



Business

# Bridging the divide between the IT and OT worlds



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## Enhancing manufacturing performance with data-driven decision-making

**In sports, data analysis helps coaches pinpoint areas of strength and those needing further development, allowing for targeted improvements. In the same spirit, Orange Business works with its customers to integrate IT and OT environments, helping them to identify operational weaknesses and implement targeted remediations that enhance operational performance.**

OT integration – the successful convergence of information technology (IT) and operational technology (OT) – is a key enabler of enhanced manufacturing performance. Bringing these two worlds together allows manufacturers to leverage data from across the organization to improve operational efficiency, optimize resource utilization, and exploit real-time data sharing and analysis for better decision-making. Ineffective integration, however, can lead to missed opportunities, higher costs, and errors that can compromise factory safety, performance, and the quality of products being produced.

Integrating the IT/OT stack involves many challenges, including managing assets that may be many years old, an expanded attack surface, and a talent drought. But as technology advances, manufacturers must transform their processes to

become more data-driven and secure a competitive advantage in an increasingly disrupted marketplace.

For example, manufacturers are looking to embrace artificial intelligence (AI) and machine learning (ML) to gain actionable insights from OT. This helps to reduce downtime, increase productivity, streamline processes, improve worker safety, and provide greater visibility into supply chains.

The effective use of data can make factories more efficient and ultimately profitable. But successful IT/OT integration is of paramount importance if manufacturers are to achieve this and deploy new digital services. This means that data from OT systems must be available in a usable format that IT systems can analyze and thereby deliver actionable insights.

# Flexing your data muscles

**Good sports coaches combine their intuitive understanding of the performance of their athletes with the data now available to them.**

It is no different for factory leaders. However, combining the worlds of IT and OT is complex, not least because the priorities of IT and OT teams can be very different. While IT focuses on data confidentiality, integrity, and availability when it comes to data security policies, OT covers the real-time machinery and technologies that perform industrial operations. Operating technologies traditionally have a set function that requires humans to oversee the process at key points.

The problem is that 95% of factories are still using paper-based data entry<sup>1</sup>. This, coupled with the deployment of local

solutions to support their processes, makes it almost impossible to standardize and benchmark factories or onboard any new systems.

Data often sits in siloed, unconnected systems, hampering the ability to link, analyze, and read it. Frequently, there is no central repository to collect, consolidate, and correlate data to provide a single source of the in. Without this, an organization cannot guarantee that everyone is basing their decisions on the same data.



**In addition, modern OT systems utilize software infrastructure and operating systems acquired from IT, which increases the overlap of skills required to manage these two environments. Thus, they advocate the use of IT best practices for OT management<sup>2</sup>, which generally involves OT vendors moving from proprietary platforms to Microsoft, UNIX, and Linux operating systems, and TCP/IP communications.<sup>3</sup>**



# Understand what you are up against

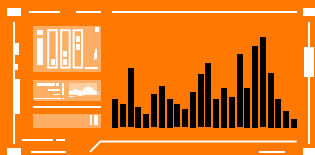
**The future of manufacturing operations is data-driven. Your plans for getting there might look great on paper – but the game isn't played on paper.**

So, your organization must integrate IT and OT wherever possible – not just the technology but also the people and processes. The historical IT landscape creates significant challenges regarding different architectures, protocols, and approaches that have evolved to address various problems. IT focuses on information, and OT on physical machines and outcomes.

IT applications are usually standardized across the factory to ensure compatibility and interoperability. OT solutions rarely are. Excel spreadsheets are commonly used for manufacturing reporting, for example. Different versions and vendors can be used across a single factory site, which makes convergence extremely complex. In addition, dealing with outdated hardware and software versions on OT networks also poses a significant hurdle.

