



The future of MES & Digital Operations

IndustryXtalk, Barcelona – 2025, November 20th

KPMG for **IndustryX** **Talk**^{EU}



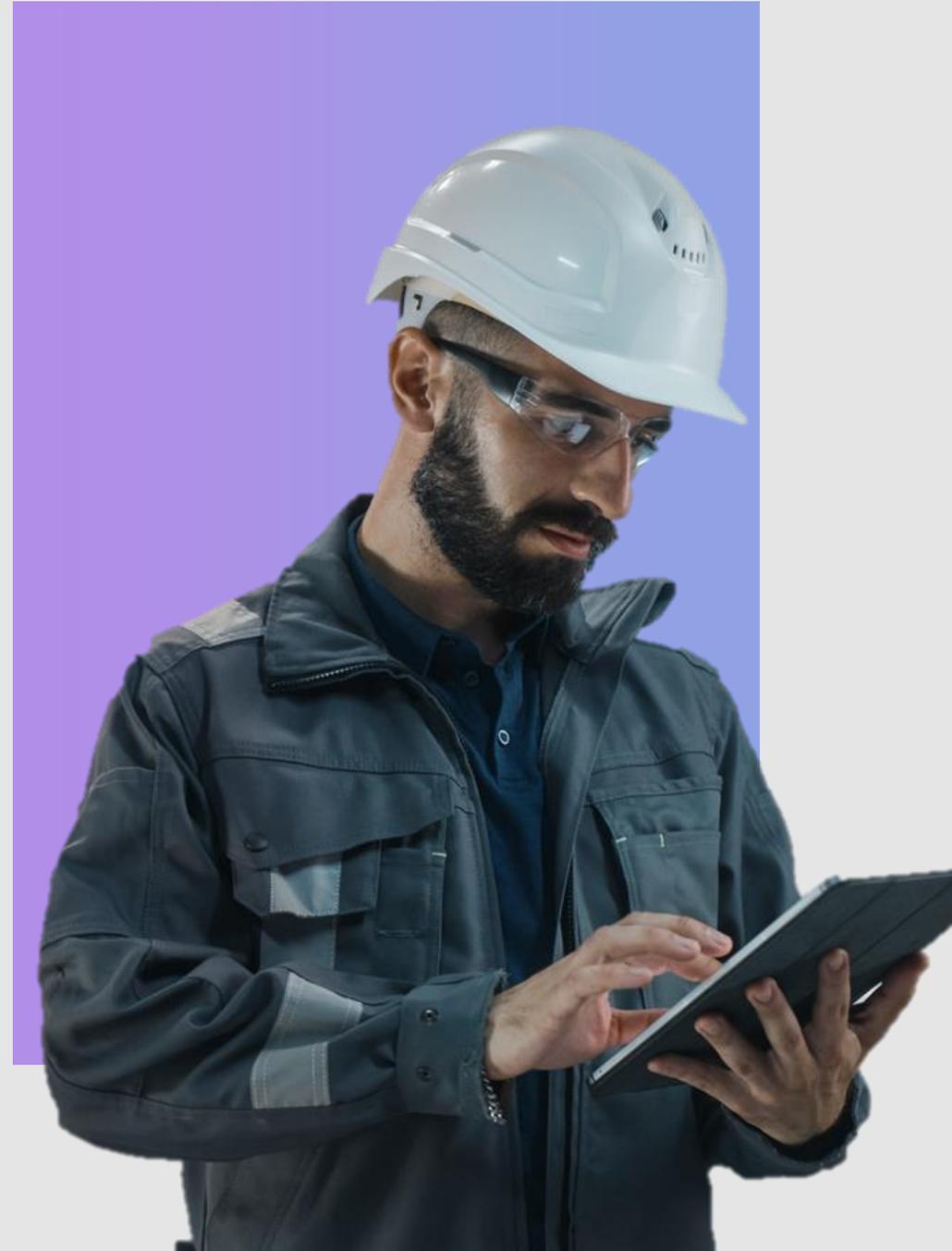
Pierre Skapski



**Director Digital Operations
4.co community Leader**



Building organizations and IT / OT architectures for Digital Operations



How do we operate Digital Operations?

MES, the starting point of Digital Ops, as normalized ...

