

zenonIZE 23

Inspiration Days for COPA-DATA Customers, Partners & Friends



Batch Control

...and why you should use it!

Andreas Langer | 14. JUN. 2023





AGENDA

- 1 Brief Introduction
- 2 Expertise & Relationship
- 3 Focus Batch Control
Pains | Explanation | Value | References
- 4 Our Conclusion & Vision

1 Brief Introduction

*Who we are &
what we do @*



Introduction

Who we are

70+ motivated Employees

Founded in 1990

Liestal, Switzerland

Continuous Education

Active Transfer of Know-how

Extensive GxP Experience

Company Culture of Innovation

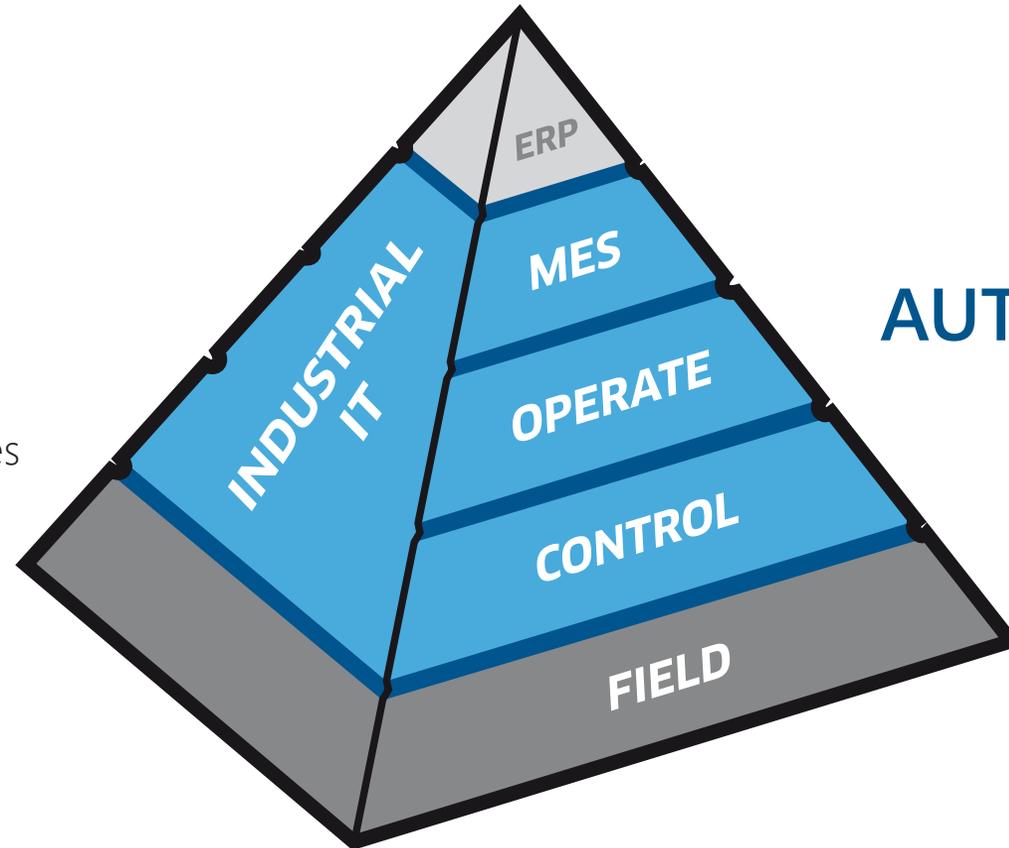


Introduction

What we do

Solving our Customers Challenges
By creating sustainable Solutions
Based on State-of-the-Art Technology
Within the Automation Environment
Including Higher Level Systems
and High Available Industrial IT Backbones

Taking Care during Life Cycle
Monitoring and Maintaining Systems
Training and Support to People



