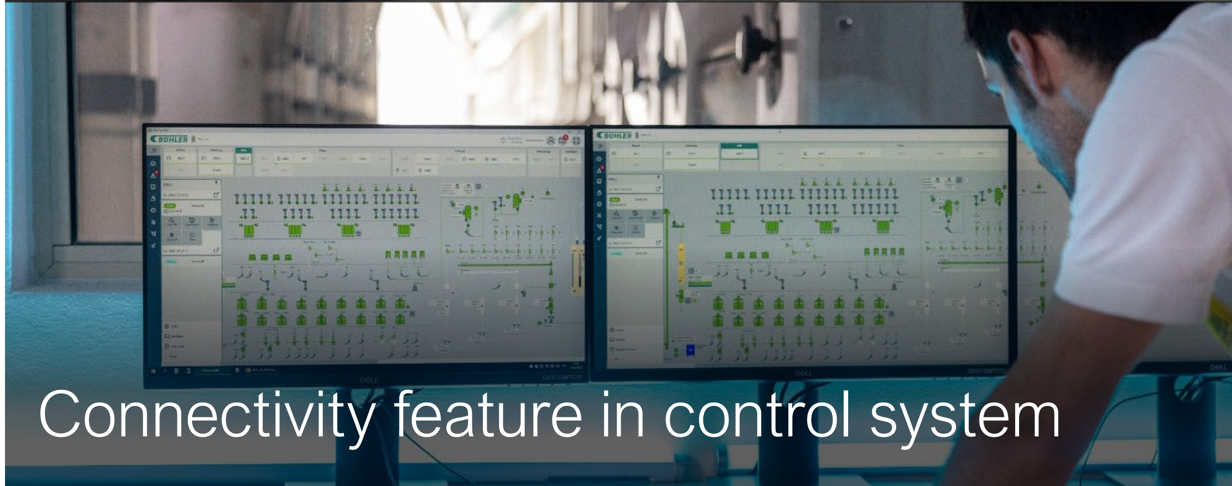
Monitor
Advanced analysis provides actionable insights for improvements and supports fact-based decisions

Connect
Making information digitally available by connecting machines, sensors, automation, etc.

Connect
Set the foundation for digitalization

- Connect enables you to collect invaluable data about your key equipment, process and end products
- Data analysis, process performance improvements and plant self-optimization cannot be achieved without connectivity and data readiness

Connect is the must-have step to prepare for the future SmartMill journey



Monitor
Gain production insights

- Monitor allows you to gain advanced production insights through assembling gathered data into comprehensive visualizations and analyses

- Straightforward dashboards on yield, quality, machine conditions, operational efficiency and more bring you operational transparency

Assist
Analysis-based smart processes

- Assist enables you to trigger automatic process optimizations based on data analysis results
- Allow your mill to gain a high level of autonomy through self-optimized smart processes, which reduces the risk of human errors

Data collection and operation analysis are pre-requisite steps to develop smart processes.

Example: Color Loop

Data from optical sensors is used to optimize blending through automated control, enhancing data-driven actions and boosting customer profits.

Self-optimize
Smart processes combined

- Connect all captured data and smart processes to enable a data-driven self-optimization process
- Self-adjusted production to keep optimal operation with minimum CO_2e footprint

To reach ultimate level of mill intelligence, previous three steps are pre-requisite: Connect-Monitor-Assist

Self-optimized mill

An intelligent mill that can optimize production and operations based on real-time data feedback, from raw material handling to final product treatment.

Conclusion

SmartMill is a journey.
A journey to reach the target of **self-optimized mill**, aiming to achieve:

Maximum yield with highest cost efficiency

Maximum energy efficiency and minimum environmental footprint

No deviation from target quality and maximum availability for elaborated mill design in autonomous way

To learn more about SmartMill, please scan the QR code.

INNOVATIONS FOR A BETTER WORLD