MES
functionalities as
described by
ISA95



Data collection
& acquisition



Scheduling



People
management



Resources
management



Production
tracking



Traceability &
genealogy



Quality
execution



Process
management



Performance
analysis



Documentation
management

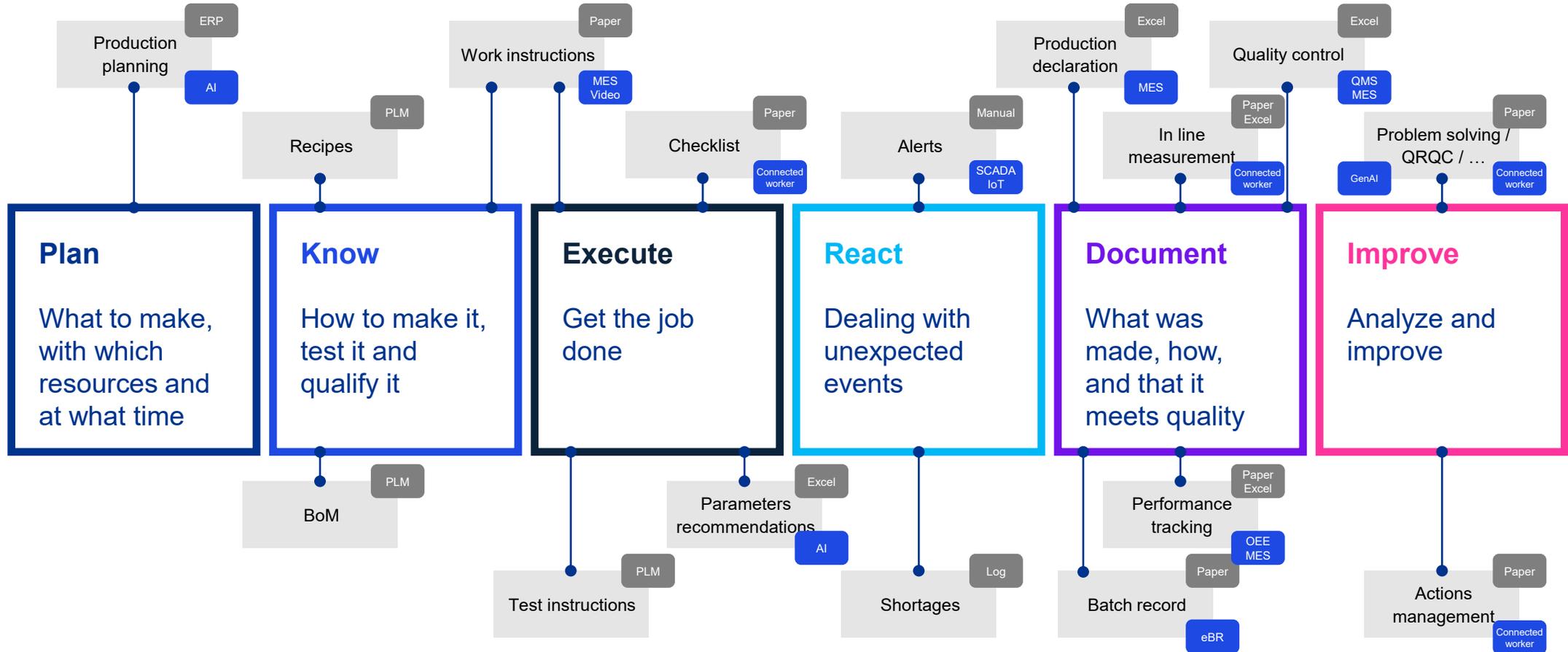