AUTOMATION & IT

Regular exchange and mutual support within various Partnerships



Introduction

Which Customers and Industries



Introduction

Who am I

Andreas Langer

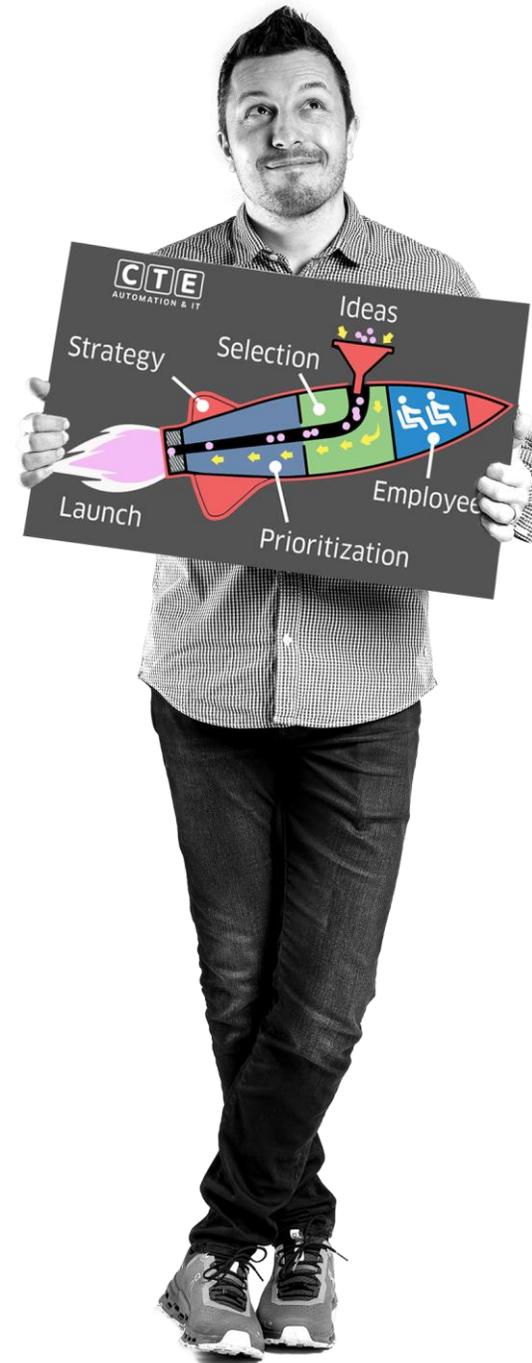
Chief Operating Officer
Head of Research & Development

20 Years Experience in Process Automation

eMBA "Innovation Management"

Cert. Eng. "Information & Communication Technologies"

Appr. "Process Control Electrician"



2 Expertise & Relationship

Why was CTE asked to take the stage?

Expertise & Cooperation

Experience in Batch Control – Taking a look back

Our solutions aim to offer our customers **the greatest possible flexibility** in the automation of process systems.

That's why we basically create our software with a **modular basic function structure (EQM)**.

HOWEVER: The SCADA systems **did not contribute with their own recipe controls** to trigger the EQMs automatically.

To enable this, CTE developed its **own recipe control system** more than 20 years ago.

The added value was recognised and also desired by various customers and was therefore further **developed for different PLCs**.



Expertise & Cooperation

Experience in Batch Control – Taking a look back

Maintenance of own software became **more and more extensive**

“Game Changer” in 2013

Successful Synergy of “COPA-DATA & CTE”:

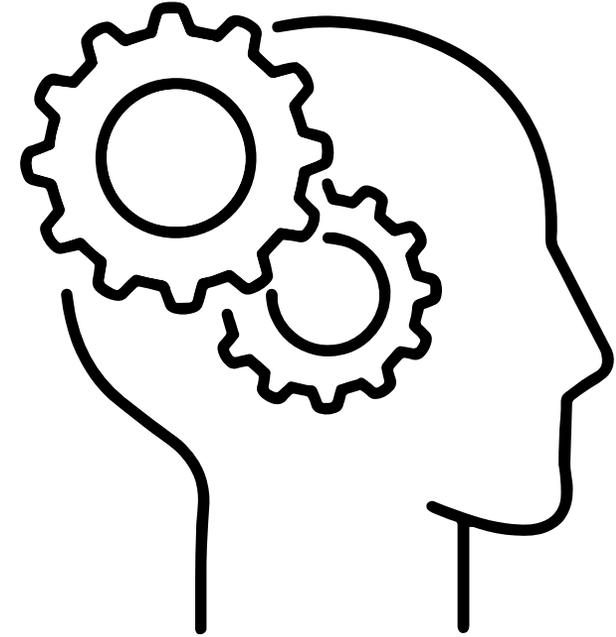
COPA-DATA wanted to **build up a Batch Control Feature** and
CTE **preferred supporting 3rd party** to concentrate on the core business

→ Active Transfer of Know-how from CTE to COPA-DATA

COPA-DATA developed a **“simple” batch control module based on the CTE recipe handler** → Matrix-Editor

The consistent further development to the PFC editor (Procedure Function Chart) **enabled a complex batch control**, which was previously only available to large DSCs.

Intensive exchange of experience **“COPA-DATA - CTE – Customer”** during development



Expertise & Cooperation

Close Cooperation

With many successful projects,
the cooperative development of the Batch Control more than 10 years ago
and the current development of the SOL-PA
(Smart Object Library for Process Automation)



we were allowed to become a proud
COPA-DATA Gold Partner in 2023



3 Focus Batch Control

Why everybody should take a look into Batch Control?

