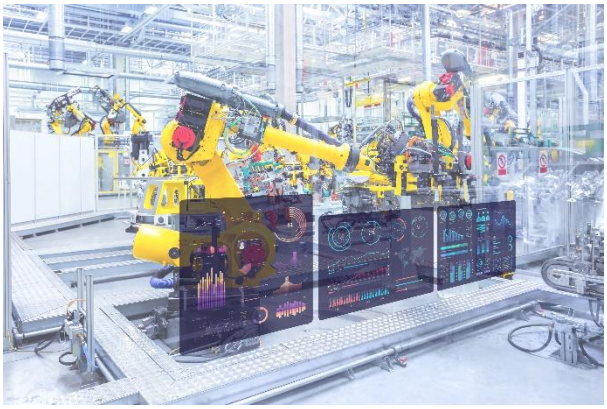
Connected OT: Local Expertise, Global Strength



The industrial IT landscape is always evolving, and office-IT (Information Technology) and shopfloor-OT (Operational Technologies) get more and more connected. OT was once a domain driven by the physical machinery and on-site shopfloor expertise. But now it is stepping into the spotlight—not just as a technical function, but as the provider of real-time shopfloor data, enabling intelligent digital manufacturing. To evolve in this direction and to support the growing demands of digitalisation, manufacturing organisations should consider how they support and scale OT from a local plant floor responsibility towards a supported and connected digital entity. Unlocking its full potential over sites, systems, and sensors.

Where is the challenge?

The computer hardware and software found on a factory shopfloor is commonly referred to as OT (Operational Technology): systems that detect or cause changes through the direct monitoring and/or control of industrial equipment, processes, and events. Historically, OT solutions have been focusing on local automation, machine control and process control. And that is often still the focus today: if you go to the local manufacturing shopfloor, expect to find

- a collection of control stations from various machine vendors,
- a mix of PLC's (Programmable Logic Controllers) controlling installations of various technologies and ages, combined with
- automation projects based on locally chosen SCADAs and historians,
- a diverse collection of workplace OT solutions evolved with the shopfloor history
- cybersecurity based on 'air gapping', leaving critical OT devices disconnected on purpose to keep risks low

On the one hand, IT is typically managed by a corporate, global function. OT on the other hand, is typically managed by the local manufacturing site with help of local partners, typically an environment that has been shaped by evolution of machines and installations on the shopfloor over the years, optimized to run manufacturing operations in the most productive way possible.

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With ongoing digitalization, the organisation looks at OT to provide real-time, instant data to tell you what is happening on the shopfloor, and what has happened. OT is expected to provide transparency and deliver the data: uniform, real time, good quality, in detail, in context and available everywhere. And by the way, of course that should be done securely and reliable. More concrete; OT is expected to fill in requirements like the following:

- Connect IT systems to the shopfloor, exchange the data, support the operator and remove the paperwork
- Do the data collections, check the data quality, bring it in context, store it and make it available
- Enable decision making based on the collected data, like
    - enable last minute instructions to the shopfloor
    - handle deviations when they occur
- Supply data to the needs for standard reporting and ad hoc analytics
- Collect (meta) data and information for AI and Machine Learning
- Provide a record of confirmation of production conform procedure and specification:
    - what were the acceptable limits? And
    - has the product been processed in conditions within these limits?
- Deliver detailed information for the planning & scheduling function
- Measure emissions, to make sure the site stays in the limits and can provide reports to comply with regulations
- Measure energy use as a basis to manage and reduce
- Comply with security demands such as user-account and role management (who is allowed to operate systems, and in which role is an operator allowed to operate)?
- System use requirements, for example track and ensure that relevant decisions are taken by qualified operators
- System monitoring to detect anomalies or manage resources
- Standardisation of applications, protocols, components, data and processes

Is Local OT ready for that task?

Local OT teams are traditionally focused on the shopfloor installations uptime and productivity. They may not be equipped to handle these new demands alone. If one visits a manufacturing site and these new requirements are brought to the OT-table, do not be surprised to get reminded of the fact that it is a production company you are visiting, not an IT company. The local OT team is typically lean and effective, focused on manufacturing operations support and does not have a lot of resource capacity for new demands, or following up on innovation and growing complexity. This is not so much related to expertise or skills, instead: it is about priorities and often resource capacity.

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And in addition: it is not just the question *who* can take that the responsibility to fill in these requirements, but also: *how* should that be done? Leave it for the local OT organisation to make their own choices, or should there be guidance and standards to work towards, a corporate structure, or an overarching architecture?

What support helps?

Especially in organizations with a global headquarters and multiple manufacturing sites, the head office can play an important role in supporting local OT teams with digitalization on the shopfloor. To evolve with speed, it helps to not only impose requirements and ask for the solutions and the data. In addition, consider that the work associated with this has an impact. It requires new ideas, new structures and resource power to get it done and get it supported. A global OT initiative can help:

- Sharing knowledge, expertise and standards: like cybersecurity, business continuity and working processes.
- Support with application standardization on OT and MOM level: MES, SCADA, Historian and PLC solutions;
- Provide guidance on data management and data architecture;
- Support with infrastructural standardization like user account management, network/server monitoring, virus protection solutions, data backup solutions, connectivity protocols, remote access solutions, fit for the shopfloor domain;
- Extend the IT network architecture to connect to shopfloor network architectures;
- Provide centralised monitoring and support services;
- Resources power and expertise where local capacity is limited.

IT and OT are different worlds. By nature, OT is tightly aligned with manufacturing priorities, focused on shop floor speed, volume, uptime, and performance. Well balanced support from Global OT can help to bring IT and OT together and make digital manufacturing a reality.

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