Maintenance
management

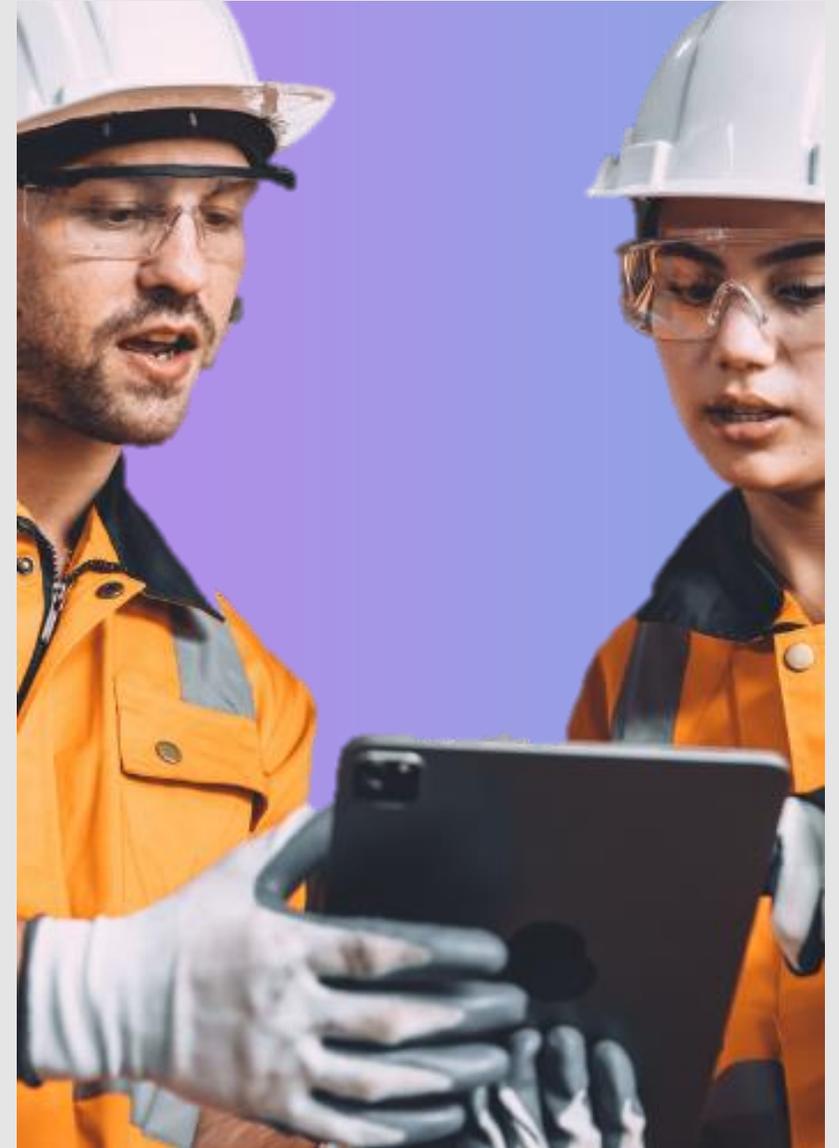
How do we operate Digital Operations? ... versus manufacturing requirements as in real life



In a constantly evolving technology environment



**In this context, how do we
bring up the right information
to the right person at the right
moment and the right place?**