Customer Pains

Especially when it comes to Process Automation

Less Process Continuity

Process Steps should be handled the same – every time

No automated or coordinated turn to next process sequences

Error-proneness of Parameterization

Setpoints, Options, Start-Up Sequences should not vary

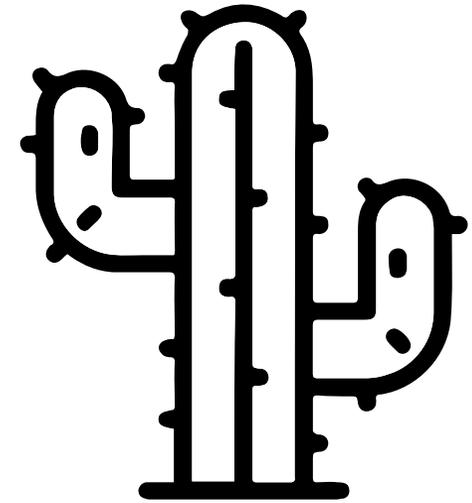
Misunderstandings driven by different Labels in SOP and HMI

Pressure to Improve Quality and Efficiency

The pressure on development and production sites is high

Equipment Efficiency and Product Quality must be constantly optimized

The Solution: Batch Control Module



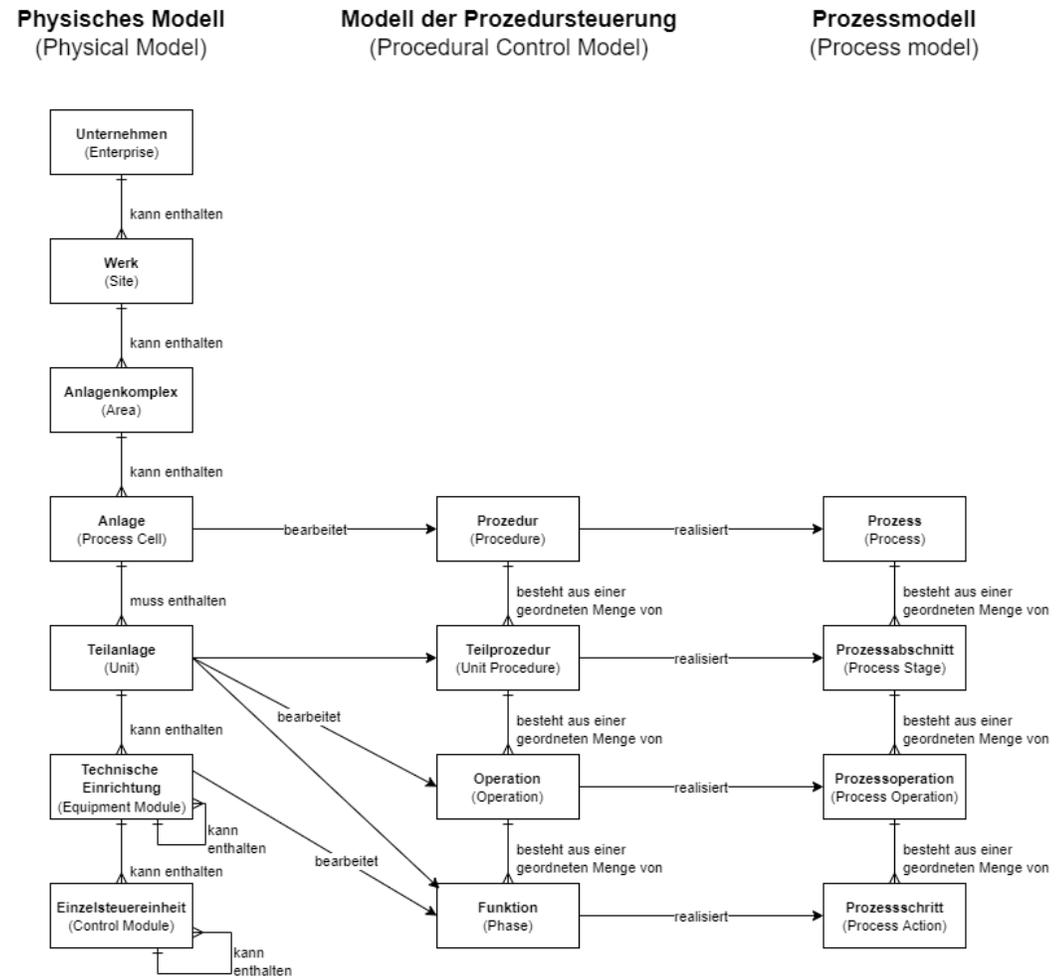
What is Batch Control

Briefly Explained

Batch Control is defined in the ANSI/ISA-88 Standard

It is designed to **guide engineering** from procedural and automation side

A basic principle of batch control is the **separation of procedural control from plant control** respectively the physical model.



Source: «wikipedia.org/wiki/ISA-88»

What is Batch Control

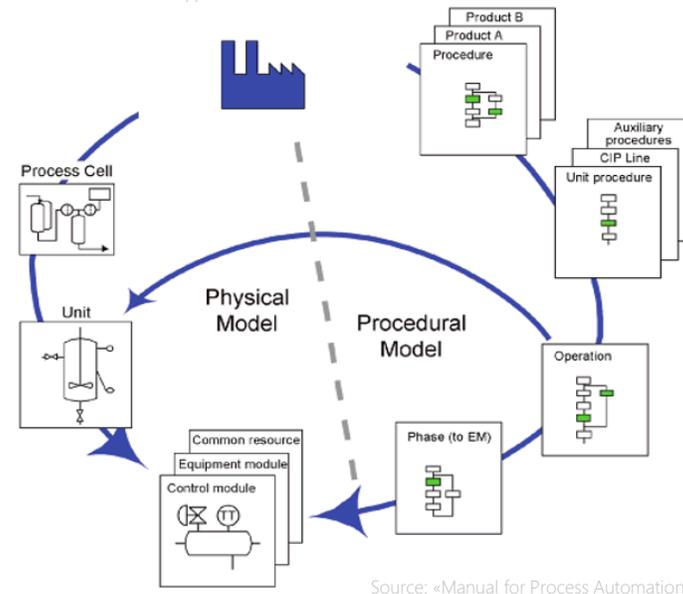
Compared to the plant controllers

Automation Software on physical side is providing **general functionality of Equipment and Devices**

