IDC PERSPECTIVE

OT Services with an IT Services Flavor for the Largest Resources Company in the World

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EXECUTIVE SNAPSHOT

FIGURE 1

Executive Snapshot: OT Services in an IT World for Resources Companies

One of critical concerns of most resources companies, including mining and oil and gas, is the lack of internal talent when it comes to driving forward with the Industry 4.0 strategy. Because of scale, digital design, converged technologies, and global reach, many of these companies are turning to traditionally IT-focused service companies such as Infosys. This document focuses on the approach to asset assessment and asset digitization that companies can develop with the support of the right services company.

Key Takeaways

- The first step along the Industry 4.0 road map is assess how digital the assets currently are.

- IT and operations technology (OT) must work as one group to develop the data governance needed for asset digitization.

- Global IT services companies are some of the best equipped to handle the technology and global scale for a global resources company.

- Information flow between IT, operations, and the services company's subject matter experts is the critical aspect of the entire initiative.

Recommended Actions

- The starting point of Industry 4.0 for a resources company is digitization and asset assessment.

- Get the engineering and asset documentation digitized and uniform across the global organization.

- Choose a service partner that not only has the digital capabilities and global scale but has an assessment methodology built on operational experience.

- Start building a converged IT and OT organization that supports the global scale, owns operational data governance, and fills digital talent gaps.
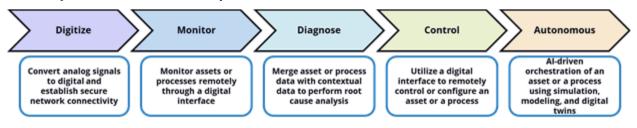
Source: IDC, 2021

State of the Industry 4.0 and Digitization

One of the core concepts that guides industrial companies to the future of operations is Industry 4.0. Industry 4.0 is a concept for an industrial company to move its operations from a relatively static and manual operation to an agile digital operation. But it is not a single project. It is a journey. It is a complete transformation of an operation that impacts all aspects of the organization.

Figure 2 is IDC's continuum for Industry 4.0 continuum that lays out the major steps as a guide to where a company needs to focus its energies on road to Industry 4.0.

FIGURE 2

Industry 4.0 Continuum in Operations

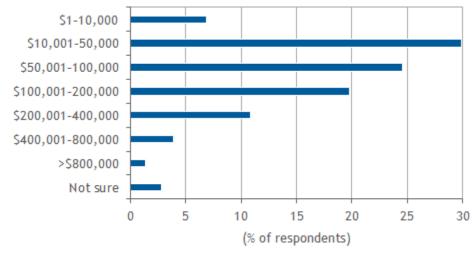| Digitize	Monitor	Diagnose	Control	Autonomous
Convert analog signals to digital and establish secure network connectivity	Monitor assets or processes remotely through a digital interface	Merge asset or process data with contextual data to perform root cause analysis	Utilize a digital interface to remotely control or configure an asset or a process	AI-driven orchestration of an asset or a process using simulation, modeling, and digital twins

Source: IDC, 2021

As you can see, the first step is digitization (refer back to Figure 2). In most operations, especially in asset-intensive operations like in the resource industries covering upstream oil and gas and mining, transforming a loose network of critical assets into a managed network of connected assets is the first step.

The Focus on Assets

When discussing Industry 4.0 in any asset-intensive industry, you are immediately discussing asset management. Assets are the lifeblood of any resources company's operation, and these companies spend billions of U.S. dollars on maintaining assets and continuously developing improved systems and methods to support the assets. The obvious reason for this focus and activity is visualized in Figure 3.

This leads to an average of almost $150,000 per hour for asset downtime for a resources company. Considering the thousands of complex assets in a typical large operation, there is a large incentive to get better visibility and control of how these assets are managed.

FIGURE 3

Hourly Cost of Unscheduled Downtime

n = 1,014

Source: IDC's *Worldwide IT/OT Convergence Survey,* 2020

Creating that digitized network of assets is a very high priority for most resources companies, even in a down commodity environment. In fact, the down economy creates an even larger motivation to develop an asset network that moves technical staff out of plants and the field to be able to leverage thousands of complex assets over a larger network of assets.