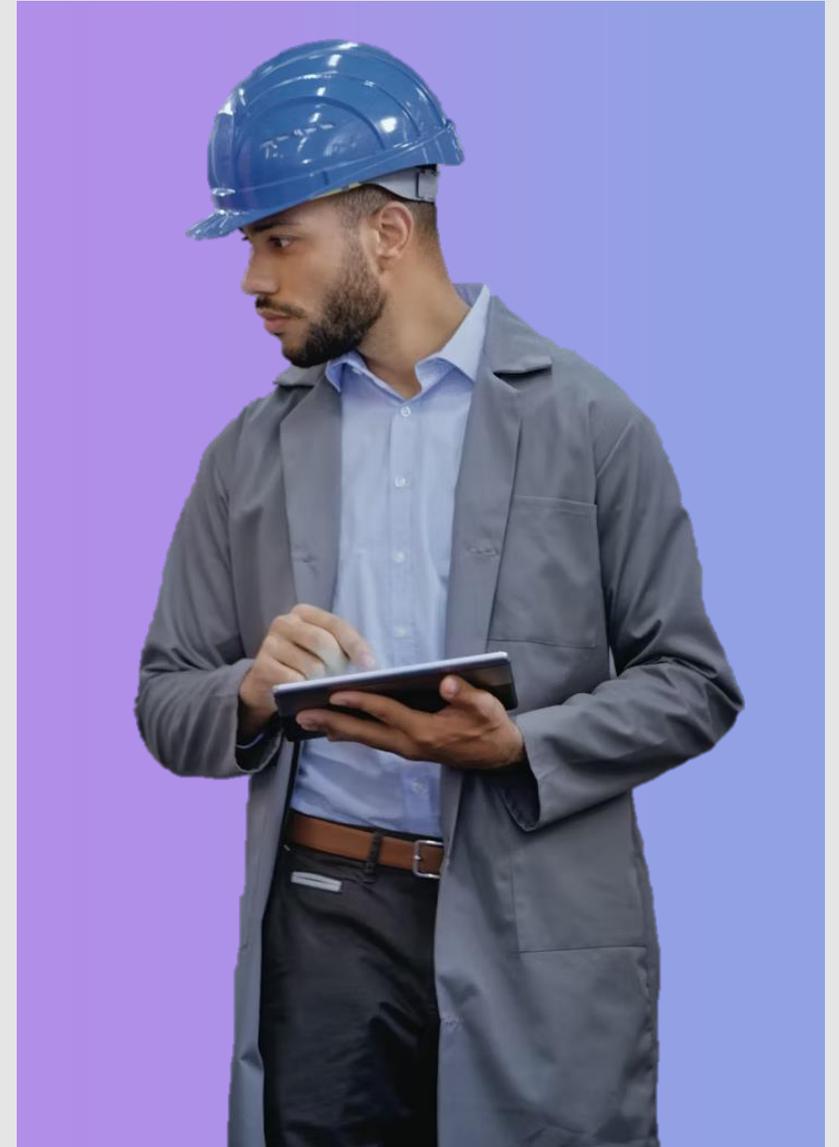


3 priorities for the future of MES & Digital Operations

Real time data
to support
decisions

Embedded
intelligence

Tailor-made
applications





Real time data
to support
decisions

Improve **reactivity** by transitioning
from decisions based on past data
to **real time insights**

From traditional process control ...

Sampling

A posteriori

Based on
product
analysis

... to real-time & data based

Systematic

In process

Based on
process data



Embedded
intelligence

Develop **field teams capabilities**
by moving from **transactional**
systems to analytics and
conversational capabilities



Machine learning & GenAI combined to support field teams

Order ID	Work Centers	Material / Version	Material Description	Release Status	Execution Status	Order Quantity	BOM / Version	Planned Start/End	Scheduled Start/End	Delivered Quantity	Sequence Indicator
100000000354	SP_C_MXK Detail	SP_C_SP01 / ERP001	PPG paint PINK	Released	Discarded	200.000 L	100000000354- SP_C_SP01-1-1 / A	Jan 3, 2024, 12:00:00AM Jan 4, 2024, 12:00:00AM	Jan 3, 2024, 6:00:00AM Jan 3, 2024, 8:00:00AM	200.000 of 20	➤
100000000555	LINE_1 Detail	NESPRESSO_V OLLUTO / ERP001	Nespresso Voluto Coffee	Releasable	Not In Execution	100 PC	100000000555- NESPRESSO_V OLLUTO-1-17 A	Feb 23, 2024, 4:41:33AM Feb 23, 2024, 4:41:33AM	Feb 23, 2024, 4:41:33AM Feb 23, 2024, 4:41:33AM	0 of 100 PC	➤
100000000554	LINE_1 Detail	NESPRESSO_V OLLUTO / ERP001	Nespresso Voluto Coffee	Releasable	Not In Execution	100 PC	100000000554- NESPRESSO_V OLLUTO-1-17 A	Feb 23, 2024, 12:00:00AM Feb 23, 2024, 12:00:00AM	Feb 23, 2024, 12:00:00AM Feb 23, 2024, 12:00:00AM	0 of 100 PC	➤
100000000553	LINE_1 Detail	NESPRESSO_V OLLUTO / ERP001	Nespresso Voluto Coffee	Released	Active	100 PC	100000000553- NESPRESSO_V OLLUTO-1-17 A	Feb 23, 2024, 12:00:00AM Feb 23, 2024, 12:00:00AM	Feb 23, 2024, 12:00:00AM Feb 23, 2024, 12:00:00AM	0 of 100 PC	➤
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100000000551	LINE_1 Detail	NESPRESSO_V OLLUTO / ERP001	Nespresso Voluto Coffee	Released	Not In Execution	100 PC	100000000551- NESPRESSO_V OLLUTO-1-17 A	Feb 23, 2024, 12:00:00AM Feb 23, 2024, 12:00:00AM	Feb 23, 2024, 12:00:00AM Feb 23, 2024, 12:00:00AM	0 of 100 PC	➤
100000000550	MIXING01,BTL NG01	CH_C_002 / ERP001	Carbonated Beverage	Released	Not In Execution	1.000.000.000 L	100000000550- CH_C_002-1 / A	Feb 23, 2024, 12:00:00AM Feb 26, 2024, 12:00:00AM	Feb 23, 2024, 6:00:00AM Feb 23, 2024, 8:25:27AM	1.000.000.000	➤

Workorder risk rating based on historical patterns



Production chatbot to manage exceptions

Workorder 554 is rated red. Why ?

