ARC BRIEF

SEPTEMBER 13, 2013

Leading American Food Company Reaches Across the IT-OT Silos

By Harry Forbes

Many Brands, Many Plants

One ARC end user client is a very large packaged food company operating primarily in the US and North America. In fact, they operate over 80 manufacturing facilities in North America. This firm will spend about $650 million this year in new capital programs. Because of company policy the firm insists on anonymity, but its production leaders have been active attendees at ARC Forums. At a recent Forum, they discussed their plans for IT/OT integration. This caught ARC's interest, so we followed up with a more detailed discussion with one of their production leaders who was most willing to talk for this report as long as his firm remained confidential. Consumers would easily recognize many of the firm's food brands. In addition to consumer brands, they also are a manufacturer of private branded and commercial and food service products.

A large North American food producer tells ARC that its IT organization and effective IT-OT collaboration are now critical success factors in all of its capital projects for new production equipment and automation systems.

The firm is organized into two major operating segments. The consumer organization makes branded, private-label and customized food products while the commercial group supplies food products to restaurants, food-service operators and commercial customers.

IT and OT Organization

Both the commercial and consumer operating groups support many business units, factories, and brands. Due to this complexity, company policy has always been to centralize its IT function. The IT people work within a single corporate-wide organization that reports into the parent company, rather than through the various operating units. The obvious advantages of this form of organization are that it enables corporate-wide IT policies. It

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also supports a more specialized and professional IT workforce, and provides more career paths for IT professionals.

One major disadvantage of this form of organization is that it separates the IT organization from the firm's central engineering and manufacturing operations groups. Manufacturing equipment and automation systems have become saturated with technologies that originated in IT (Windows HMI and server platforms, Ethernet networks, internet protocols, thin clients, virtualization, etc.). Instantaneous factory floor information is critical for a host of applications that enable a collaborative manufacturing environment along the lines of ARC's Information Driven Manufacturing model.

High Speed Packaging Using Ethernet

To achieve this collaborative environment, information residing in production and automation equipment must be easily integrated with these critical applications. Time and time again, ARC finds that some manufacturers struggle to do this effectively. One factor that can contribute to the problem is a dysfunctional relationship between the corporate IT organization and a firm's engineering and manufacturing groups. Since the organizational structure is usually determined by other considerations, the important question is how firms can collaborate effectively across the IT-OT silos.

Reaching Across the Divide

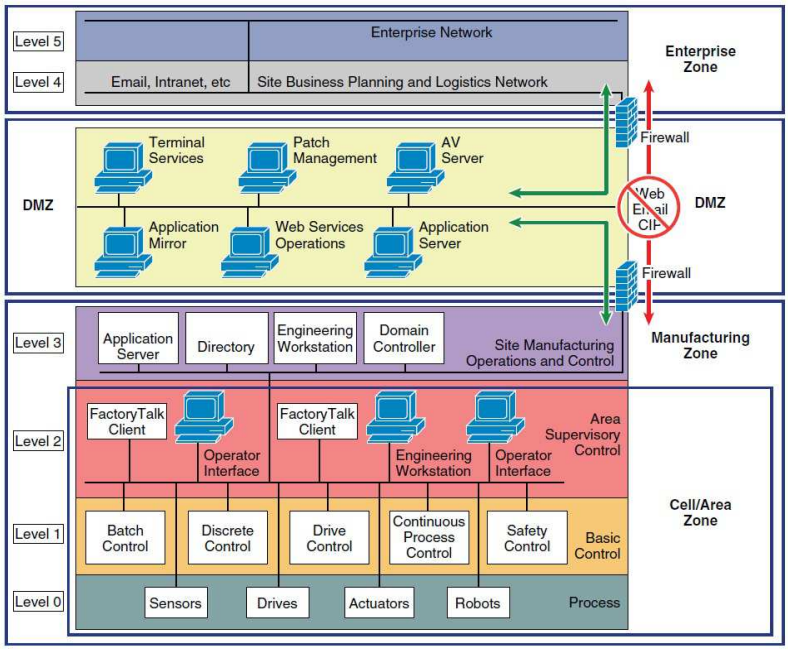
As a follow-up to a presentation at an ARC World Industry Forum, ARC discussed the IT-OT relationship issue with the process control manager for the commercial foods division. We'll call him "John Doe". John's unit holds the leading market share position for its product segment in North America.

John's work with the firm began in IT. A career move from IT to the process control discipline is not unusual in the food industry. While larger plants may have 500-800 employees, many of the company's plants are small and have commensurately small staffs. It's not uncommon, according to John, to have a single person in support roles for both IT and automation.

By contrast the larger plants will have separate teams for each discipline, but within the commercial unit the working relationship has been good.

John explains, "Our engineering groups make a concerted effort to engage IT early and often. We bring IT into project meetings. We reach out and ask them, even if they are not otherwise going to be involved. We've had some real success. We did a greenfield project a couple years ago, and we couldn't manage it ourselves, so we reached out to corporate IT at the front end of the program. You need to reach out and literally give the olive branch; quite frankly reach out and make that attempt, otherwise the old divisions can still be there."

"We went to the corporate IT group and said we needed their help on the project and partnered. We had a well-defined liaison between IT and automation. We had two or three IT people that we worked with regularly."



The Firm Adopted a Cisco Plant-wide Ethernet Reference Architecture (Source: Cisco)

"We don't have a role in our automation organization that IT people could rotate through. But we have situations within automation projects where the IT role is integral to its success. Before a project is kicked off I really have to reach out as process control manager. We have corporate IT standards and we need our automation projects to be compliant with them. Reaching out and asking for help is the key. They want to be asked."

"Our IT-OT relationship certainly isn't perfect, be we have had pretty good success with it. We are better than a lot of manufacturers, but we have room to improve as well. The single biggest thing I would point to is early and frequent communications between the two groups. We try to initiate that communication process from the automation office."

"We partner and work with IT, because simply we cannot maintain our own IT competence. It's not possible. We've had that discussion within our own engineering groups, but the answer comes down to this: do we really want to try to develop switching and networking domain expertise within our group? We can't, especially when the company already has it in another organization. So we don't try that. It makes far more sense for us to learn to work together. The two disciplines may think that they are at odds but they are really not. Their ideals are pretty similar, but their roles and languages are so different that often they don't realize it."

Regarding their current state of best practices, John says that at his firm: "We now pretty closely match the Cisco reference architecture. We have an enterprise network throughout the facility and from that core we pull down to manufacturing network switches. When we put in a PLC we install two Ethernet interfaces; one for the network side and one for the automation services. That satisfies both IT and process control that the networks are sufficiently separated."

"IT tries to build the networks we need within their standards framework. We'll set up VLANs for various automation functions. Our new process control servers are purchased by IT based on input from process control engineering. Our corporate-wide automation protocol standard is EtherNet/IP. All of the communications and all our devices going forward will be using EtherNet/IP. All our remote access is also compliant with our corporate IT standards."

"We can't do our jobs without IT…We have come from a realm of doing things using proprietary controls networks to a point of using IP throughout. The days of dragging IT along kicking and screaming are long past us. For our projects today, IT is a necessary partner."

Regarding the future of collaboration, John adds, "Many new challenges we face are variations on a theme. We can't do our jobs without IT. The days of dragging IT along kicking and screaming are long past us. We have come from a realm of doing things using proprietary controls networks to a point of using IP throughout. So IT is not the 'red-headed step child' anymore. For our projects today, they are a necessary partner."