Getting Started by Using IT Services in an OT World

For one very large resources company, the digitization was a daunting task, considering the tens of thousands of assets it operated around the world. Executives at the company were considering approaching the asset network in a similar way to a network operating center (NOC). Each asset would be a manageable device that could be monitored and diagnosed from a central operating location.

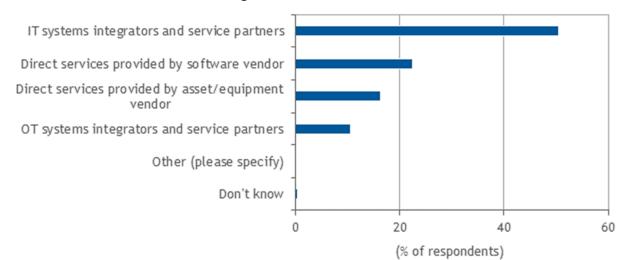Some of the issues the company was dealing with were:

- **Global spread:** Assets are spread across 3 continents and 34 countries.
- **Unreliable and outdated documentation:** Lack of an engineering documentation system that covers all operations leads to heavily siloed documentation and inability to update effectively.
- **Unclear asset responsibility:** In many cases, it was unclear which group in the company actually had responsibility for the asset.
- **Disconnected assets:** Many of the assets have never been configured to be connected.
- **Unreliable control system backups:** The backups for PLCs and other controllers are incomplete and out of date.
- **Asset life-cycle management:** The asset is managed through its entire life cycle for investments in maintenance and digitization based on overall performance and reliability.

- **Current capability of the asset:** This includes the current capability of the asset in terms of moving it into the Industry 4.0 regime.

With all of these challenges, it quickly became clear to the company that it needed a very large-scale project that would clean up all its asset processes and data. Based on existing organizational structures, asset responsibilities, and project scale, the company quickly realized that it needed outside help.

As shown in Figure 4, the company was not alone in making the decision to turn to a partner for this Industry 4.0 strategy.

FIGURE 4

Preferred Partner for IT/OT Integration Work

n = 1,014

Source: IDC's *Worldwide IT/OT Convergence Survey,* 2020

Resources companies, by far, choose traditional IT companies to support these large asset digitization projects as part of the greater Industry 4.0 approach (refer back to Figure 4).

In more detail, the resources company had specific parameters for a partner that led to the company choosing Infosys as its partner on assessing its entire asset landscape. The main parameters were:
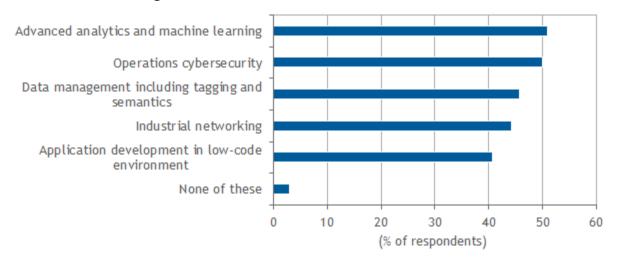
- Capabilities in transformational technologies such as cloud, vision, data management, AI, and analytics
- Engineering experience in designing sensor packages, enclosures, and gateways
- IT background to support the IT infrastructure needed to connect assets and develop data governance frameworks
- Significant OT experience in resources and other industrial environments

- Ability to scale with cross-skilled teams for large programs teams that include OT, IT, and engineering design.

This aligns with how other industrial companies approach choosing a partner. As shown in Figure 5, this is especially true in the approach to OT and digital technologies.

FIGURE 5

Plans to Utilize Managed Services Within Three Years

n = 1,014

Source: IDC's *Worldwide IT/OT Convergence Survey,* 2020

As you can see, over half of the resources companies expect to outsource some part of their OT capabilities. Again, this is based on lack of internal resources and that companies such as Infosys have the scale needed to design, develop, and deploy very large technology projects.

