Business Transformation Through Remote Collaboration, Optimization and Operations

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Introduction

In industries such as oil & gas and mining, metals and minerals, operating companies typically have multiple production facilities geographically spread out over vast distances. As a result, expertise and best practices can be difficult to share and institutionalize across locations. Optimal production and productivity is hard enough to achieve on a single asset level, but interdependencies between processes and facilities complicate things even further. Industrial organizations require new thinking in order to operate effectively in an increasingly complex and distributed environment.

In the upstream oil & gas industry, changing market conditions require more flexibility and efficiency in the production of natural gas and oil. Increased operational costs, combined with instability in the price of crude oil on the international market, make it essential to lower operating expenses while improving production levels. In addition, offshore operators seek to improve safety by limiting helicopter flights and boat trips to remote facilities, and by reducing the number of people onboard platforms (See Fig. 1).

In the mining, metals and minerals industry, companies producing aluminum, iron/steel, and precious metals must improve product quality and production efficiency while lowering the consumption of energy and reducing greenhouse gas (GHG) emissions. Mining operations also need solutions that help connect and integrate disparate systems that work in isolation. New mineral supplies are increasingly found in inhospitable areas of the world.

To enhance operations, it is necessary to connect the production and enterprise levels and ensure the availability of real-time information across multiple sites. This, in turn, will enhance operational data management—enabling improved asset performance. Additionally, making operational data available to the enterprise allows this information to be merged with other key data.

Today’s Challenges

Now, more than ever, operating companies seek to maximize the recovery of resources such as mineral deposits and oil reservoirs, since supplies are declining in many areas. And they must constantly optimize production as profit margins are compressed and global competition intensifies. Stringent process safety measures, cyber-security standards, and environmental regulations further complicate operational strategies.
Production sites in remote locations present a variety of safety concerns, either in the hazardous environment of the operating facility itself (e.g., underground with risk of earthquakes, high altitudes, offshore with risk of hurricanes) or associated with transportation to these facilities (e.g., helicopter trips or long car trips over bad roads).

In the upstream oil and gas business, for example, organizations face challenges making safe operation with traditional technologies more difficult, and work processes less profitable. As existing fields mature and become marginal, operational costs tend to increase. New fields are typically located in more remote and demanding environments, such as arctic regions or deep water.

The more mining, metals and minerals companies are able to implement advanced automation solutions, the more their economic results and safety performance will be enhanced. Their motivation to implement collaborative solutions centralizing processing operations across facilities is quite high (See Fig. 2).

Issues related to staffing also burden company management. With operations situated in remote areas, it is difficult and costly to attract and retain a talented workforce. This leads to a high degree of staff turnover, which subsequently creates a hardship in training new resources. Moreover, in many disciplines, an aging workforce shrinks the available talent pool even further, and makes the need to leverage expertise more acute.

**Transformative Business Strategy**

The level of business transformation associated with the implementation of a Remote Collaboration, Optimization and Operations strategy cannot be achieved by technology investments alone. Rather, this is a large-scale change for industrial organizations that goes to the core of their operations. To ensure success, they need to take into account the following key elements (See Fig. 3):

- **Vision:** The overall strategy for a remote initiative must be aligned at the highest level of the organization in order to enable a cohesive change
- **People:** As personnel and their roles are redistributed, care needs to be given to the human element and appropriate change management must be adopted
- **Processes:** Organizations must have a keen appreciation of roles at the task-level, and re-associate them to work-processes, to ensure continuity in operations
• Technology and Services: Organizations must understand that this approach goes beyond the traditional automation + software strategy for operations.

Remote operations establishes a base for improved monitoring and management of oil and gas installations, pipelines, mines, production sites, compressor stations, etc. It involves deploying communication systems and other enabling technology to provide monitoring and surveillance services for remote facilities, thus reducing the number of site visits and onsite personnel required for these locations.