- Tempering/Mixing/Pressure
- Feeding/Transfer
- Bubble-Trap/Refill

Functionality is typically **executed on PLCs** due to reliability

PLC could also be about **coding**

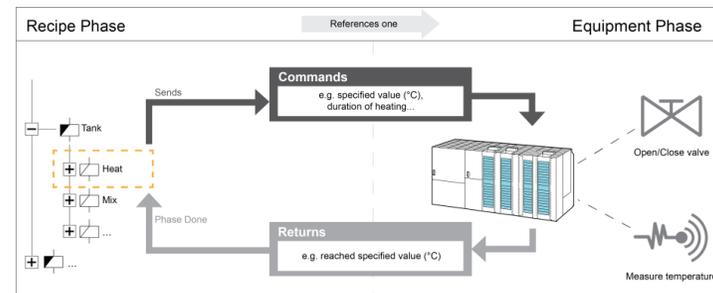


Based on that Physical Model, Batch Control Systems bring in any **procedural process needs**

- Sanitization
- Distillation
- Filtering

Batch is often **executed on PCs** due to complexity & connectivity

Batch is about **configuring or even Parameterization**



Value Proposition

What you will instantly like about it

Major benefit: The product is always produced in the same quality, there is no deviation from the standard

- Rapid revision of procedures, done by **trained process responsible staff**.
No need for automation engineers
- Perfect **Process Overview & Simple Operator Prompts** out of the Box
- Extend your initially designed procedures also with useful **“Non-Production” Recipes** like
 - Cleaning & Sanitization (CIP/SIP),
 - Preparing Equipment (Inerting & Pre-Tempering)
 - Coordinated shut down of whole production areas

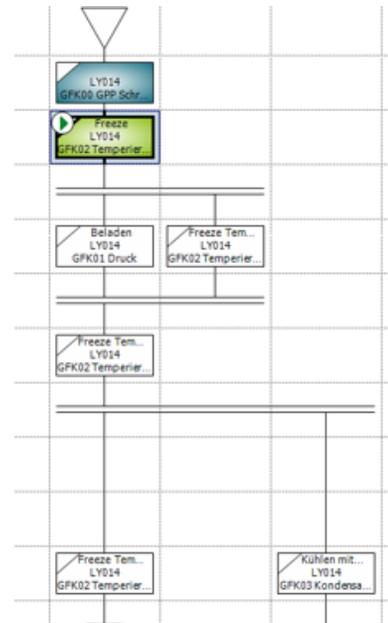
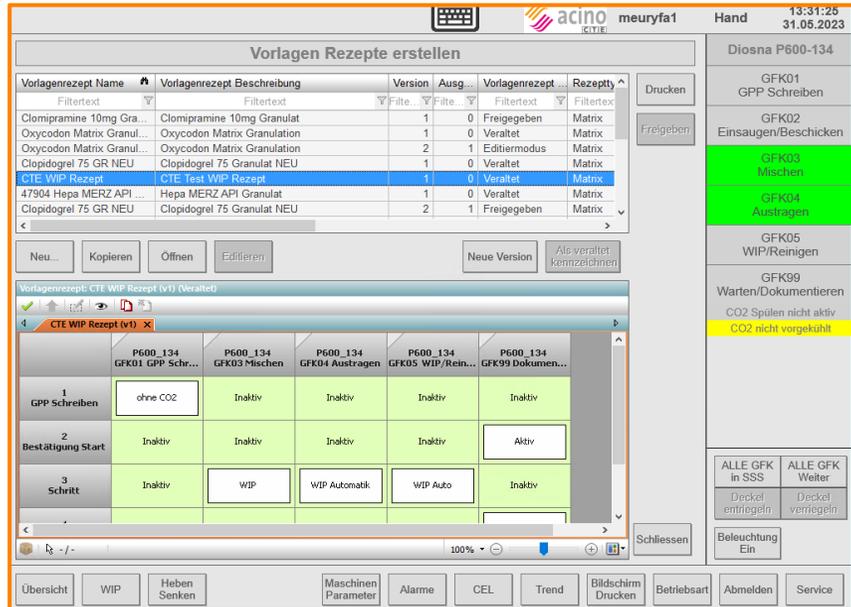


Examples & References

Where we used zenon Batch Control in very different ways

Batch Control has been applied successfully for 10 years predominantly in the pharmaceutical industry

