

## Creating a Strategic IT-OT Investment Plan

By Dick Hill

### Keywords

IT-OT, Cybersecurity, Gap Analysis, MES, Manufacturing IT, DCS

### Overview

Many manufacturing companies today have experienced mergers, acquisitions, and divestitures. Executives from three such companies presented at

Creating a Strategic IT-OT Investment Plan is essential not only to companies heavily engaged in mergers, acquisitions and divestitures; but also to others that may not be going through such changes.

While acquiring an operation from another company might open one's eyes to different ways of doing things, it often requires developing a strategic IT-OT investment plan that meets both short- and long-term business objectives.

ARC Advisory Group's 22<sup>nd</sup> Annual Industry Forum held earlier this year in Orlando. As experienced at Ashland, Dow-DuPont, and Arkema, the acquired operations almost never have the same IT-OT architecture, technologies, and/or support infrastructures as at the existing operations.

While some of these companies may have standards in place for both technology and organization, the transition to these standard approaches must be carefully planned. While the acquisition or merger was no doubt viewed as an investment in the future business potential of these companies, it's also important to consider how the evolution of IT and OT will impact that overall investment.

As we learned, all three of these companies considered it essential to create a strategic IT-OT investment plan. ARC believes this is equally essential for all industrial companies today, whether or not they have been active on the mergers and acquisition front.

While acquiring an operation from another company might open one's eyes to different ways of doing things, it often requires developing a plan. Since no single approach will fit all situations, owner-operators must develop their own IT-OT plan that fits both their short- and long-term business objectives.



## IT-OT Investment Challenges

As ARC Associate, Mike Williams, indicated in his opening remarks for this Forum session, mergers, acquisitions and divestitures often create technical, organizational, and investment challenges for owner/operators relative to operational technology (OT) assets, information technology (IT) assets, and how to most effectively converge the two previously separate domains. Mr. Williams asked the audience if they could relate to any of the following situations:

- Incompatible IT infrastructures
- Custom applications or configurations do not integrate well
- End-of-life issues for automation assets place additional stress on already tight operational and capital budgets
- Dwindling skill resources to support and sustain the installed base

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The audience generally responded in the affirmative to most, if not all, of the above bullet points. So, what to do about it?

Mr. Williams' experience gained through his prior career, both at Dow Chemical and assisting many other enterprises, indicates that it's often most effective to create a strategic, imperative-driven IT-OT investment plan that is structured for a three- to five-year period. Formalizing a strategic plan helps ensure that executive leadership is fully aligned with the investment needed and agrees with the objectives. The strength of the strategic plan is established through agreements between the business leadership and the IT and OT organizations.

Based on the dozens of successful planning and execution exercises in which he has participated, Mr. Williams has found that a key component of the plan is a "gap analysis" that reveals the current state versus the future IT-OT vision, and helps determine the associated funding requirements and financial incentives. Based on the gap analysis, the resulting plan typically:

- Identifies the IT-OT functional capabilities that will be delivered against specific business objectives
- Identifies the timing for delivery and any related dependencies
- Clearly articulates the value proposition of each deliverable
- Defines any organizational change required

## Impact on OT Not Always Obvious

In his Forum presentation, Gary Lipson, Principal Engineer in the Global Engineering group of Ashland LLC, explained that the company currently focuses its business on specialty chemicals. Many may know Ashland from its past businesses that included oil refining and petrochemicals. Through multiple acquisitions and divestitures, it has made the transition to its current business focus.

These acquisitions and divestitures resulted in many visible transitions on the IT side. These include:

- Reorganization and consolidation
- Changes in leadership
- Changes in policy
- Support resource challenges
- Changes take time to make
- Adjustment required to the “new normal”

Perhaps less visible (to management at least), these business changes also impacted Ashland’s manufacturing plants. As Mr. Lipson pointed out, the OT systems were basically hidden “behind the scenes.” This was largely due to the large amount of adjustment necessary to transition the IT practices. From an OT point of view the impact consists of:

- Distractions
- Interruptions to workflow
- Need to learn new systems, tools, and procedures
- Determining what tools are used, which standards are in place and adhered to, and what ERP platform(s) must be interfaced to
- Changes to key tools such as e-mail, Microsoft Office-style tools, and different DCS/PLC platforms and vendors
- Physical and cybersecurity technologies and policies
- Support and maintenance agreements (procurement, legal, etc.)

“Standards” on the OT side were often based on home-grown approaches developed to meet the specific needs of the various plant operations. For example, different DCSs for process control were often found at the different acquired plants. More critically, the communication mechanisms between

the various OT and IT systems in place at the acquired plants were often brittle and easily broken. IT-related structural changes such as outsourcing IT systems and support also created challenges on the operational side.

Mr. Lipson's lessons learned echoed Mr. Williams in that it is important to make senior management understand the OT issues. His experience is similar to most others in that the company did not have an overarching "manufacturing IT" structure that understood both the IT and OT issues. This makes it imperative that good documentation of the OT technologies, structure, and organization be made available to the business as well as the local operations.