A centralized remote collaboration center makes the best use of resources by creating an operations hub where experts from a variety of disciplines can access information, troubleshoot and optimize production facilities—all from a single location. Control system and software upgrades can also be implemented via remote access technology. Remote maintenance and upgrades where physical devices are involved can be accomplished using both mobile, field-deployable cameras and onsite operators.

The ability to operate and manage operations in a location-agnostic manner opens the door to a wealth of opportunities. For instance, experts and operations staff can be relocated to population centers, and out of harms’ way. They can then be leveraged over multiple assets in real-time to ensure maximum utilization. Remote collaboration also allows for much faster creation and utilization of best practices across a network of operating assets, thereby contributing to better knowledge retention and management as well as greater efficiency, and establishing a true, shared corporate culture throughout the enterprise (See Fig. 4)
Honeywell’s Comprehensive Solution

An effective remote collaboration, optimization and operations solution delivers superior business results by utilizing game-changing technology, procedures, and empowered people. It has the potential to eliminate the time, distance, and organizational constraints that plague traditional approaches while providing all parties with a single version of the truth. Knowledge and understanding empower workers, enabling operating companies to respond better to dynamic environments and work processes to be more flexible—facilitating a higher level of engagement.

However, industrial organizations need to focus on operations and cannot dedicate internal resources to such an undertaking. And while traditional control and instrumentation vendors, IT suppliers, telecom developers and consulting firms offer the individual components needed as part of this strategy, they are unable to provide all the capabilities to meet the customer’s end-to-end requirements.

Honeywell Process Solutions, one of the world’s largest industrial automation suppliers with extensive experience in the process industries, has developed a comprehensive, yet modular solution encompassing remote collaboration, optimization and operations. This strategy delivers an increasing level of value (and also involves an increasing degree of organizational change) as it progresses from the collaboration phase to the optimization phase, ultimately enabling secure and efficient operation of remote production sites.

Honeywell’s recent acquisition of Matrikon further strengthens its remote solution. Whereas Honeywell has deep expertise in automation systems and applications, Matrikon is a recognized thought-leader in industrial intelligence and remote collaboration. The combination of Matrikon’s consultative approach and integration capabilities with Honeywell’s broad product and service portfolio helps customers achieve transformative business outcomes.

Honeywell’s remote solution creates a collaborative infrastructure, which helps industrial organizations to truly understand the key performance indicators (KPIs) at each operating site, benchmark and document consistent work processes, and then implement and maintain best practices throughout their company—resulting in significant improvements in production, productivity and recovery.
Through its consultative approach, Honeywell helps customers create a vision and develop a strategy for remote collaboration, optimization and operations that touches all levels of the organization. This transformative solution includes powerful organizational change and business process management elements (See Fig. 5).

![Initiative Scope](image)

Honeywell starts with an initial assessment that includes workshops and interviews to develop a vision for optimization opportunities and quantify customer requirements. This helps align the customer’s organization to the project goals and secure management buy-in. It also provides an opportunity to assist in developing a business case around the initiative.

Next, the project phase “bridges the gap” in technology by upgrading the site infrastructure. The project team undertakes various planning, design, implementation and testing activities. During the multi-faceted implementation phase, an implementation team consisting of project participants, partners and consulting resources works together to achieve benefits from remote operations. Close collaboration creates the structure for remote work and integrated sites and systems, as well as location-agnostic work processes. Optional optimization, operations, planning & scheduling, operator effectiveness and maintenance modules allow for:

- Cross-site optimization of production operations
- Location of operations staff independent of production assets
- Utilization of an integrated, multi-asset supply chain solution
- Multi-site, centralized deployment of operator effectiveness and maintenance solutions
Finally, an engagement team provides services focused on auditing and continuous improvements, thus helping to ensure ongoing value (See Fig. 6).