Infosys in the Lead

The resources company, working with Infosys, decided that the first step in the project was to do a full assessment of its global assets to get a detailed view of where each asset was in the digital continuum. The existing digital state of an asset digitization is typically a mix of the following:

- Older assets with no digital capability
- Assets with limited individual digital capability using legacy networks like RS-232 and RS485
- Assets with limited individual digital capability but connected to an industrial network
- Newer assets with cloud-ready connectivity

Infosys' approach was to use central engineering resources, field documentation, and onsite visits to assess the digital readiness of the assets. This complex task and its very large global scale were something the resources company could not have taken on internally. While it had some of the best domain knowledge in the business, those resources were needed for day-to-day operations. Infosys

was able to provide a combination of scale, operations expertise, and digital experience to assess individual assets and develop a plan to digitize them for the asset monitoring and diagnostics steps toward Industry 4.0.

Infosys used a relatively straightforward IT approach to engaging in the project. While it is straightforward to an IT organization, it was new to operations. In detail:

- **Prediscovery process.** Workshops were conducted with all stakeholders to assess the magnitude of the OT infrastructure and the technological diversity within it. A standard and unified template for data capture was designed.

- **Cross-skilled domain experts.** The OT infrastructure was found to contain equipment and technology across the wide ranges of systems within control systems, networking infrastructure, and hosting infrastructure.

- **Zero-distance initiatives.** Daily stand-up call, region-wise weekly catch-up calls, and client visit to the offshore locations were integral parts of the project; they helped in providing instantaneous feedbacks in both directions.

- **Document management.** Information flow was structured and regulated. The entire flow was regulated through a central repository with internal quality checkpoints.

This approach was based on continuous engagement with the operations staff who had the most knowledge around the assets. The entire process not only gave Infosys more insights into the company's asset management capabilities, it also provided a disciplined framework for the asset stakeholders to start to develop their own plans for digitizing assets.

Benefits of Partnering for Industry 4.0

Many resources companies, and other industrial companies as well, struggle with the scale of digitization that is needed for their Industry 4.0 journey. But this resources company, by partnering with Infosys, saw some significant results from the project. The discovered data has become an important source of information for the client to launch other IT-OT integration-related initiatives. This project helped the client understand the scope for improvements in other areas, which escaped the attention of the client. The project provided significant transparency into asset operations. In detail:

- Data integrity issues in asset management systems

- SAP PM capabilities and data that were more fully realized through refinement of asset data

- Identification of critical control systems areas, which are long overdue for upgrade

- Beginning of standardization of diverse technology and systems across regions

- Visibility of the impact of multiple and poorly configured monitoring and management tools with incompatible versions

- Lack of connectivity for several critical assets

None of these aforementioned issues would have been adequately and cost effectively identified with an internal-only team. Having a partner such as Infosys be able to get at the assets and its underlying documentation was the key to moving into the future of operations through Industry 4.0.

ADVICE FOR THE TECHNOLOGY BUYER

- Start on the road to Industry 4.0 through the assessment of your assets for digitalization.

- Get your asset data and documentation in order.
- Choose a partner with a disciplined and structured approach to assessing your assets.
- Use the entire process to drive IT and OT convergence.

LEARN MORE

Related Research

- *IDC FutureScape Webcast: Worldwide Oil and Gas 2021 Predictions* (IDC #US47395821, February 2021)
- *The Battle of the Operations Hyper-Platforms* (IDC #lcUS47069520, December 2020)
- *The Future of Operations Middle Management* (IDC #US46985920, November 2020)

Synopsis

This IDC Perspective focuses on the approach to asset assessment and asset digitization that companies can develop with the support of the right services company. Having domain-experienced and reliable technology partners is critical for moving into the future of operations through Industry 4.0.

"Asset-intensive companies face large-scale digitization initiatives on their Industry 4.0 journey. Having the right services provider is critical to manage the scope of IT-OT convergence for a global enterprise." – Andrew Meyers, research director, Worldwide Oil and Gas IT Strategies at IDC

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