Flexible way of use to the needs of our customers from simple matrix-driven equipment to complex PFC-driven productions with centralized multi-client recipe station



Thanks to
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AUTOMATION & IT

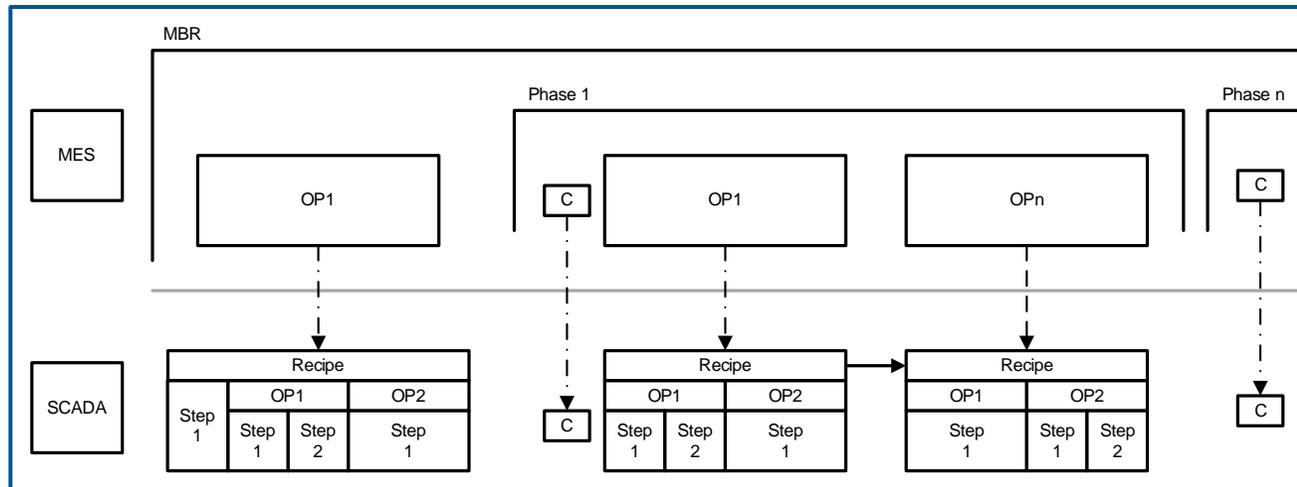
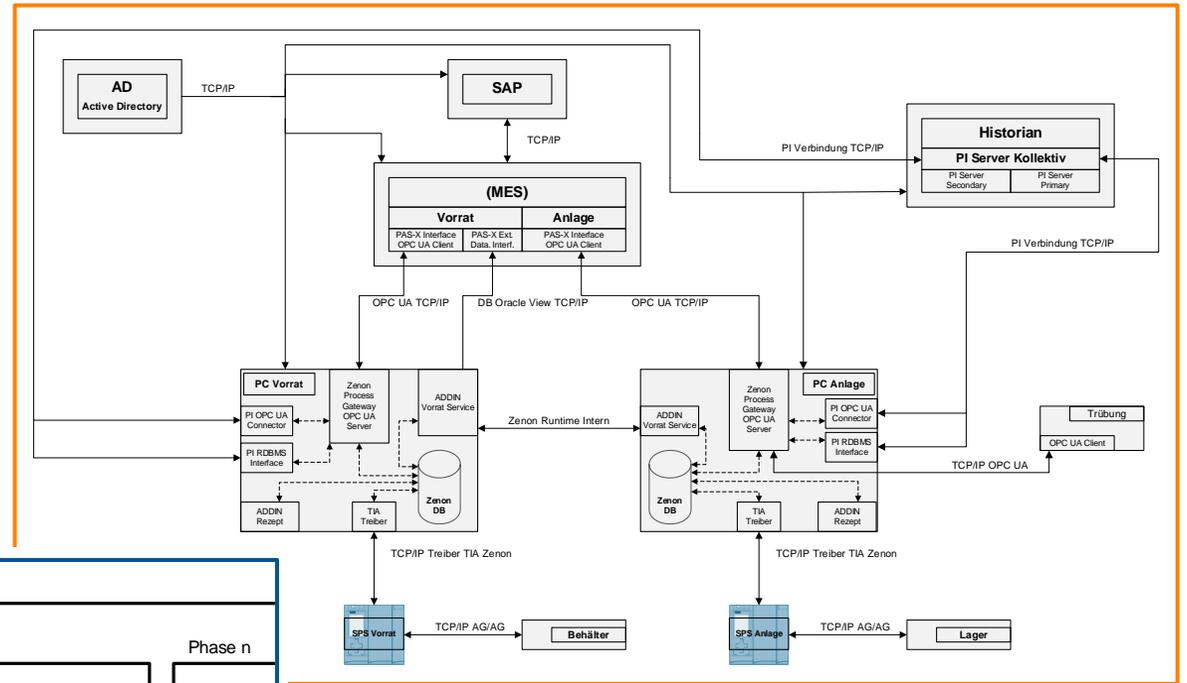