Based on the historical data, there is a risk of assembly with components coming from press 017 (lot nb. 67X23) when mounted on support provided by supplier Alpha (lot nb. ALP1891). Do you want me to look for an alternative?

Yes

Processing available components and workorders ...

There is 1 lot of matching component available from press 011. Switching won't impact the workorders. Do you want me to prepare an exception declaration for you?

Yes

Below is the exception declaration justifying the change of component. You can review it and validate it. Validation is nominative and will include your electronic signing.

...



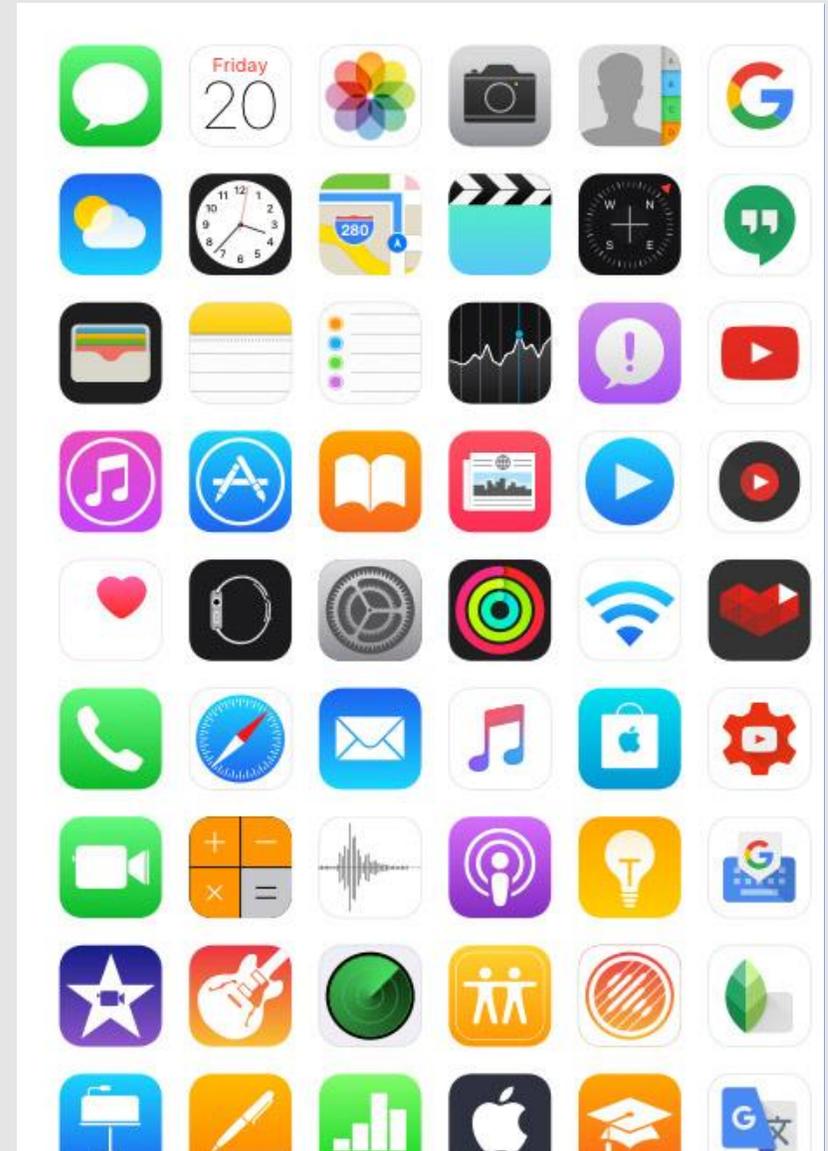
Improve workers' experience and efficiency
switching from modules' customization to
tailor-made and personalized applications

Tailor-made
applications

3 553 050 Oct 2022

1 682 635 June 2024

(Applications on Google Play Store Oct 2022)



Capabilities required to deliver these expectations

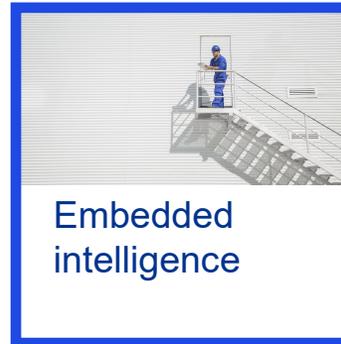
Improve **reactivity** by transitioning from decisions based on past data to **real time insights**