The Industrial Internet of Things (IIoT) is the foundation of successful IT/OT integration: IIoT devices collect, transmit, and analyze data from OT systems, providing IT with the insights it needs to drive data-driven decision-making. However, a recent survey<sup>4</sup> found that a staggering 80% of IIoT projects fail to scale due to the complexity of integration and the inability to support scaling systems. If these challenges are not adequately addressed and accounted for at the onset, the implementations are destined to fail.

Other IT/OT convergence problems include connectivity and data collection issues, cloud integration complexities, and scaling troubles. For example, OT may use different protocols from the Edge devices used to transmit data between the local network and the cloud, which may make harvesting data problematic.



**Only 44% of manufacturing leaders believe that their organisation are using collected data effectively.<sup>1</sup>**

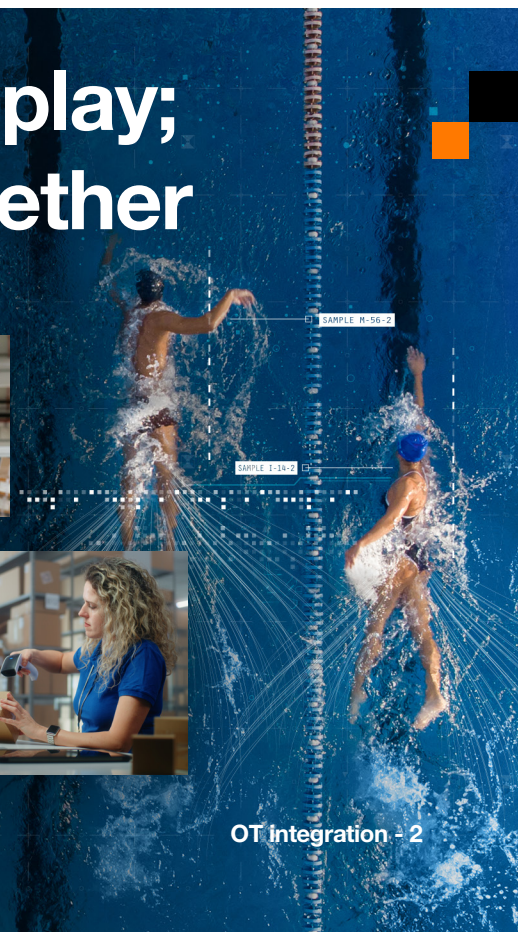
2024 State of Manufacturing Report

**There are also cultural differences to overcome. Historically, OT and IT have had different priorities. Concerns over change, fragmented OT, exposure to security vulnerabilities, and risk to process integrity must all be carefully managed.**

## It's not just how well they play; it's how well they play together

A collection of talented individuals will struggle to beat less talented players who have a great team spirit. Equally, IT and OT might each be superstars in their own right, producing unique and valuable data about the organization's operations and processes, and the behavior and activities of people. But if they cannot work together, performance will suffer.

Straightforward connection and access to data in these systems is therefore essential to providing real-time visibility across operations – and a core enabler for use cases that can derive real business value from operational data. IT/OT integration also facilitates the adoption of new digital services, leading to increased automation, production, and improved quality of manufactured goods.



**Business**

# Developing your IT/OT integration game plan

Efficiently integrating business and operational data is pivotal in creating a data-driven factory. But, like any team, those responsible for delivering that strategy will need clear instructions when they enter the field of play. IT/OT integration is complex and requires high-level thinking and a holistic integration program to bridge these environments successfully.

Here are six crucial steps to consider when it comes to IT/OT integration:

1

## Assess your legacy estate

Every manufacturer is at a different stage in their digitalization journey, and each faces unique challenges depending on its manufacturing operations. Many have legacy systems on the factory floor using old firmware. Systems lack the flexibility to evolve due to a lack of standardization. As a result, they do not have a complete inventory of their assets. It is essential to run an audit to better understand the factory's IT/OT estate and uncover any vulnerabilities or quick-win integration opportunities.

2

## Securely extending OT data to the cloud

Extending OT network connections to IT and cloud environments requires the implementation of additional internal OT security measures which, by its very nature, is complex. Thoroughly evaluate requirements so that necessary modifications can be made to the OT network, which can serve as a foundation for the integration.