Examples & References

Where we used zenon Batch Control in very different ways

Loose- to tight-fitting connections
to higher level systems like MES & PIMS

Handover Setpoints, starting recipes
and reporting results & exceptions



Examples & References

Where we used zenon Batch Control in very different ways

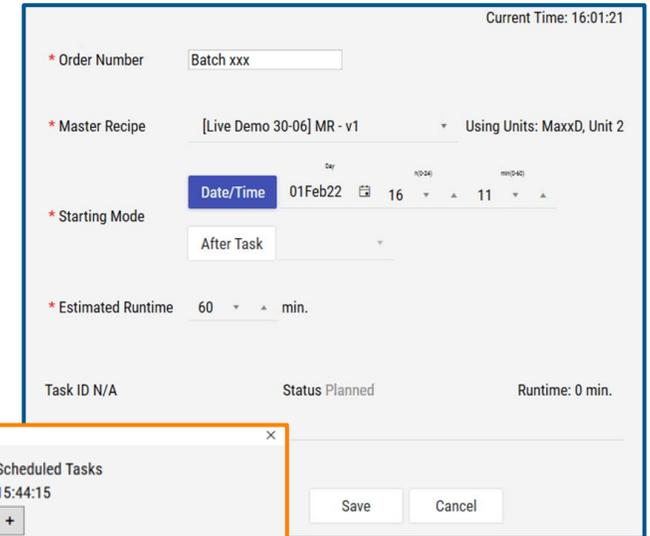
If standard Batch Control Features are not enough
feel free to bring in own solutions

CTE developed a "Production Scheduler"
using the zenon API

- Calendar (Date/Time) based start triggers
- Multiple Equipment
- Automated start of next Production Cycle

Customized solution
especially for shorter recipe runs

→ Even more efficient production and plant control



Current Time: 16:01:21

* Order Number: Batch xxx

* Master Recipe: [Live Demo 30-06] MR - v1 Using Units: MaxxD, Unit 2

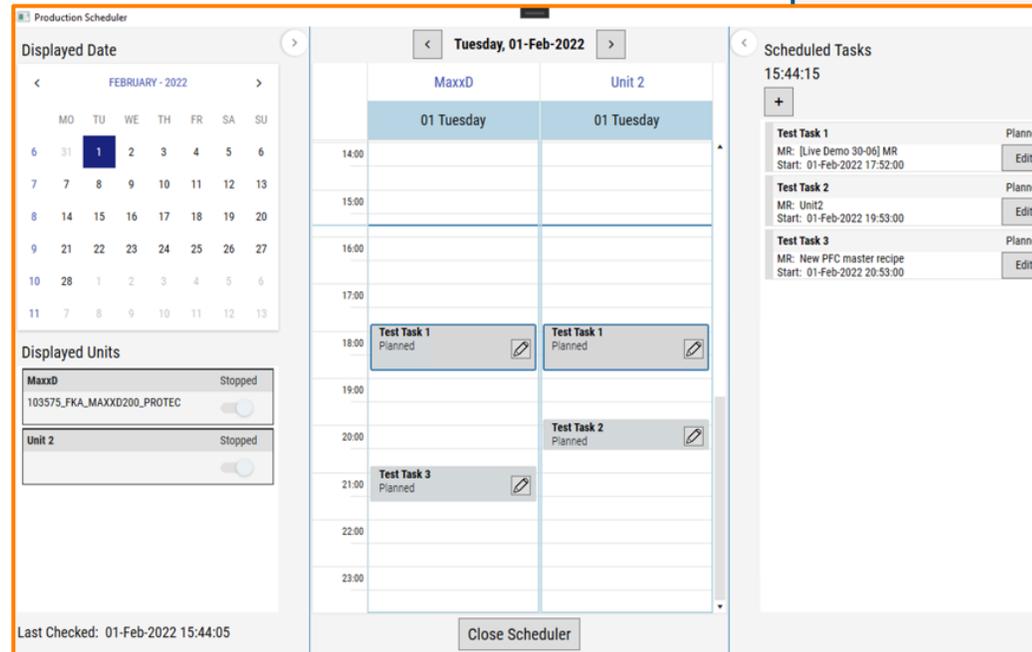
* Starting Mode: Date/Time 01Feb22 16:11

After Task

* Estimated Runtime: 60 min.

Task ID N/A Status Planned Runtime: 0 min.