Real-time connection to multiple data sources and systems

Event driven architecture

Develop **field teams capabilities** by moving from transactional systems to **analytics and conversational capabilities**



Harmonized and orchestrated data

Aggregation of data

AI / ML / GenAI / Agentic AI

Improve **workers' experience and efficiency** changing from modules' customization to **tailor-made and personalized applications**



High speed development

APIs

Real-time connection to multiple applications

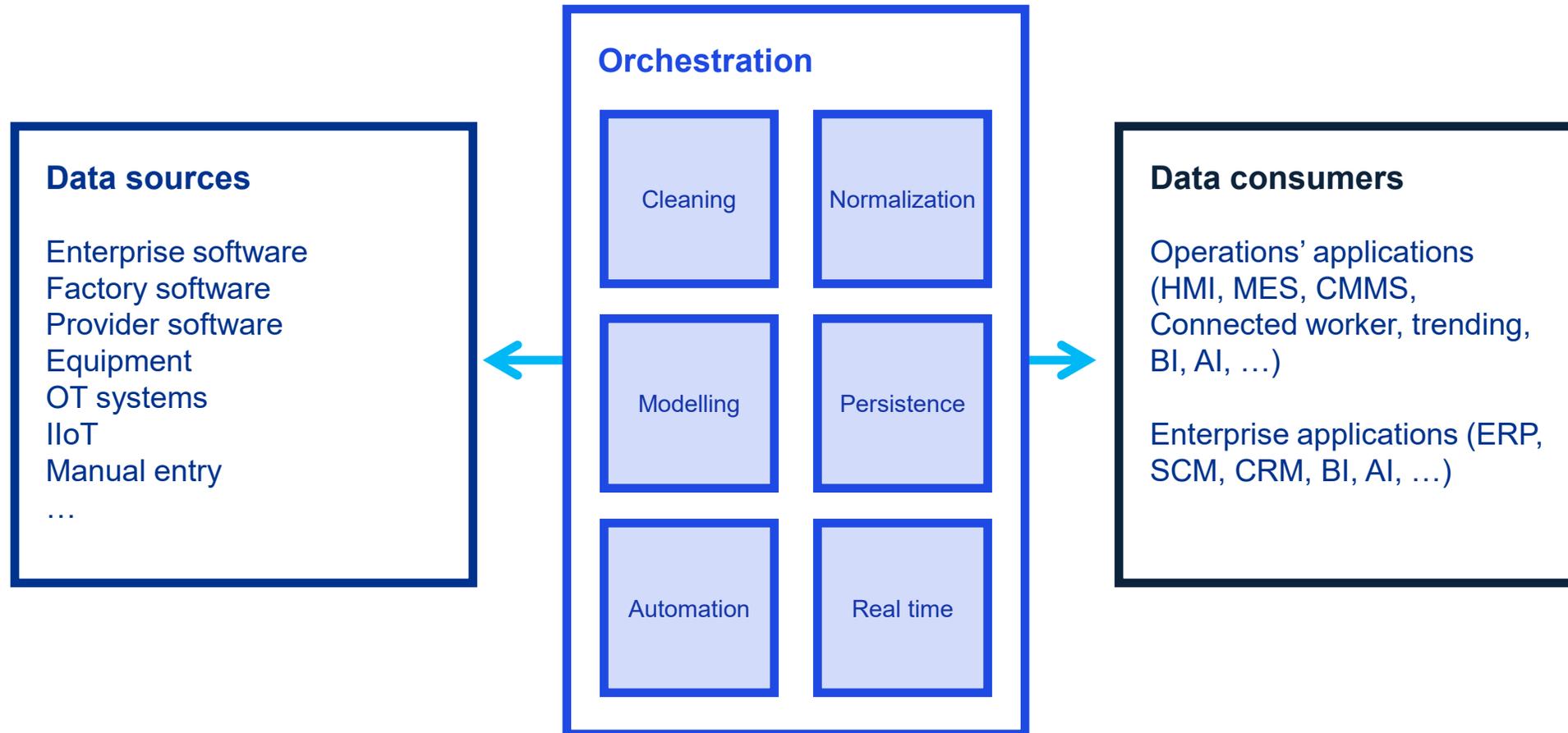
Data orchestration becomes a critical capability of Operations

From complex and expensive point to point integration ...