3

## Select data-driven use cases

With convergence, scalability can be an issue. Edge devices may produce a wealth of data that will swamp the IT system if not properly planned for. However, this isn't a case of ripping out legacy hardware and starting again. Assess all use cases to determine whether they fit into the transformation roadmap and have defined business benefits and an impact on competitive advantage. Start small and cherry-pick those use cases that will benefit most from integration.

4

## Create your IT/OT integration strategy

IT/OT integration projects often go wrong because they do not embrace organizational change, data governance, and cross-team collaboration. It is imperative to create an overarching IT/OT integration strategy that includes common governance models, consistency across data and skills, and security guidelines. This includes standardized industrial connectivity for continuous improvement. Ensure you have plans for scaling. Every change should start with defining the impact on the business and clearly showing the challenges involved.

5

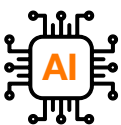
## Find a partner

From a security perspective, companies often struggle with protecting their own OT networks. These may have been created over many years on an ad hoc basis, leading to severe vulnerabilities. Many manufacturers are worried about moving forward with integration due to security worries. Work with a trusted partner to ensure cybersecurity is a key enabler of digital investment and central to integration.

6

## Be prepared to execute gradually

Every factory is different. Even when properly scoped, there will be hidden challenges. To manage this scenario, start with small and manageable projects but with one eye on scaling them up across factories. A flexible roadmap should be created for rolling out expansion plans.



Currently, 41% of manufacturers use AI-based applications to gather and manage supply chain data.<sup>6</sup>



# Playing to win

**Sir Dave Brailsford, the former head of British Cycling, is synonymous with the “marginal gains” approach, which focuses on making small, incremental improvements across many areas to achieve significant overall gains.**

With increasing competition triggered by digitalization, a culture of continuous improvement is critical for manufacturing success. A mature IT/OT integration approach results in faster data access via fewer resources and enhanced uptime and provides a platform for the incremental gains that will contribute to enhanced performance. However, successful integration requires a trusted partner, cross-functional collaboration, and a combined, centralized IT/OT model.

A major challenge is aligning and integrating IT and OT technologies, departments, data, and processes. But it is a critical step in any manufacturer's journey to digital transformation, supporting the continuous improvement of productivity, safety, and sustainability that are the hallmarks of great performance.



## Orange Business – on the side of its customers as they build data-driven businesses

**Orange Business has 2,200 global experts available to help you deliver a data-driven strategy. This allows you to maximize plant energy efficiencies, provide faster resolutions, seamlessly exchange data, enhance safety and quality control, track components across the value chain, and ensure on-time delivery. Our offering includes:**

- A consultancy-led approach to transforming data and creating value for the business
- Auditing data Assets and analytics maturity to create an overarching data-driven strategy
- Design and build a central Unified Namespace (UNS) as a centralized repository for structured data to make it meaningful to all components in the enterprise
- Data governance expertise to ensure high quality of data and manage its use
- Help you focus on areas of your business where technology and a data-driven approach will have the greatest impact
- Create easy-to-use dashboards so employees can track and optimize product quality and efficiently manage all manufacturing-related costs

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2. **Gartner** 2022 roadmap for strategic OT / IT alignment

3. **Gartner quick questions:** What is OT/IT alignment? What is OT/IT integration 2022

4. <https://www.iiot-world.com/industrial-iiot/connected-industry/survey-results-building-industrial-iiot-systems-in-2024/#:~:text=A%20staggering%2080%25%20of%20IIoT,implementations%20are%20destined%20to%20fail>

5. <https://www.rockwellautomation.com/content/dam/rockwell-automation/documents/pdf/campaigns/state-of-smart-2024/9th-annual-state-of-smart-manufacturing-report-en.pdf>

6. <https://www.allaboutai.com/resources/ai-statistics/manufacturing/>