Save Cancel



Production Scheduler

Displayed Date: FEBRUARY - 2022

MO TU WE TH FR SA SU

6 31 1 2 3 4 5 6

7 7 8 9 10 11 12 13

8 14 15 16 17 18 19 20

9 21 22 23 24 25 26 27

10 28 1 2 3 4 5 6

11 7 8 9 10 11 12 13

Displayed Units

MaxxD Stopped
103575_FKA_MAXXD200_PROTEC

Unit 2 Stopped

Tuesday, 01-Feb-2022

Time	MaxxD	Unit 2
14:00	01 Tuesday	01 Tuesday
15:00		
16:00		
17:00		
18:00	Test Task 1 Planned	Test Task 1 Planned
19:00		
20:00		Test Task 2 Planned
21:00	Test Task 3 Planned	
22:00		
23:00		

Last Checked: 01-Feb-2022 15:44:05

Close Scheduler

Scheduled Tasks 15:44:15

- Test Task 1: MR: [Live Demo 30-06] MR Start: 01-Feb-2022 17:52:00
- Test Task 2: MR: Unit2 Start: 01-Feb-2022 19:53:00
- Test Task 3: MR: New PFC master recipe Start: 01-Feb-2022 20:53:00

Connectivity to Upper Level

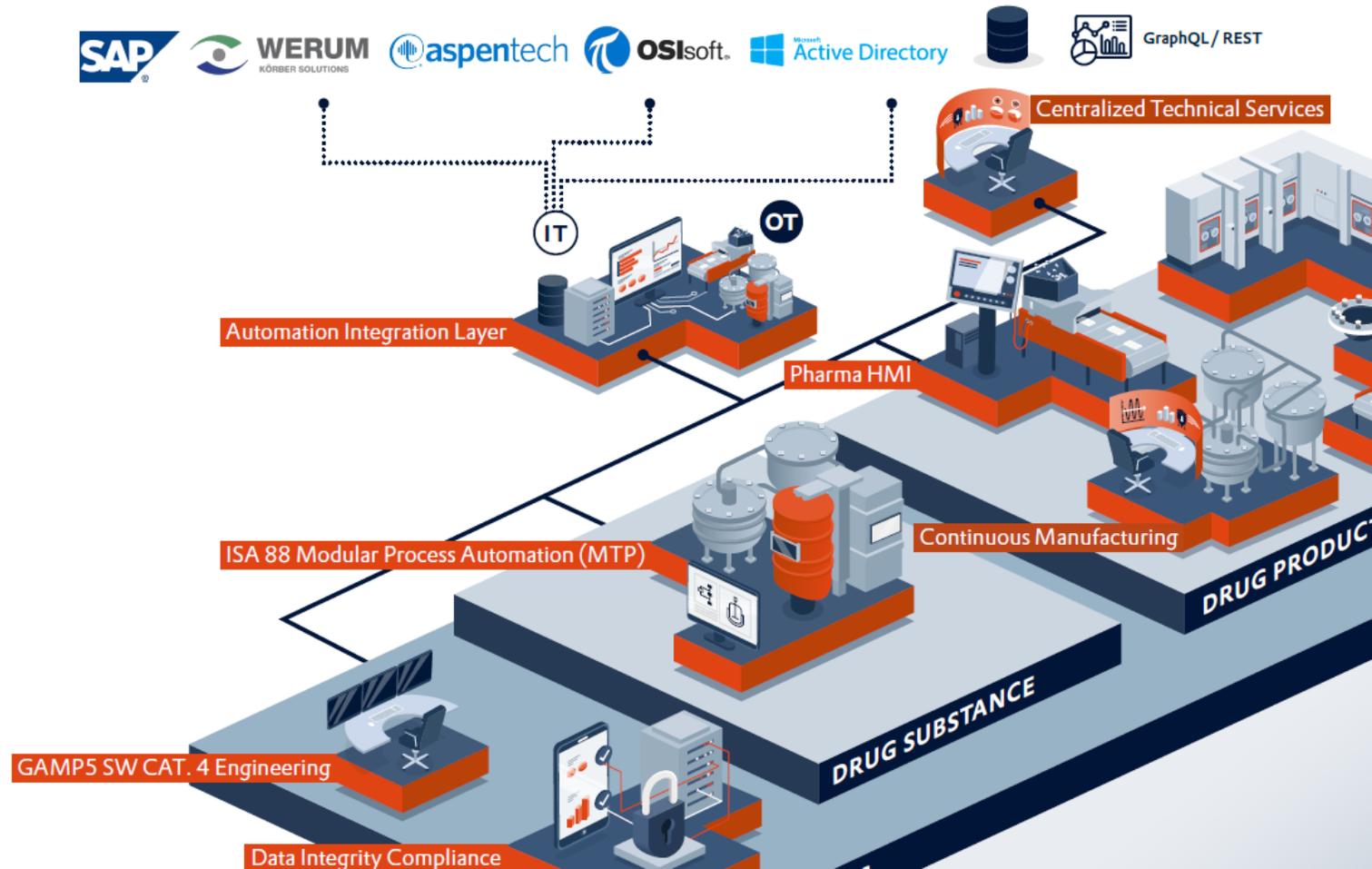
How to get Batch Data to C-Level

OPC-UA (including Alarms & Conditions Profile)

MES MSI Interface cooperating
with Körber (Werum/PAS-X)