Figure 6. Honeywell’s comprehensive, yet modular approach

The key to Honeywell’s overall integration capability is its advanced Intuition software, powered by Matrikon. Intuition delivers industrial intelligence in a revolutionary way—providing context to enable all people, processes and applications to work in concert. This empowers collaboration across departments, functional areas, geographic boundaries and languages. As the foundation for unified, enterprise-wide information management, Intuition enables industrial organizations to transform data into meaningful information and display it to provide context (i.e., a unified view of data assets so that business and industrial processes can co-exist seamlessly). Plus, the software allows users to access the right data at the right time and share information across business units, and then implement integrated workflows to ensure the right action is taken.

Additional Honeywell tools powered by Matrikon not only make it possible to integrate and access information from the field to the desktop, but can also integrate workflows across engineering, managerial and maintenance domains for consistent action. For example, the latest version of Well Performance Monitor combines powerful data cleansing, visualization and analysis solutions with tools for collaboration and workflow management. Equipment Condition Monitor supports a complete operational excellence program, including condition-based equipment monitoring and maintenance, and associated workflows.

Operational Insight is a web-based, real-time, data visualization and KPI-dashboard solution that enables better operational decisions. Using standards-based technology, Operational Insight connects all data sources and makes critical operational information easy to trend, chart, monitor, report and display.

With the Mine to Port solution, mining operations can integrate and present data from all operational systems regardless of supplier or technology and ensure visibility across the entire enterprise. By connecting to mine planning systems, fleet management systems, process control systems, laboratory information management systems and other operational systems, this solution transforms data into operational intelligence, which leads to substantial improvements in production, quality, safety, environmental compliance and profitability.

When it comes to implementing a remote operations capability, Honeywell’s Experion Process Knowledge System (PKS) enables operators to easily monitor and control production at geographically dispersed facilities. Experion’s human machine interface (HMI) provides a detailed view of the situation in order to avoid process upsets before they occur. Furthermore, its distributed system architecture (DSA) allows multiple systems to operate as one within a single unit, site or enterprise. Integrated with Experion are Fail Safe Controllers and Safety Manager, Honeywell’s advanced safety systems, as well as fire and gas detection systems.

The Honeywell remote operations solution also incorporates a sophisticated network management model that satisfies demanding security and audit requirements, and data integration needs. It includes: virtual private networking (VPN) to protect the network from the outside world; firewalls between the commercial network and the process control network (PCN) to prevent intrusion to and from the commercial domain; trust settings on the PCN to ensure correct authentication for users; and access protocols so that Honeywell, if needed, can remotely monitor equipment on the PCN and direct site staff to implement changes.
With a remote solution like Honeywell’s, industrial organizations have a transparent process where operators can access the information they need to do their jobs better and safer. They no longer have to visit installations and physical equipment on a frequent basis to check their status. With the entire production process controlled from a centralized point, only a few employees are required on site—significantly increasing safety and efficiency.

While improvements in production and yield, raw materials usage and regulatory compliance have an immediate impact on the bottom-line, the ability to integrate reliable process information with the business allows industrial organizations to take a major step towards establishing global best practice benchmarks in process control. Additional benefits can include increased technology transfer between facilities, improved hiring retention and training, and greater leveraging of existing expertise.

**Customer Experience**

Around the world, industrial organizations are transforming their business results through the use of remote operations technology and centralized collaboration centers. Recent examples include:

**A leading global producer of crude oil and natural gas** looked for a way to stay ahead of dynamic market demands and to overcome the many challenges associated with offshore oil and gas production. As part of an innovative technology project and with the help of Honeywell, this company built a central control room (CCR) to help coordinate control of multiple offshore platforms in the North Sea, and improve operations and efficiency.

With the new CCR, this company has centralized operations at 18 of its 26 offshore platforms. All operating and production procedures are fully automated and synchronized, creating increased flexibility and competitive advantage. At the heart of CCR is Honeywell’s Experion PKS solution, which enables operators to monitor and control production at various platforms.