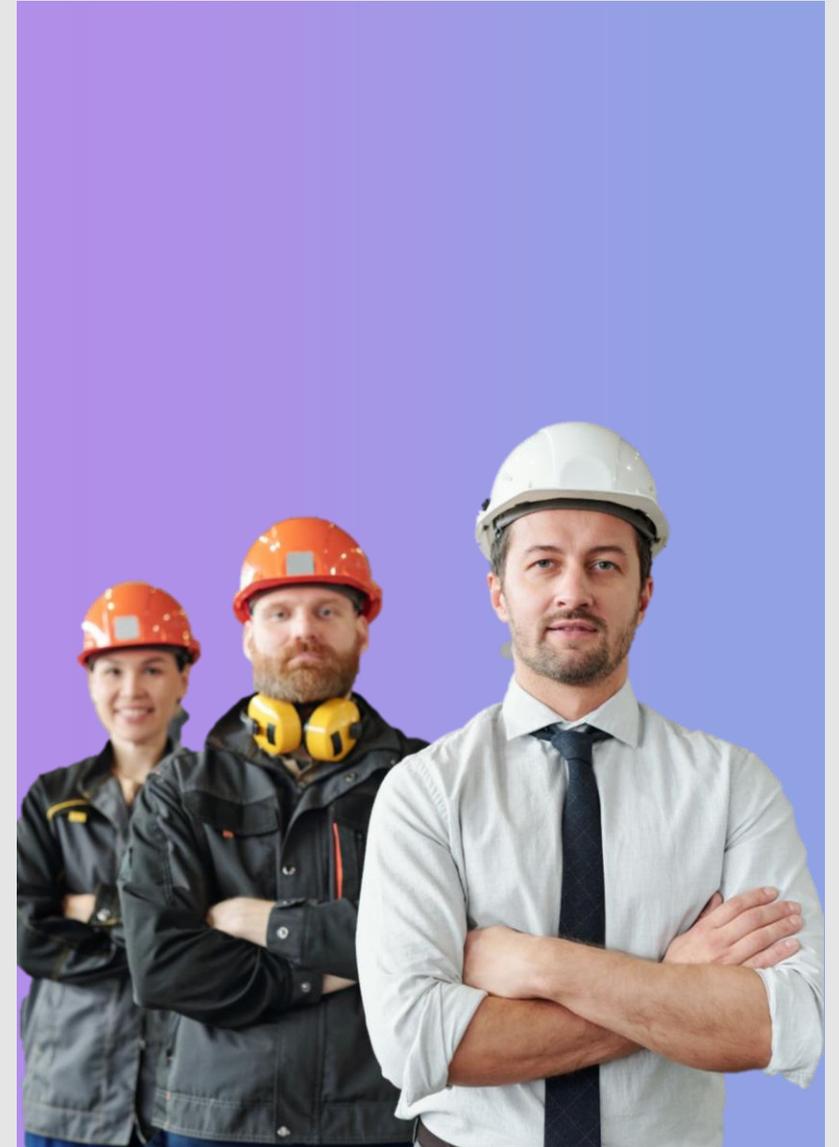


Data orchestration becomes a critical capability of Operations

... to faster, better and scalable orchestration



Which organization to operate Digital Operations?

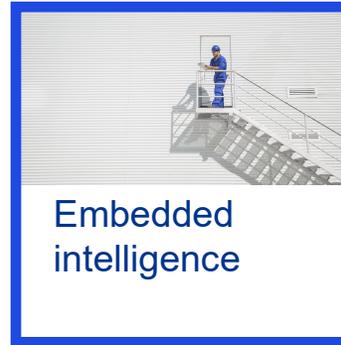


Which organization to operate Digital Operations?

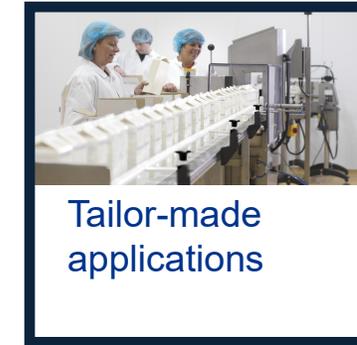
Create the proper culture and organization



**Make each department
responsible of its own data in
front of the entire organization**



**Build an organization to support
trustable data at scale, from
Management to Shopfloor
Facilitators**



**Develop a citizen developer's
culture and toolset**

**Develop with people,
not for them**

Switch your organization from project to **product management**

“My role is to manage the success of an internal startup, ensuring my clients are happy, use and recommend the application”