Integrations to common PIMS/Historians

Reports with internal Report-Engine or
3rd-Party Tools using SQL or REST



4 Conclusion & Vision

What we would recommend and try to actively shape

Our Conclusion

You should use Batch Control Systems

- ✓ **Improved product consistency**
 - ✓ ensures consistent product quality by defining precise process sequences and control parameters
- ✓ **Increased flexibility**
 - ✓ allows for easy modification and reusability of recipes, enabling you to adapt to changing market demands
- ✓ **Enhanced Equipment Efficiency**
 - ✓ optimizes resource utilization, reduces manual intervention, and minimizes production downtime
- ✓ **Regulatory compliance**
 - ✓ Following the ISA-88 standard helps organizations meet regulatory requirements and maintain documentation for audits

That requires a consequent
ISA-88 Design of Automation Software
& Process Equipment

If you do so, you will also enjoy
a **higher reusability of software Modules**
and **MTP Readiness**

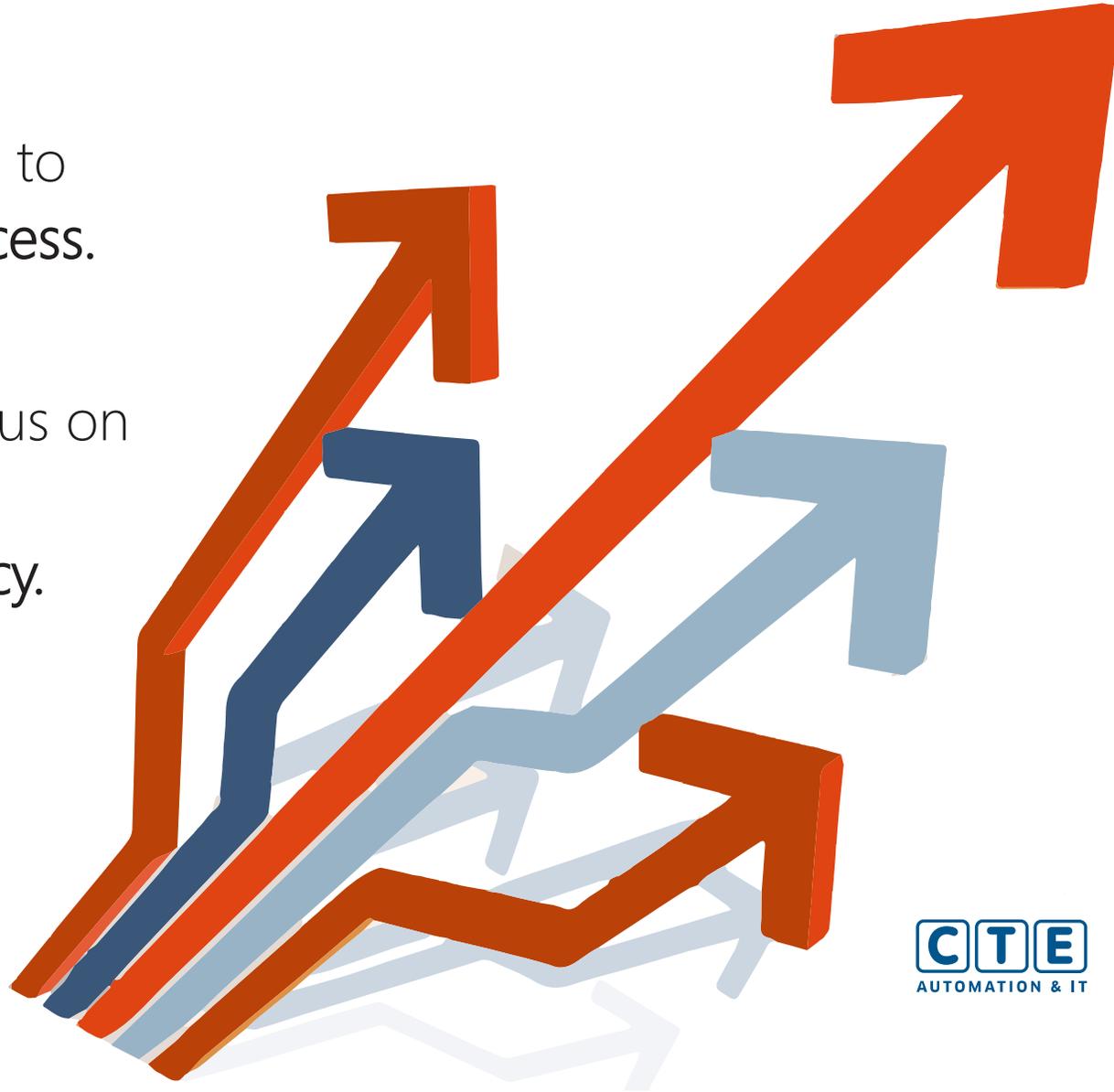


Our Vision

Why we do what we do

Machines should be enabled to control and monitor the process.

Human resources should focus on process design, analyse and optimize quality and efficiency.



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Inspiration Days for COPA-DATA Customers, Partners & Friends

Really no Rocket Science if you follow the rules...

...but we would also like to
guide and support you !

Talk to our experts: cte.ch | info@cte.ch

www.copadata.com/zenonize23 | zenonize@copadata.com





PEOPLE THINK
IT'S MAGIC.
WE CALL IT
ENGINEERING.

CTE
AUTOMATION & IT