Thanks to an effective remote operations capability, a number of significant operational and business benefits were achieved:

- Faster, more effective decision making by operations staff
- Greater production flexibility
- Increased efficiency through reduced helicopter flights, ship movements and supply of material to platforms
- Increased uptime and higher levels of productivity and throughput
- Improved safety through full redundancy and built-in failover support

**As a major international producer of primary and fabricated aluminum** sought to enhance production and raw material efficiencies across its refining business, it turned to Honeywell to provide a standardized process control infrastructure and control solutions across multiple refineries in six countries.

By improving plant efficiency, reducing raw materials consumption and lowering environmental emissions, a sustainable, competitive advantage is achieved. Key features of the program include:

- Improved process performance by leveraging automation technology and combining best practices from each refinery
- Improved plant support through centralized monitoring of the system to help analyze and rectify the process control system performance of each refinery from a single center, thus leveraging scarce expert resources
- Reduced downtime with integrated support and maintenance practices through a co-sourced support center
- Rapid deployment at each location by a dedicated implementation team that minimized costs, improved quality and minimized plant interruption
As one of the world’s largest copper producers that controls around 20% of the world reserves of this metal, it operates four mines across Chile and saw the need to implement common processes across these facilities to improve productivity and increase production. New deposits are also being found in more extreme conditions. All of this effects the environment in which mining is developed and this company faces critical challenges that must be solved to ensure business viability.

Honeywell worked with to implement a remote operations center at its facility in Santiago, Chile. This center connects operating sites to essential facilities, creating a collaborative environment that is the key enabler for production improvement. Expertise is centralized in a single, easy to staff location and leveraged across multiple sites. The automation infrastructure, as well as applications such as advanced process control, can be deployed, maintained and optimized across mine operations with optimal efficiency and without requiring additional head count. The specific benefits of this project include:

- Improved overall operational performance
- Effective deployment of best practices and solutions across multiple mining facilities
- Increased production throughput and copper recovery
- Increased profit margins without major capital expansions

One of the world’s largest energy producers, with diverse operations across the globe, employed remote well monitoring technology, which enabled project personnel to not only integrate and access information from the field to the desktop, but can also integrate workflows across engineering, managerial and maintenance domains for consistent action. This solution has facilitated better decision making, helping experts to take the right action at the right time to solve problems, take advantage of opportunities and improve well performance. Significant advantages included:

- Single prioritized view of well operations
- Real-time analysis capability for production data
- Real-time feedback on well performance
- Improved production and forecasting accuracy
- Quick implementation as available out-of-the-box
- Easily supportable and maintainable monitoring solution
- Conformance and integration with corporate standards

A global industrial gas company sought to manage production loads by taking advantage of variations in power prices between peak and non-peak times. It also wanted the capacity to respond quickly and according to customer product demands to reduce venting and top up usage, as well as the ability to operate consistently at maximum and minimum load constraints.

This company implemented two powerful Honeywell products powered by Matrikon, Operational Insight and Control Performance Monitor, and the information infrastructure was tied together with OPC connectivity. Operational Insight provides a web-based solution for process data acquisition, control system performance analysis and process monitoring. Control Performance Monitor offers automated step testing and modeling functionality. Benefits realized included:

- Improved throughput and control quality
- Reduced energy consumption
- Improved plant stability
- Increased operational consistency
Conclusion

A remote collaboration, optimization and operations solution can help industrial organizations manage critical assets, regardless of their physical location, so they can securely access all their data, seamlessly deliver information when and where it's needed, create and monitor enterprise KPIs for decision support, and enforce consistent operational and business processes. As a result, they are able to act and react faster to market conditions, increase productivity and reliability, ensure regulatory compliance, and improve the safety of their employees with less downtime and more production availability.

More Information
For more information on Remote Operations, visit our website at www.honeywellprocess.com or contact your Honeywell account manager.

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