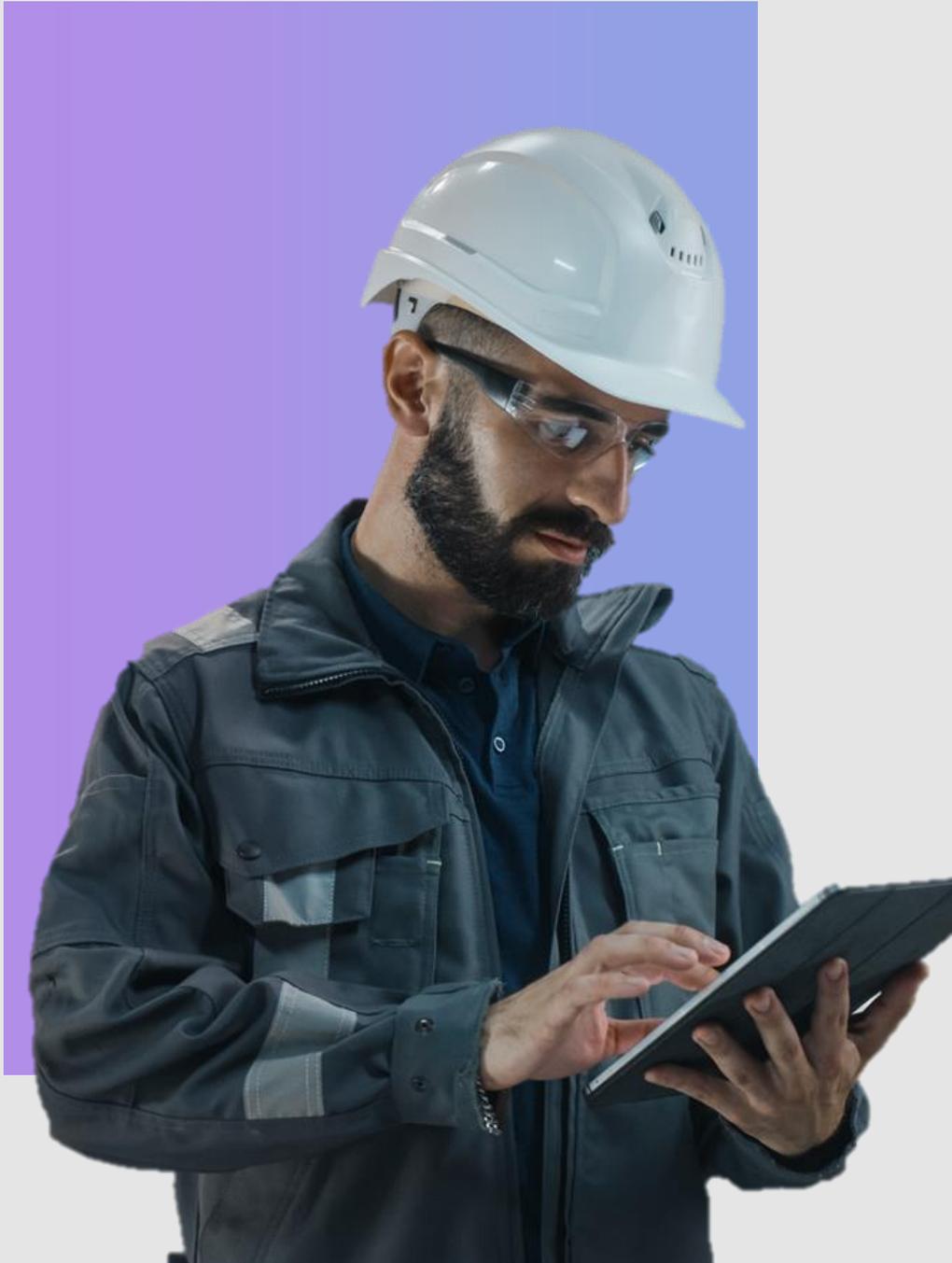
– Digital Product Owner

Transition from
project execution,
to product / market
fit iterations



**Your future MES might be
a limited core system**

**for workorders execution and declaration
surrounded by a set of tailor-made applications
orchestrating multiple data sources in real time
embedding analytics and conversational capabilities
and designed by operational teams
with the support of Product Owners**





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