### No Two Companies "Do" IT (or OT) the Same Way

Alan Fridstrom, Enterprise Architect at the DowDuPont company explained that the current enterprise is no stranger to mergers, acquisitions, and divestitures. (The company's new name should make that obvious enough to readers.) While many might think that divestitures would be a lesser issue

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For example, in Dow's case, a legacy, Dow-proprietary legacy control system had been designed, developed, and supported in-house. When a different

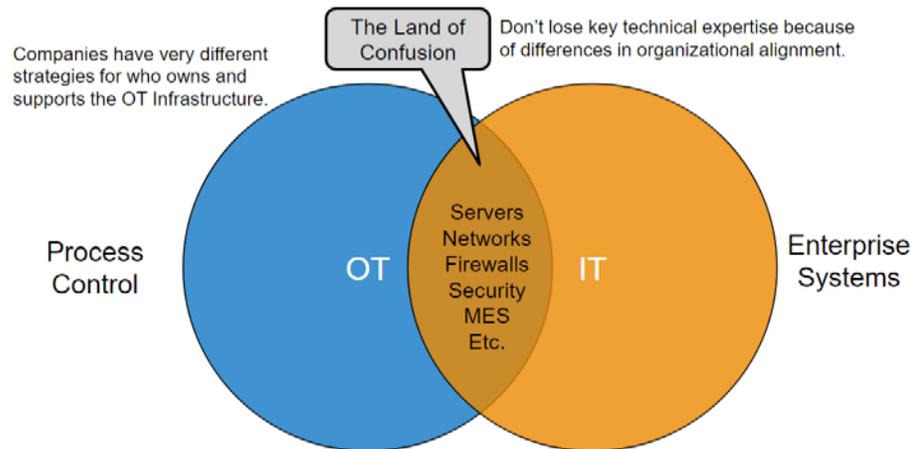
company must operate a facility with this proprietary system, Dow and the acquiring company must decide how to support the system.

Many of the acquired companies operate using different ERP systems. Dow's approach has been to transition these to the SAP-based Dow standard. As Mr. Fridstrom pointed out, if the acquired facility had a high degree of IT-OT integration, it is important to understand how this integration works before it can be transitioned effectively to the Dow standard approach.

### The "Land of Confusion" – The Boundary Between OT and IT

In cases where the acquired facility already has a high level of integration between IT and OT, chances are that the way the integration happens, who has responsibility for supporting the integration, and the specific technology used will vary from that of the acquiring company.

Mr. Fridstrom referred to this as the “Land of Confusion,” since what is already there, how the integration happens, and who is in charge, may not be well documented. During an acquisition, it is important to understand the organizational alignment of all the critical manufacturing automation systems and who the support resources are.



Source: Alan Fridstrom, Dow

### Clarify IT-OT Organizational Boundaries

#### Determine the Best Time to Replace an Acquired Plant's IT and OT

Sandra Vann, Principal Automation Specialist, Arkema Group, had previously been part of the Rohm & Haas organization that Dow Chemical divested to Arkema. For the last eight years, Ms. Vann has been a member of the corporate Arkema engineering team in King of Prussia, Pennsylvania responsible for manufacturing information systems deployment and optimization. Part of her role has been to review all the systems in place and determine a plan to transition to a standard approach.

She indicated that like the others in the session, Arkema has grown by acquisitions. In fact, over the last 12 years, there have been 12 significant acquisitions. Also, like the others, the “cutover” from the acquired IT and OT systems must be carefully considered. Like others, Arkema does have a formal IT organization across the company; but not a formal “corporate” OT organization. As a result, the plant operations must often decide what, when, and how to transition.

### Don't Disrupt the Plant!

A common theme among all the participants was to not disrupt production during the transition to the acquiring companies' standards. Ms. Vann indicated that the recently increasing emphasis on cybersecurity has made this part of the imperative even more important.

For example, when the Dow plants were acquired, Arkema allowed them to keep using the somewhat unique asset utilization system. Because it had a proprietary Dow web interface, it had to develop a new interface to be able to continue using the unique functions of this system. This delayed the transition to the Arkema standard, resulting in some unavoidable issues.

### Recommendations

As we learned during this ARC Forum session, it's essential to create a strategic IT-OT investment plan. With all the opportunities available to fund projects, determining which are most important is only possible if considered as part of an overall corporate investment.

Too often, IT investments and OT investments are considered separately. While IT investments may be very visible across the enterprise, OT investments could have a significant impact on the business.

Strategic IT-OT investment plans have the best chance of success if corporate executives are involved in the early stages. IT executives need to know what is happening at the OT level, and OT management need to understand how the business IT structure works and interacts with the OT. Often, the simple step of having IT management visit an

operating plant to see how OT impacts the ability to keep the plant operating and producing product can have a significant impact on the resulting strategic plan.

In cases, where operating assets are the result of mergers and acquisitions, it is important to make sure you understand how the acquired facility works before implementing change. As part of the analysis, it's important to understand both the timing of change, as well as the change itself to ensure that it doesn't disrupt the plant operation.

ARC consultants can help industrial businesses create a strategic investment plan that aligns their OT and IT assets and requirements. This assistance could be as simple as helping organize the first strategic meetings, or as complex as assessing the current production assets to determine the opportunity

value that could be created with the correct changes – both in terms of the “what” to change as well as “when” to make that change.

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