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White Paper

Driving Profitability through a Real-Time Enterprise

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What's Inside:

Driving Profitability through a Real-Time Enterprise

1. Background

Over the past decade, many industrial operations have reached a profitability plateau. Significant levels of automation and information technology have been installed increasing the efficiency of the operations and initially driving increased profitability, but finding the next step to increased profitability has been elusive.

To a large extent, industrial operations have been focusing on the advanced software tools as the new frontier. Although some of these tools offer promising initial results, the overall improvements in business performance have not met expectations. There are two critical barriers to improvement encountered by most industrial operations as they move to improve performance through advanced application software. The first barrier is the mindset of the technologists at these companies to ignore the power of the human assets at their disposal. Secondly are the traditional islands of automation and information systems that hinder holistic business solutions approaches. In order for the industry to make the next leap forward with respect to improved profitability, both of these barriers must be dealt with effectively.

2. The Power of Human Assets in Industry

Since the dawn of the Industrial Revolution, management and professional leaders in industrial operations have struggled with how to deal with the labor force. Early on the labor force was extremely unskilled and uneducated, which made their effective utilization a huge challenge. To deal with this challenge, Frederick Taylor developed the management approach commonly referred to as Scientific Management. The precepts of Scientific Management were to define the work processes and assign a laborer to execute a very limited aspect of the overall workflow. In today's vernacular Scientific Management essentially converted laborers into limited function robots. Often laborers would learn a function when they joined a company and continued doing that function until retirement. Since they were very uneducated and unskilled, the professional staff, especially the engineering staff, would work to ensure that the laborers did nothing more than what was required. The premise was that the production operation had to be protected from the actions and activities of the laborers.

Based on this mindset and approach, a huge schism developed between the laborers, management and the professional staffs. One result of this schism was that labor organized into a powerful political force. Once they were organized they worked diligently to ensure that their children would have a better life than they did by expanding on public education and other educational opportunities. The result was that the children of the labor force typically ended up being better educated than their parents. After a few generations, the large unskilled and uneducated labor force that was the backbone to the industry faded away.

The new labor force is comparatively well educated. Furthermore, over the past few decades the automation and information systems commonly utilized in industrial complexes have become significantly more sophisticated, providing the operators with a much more intensive information view of the operations than previously possible. The result is that today's "Labor Force" is not only well educated academically and experientially, but also has typically developed an impressive information based skill set. Yet the professionals and managers in these operations still tend to deal with them as they did the unskilled, uneducated labor force of history. What a waste of a powerful industrial asset! Industrial professionals and managers must challenge themselves to break the mindset that has held back this powerful resource.

Recent attempts to capitalize on the skills and education of the new labor force, primarily the plant operations and maintenance, in industrial operations have been met with mixed success. In some cases, the operations and maintenance teams were provided with operational measures of performance (key performance indicators or KPIs) on a daily basis to help guide them to make better decisions. These daily KPIs provide new information and allow operators to determine how well they are doing, but for the most part, do not provide the information needed in the time frame required to make better decisions and improve the plant performance.

Real-time decision support systems that provide operational and financial information to the operators and maintenance personnel when needed to make performance-improving decisions have proven extremely effective. The real-time decision support information can be provided on simple prioritized and contextualized dashboard displays offering immediate feedback on the performance impact of any action taken. For example, if an operator changes a temperature set point, they can look at the dashboard to immediately discern if that change increased or decreased the performance of their portion of the operation. By obtaining this information they learn how to operate the plant in an extremely effective manner and how to increase the profitability of the operation.

This real-time decision support approach has proven to be extremely effective if real-time access to the necessary information is available. Unfortunately, the way many industrial operations went about automating was to install different automation systems from different suppliers and of different vintages resulting in islands of automation and information. Developing the real-time information to support the real-time decisions support system typically requires real-time information access across all automation and information domains in a plant and across an entire enterprise. Connecting two dissimilar automation systems together has been a very expensive proposition. The islands of automation and information systems have become a considerable barrier to the development of real-time decision support.

3. Bridging the Islands of Automation and Information

In many industrial operations, technologists have worked to build unified information infrastructures across the various automation systems by connecting the automation systems to a common plant historian, such as OSIsoft®, PI, AspenTech®, InfoPlus.21™ or Wonderware® Historian. Although this approach does provide a degree of interconnection across the different islands that are typically adequate for moving the data from the plant floor to the business systems, it also introduces an inherent delay in the propagation of the data. If an operator must take action immediately to effectively impact the performance of the plant and the data does not arrive for even ten minutes, it may be too late to affect the desired result. This is not to say that the connection from the plant systems through the historians to the business systems is not necessary. It is, especially for reporting functions within the plant. But decision support requires the information to be delivered when the decision must be made. On the plant floor this means real-time delivery.

The good news is that a new technology has emerged over the past few years that directly address the islands of automation and information with real-time connectivity—Enterprise Control Systems, such as InFusion™. InFusion has taken the lead from the business system and information technology world by adapting the Service Oriented Architecture (SOA) that has been very effective at overcoming the islands of information at the business and enterprise levels by building industrial and real-time SOAs. These industrial SOAs, such as ArchestrA®, provide very cost effective real-time interconnection across the entire automation domain in a plant or enterprise. This technology, effectively implemented provides a common real-time information domain across a multiplicity of automation technologies from multiple vendors and across multiple vintages. The result is a common real-time compute space that provides effective real-time information access wherever required through an industrial enterprise. With the introduction of the InFusion Enterprise Control System to the industrial marketplace, all the components are available to drive unprecedented improvements in the efficiency and profitability of industrial plants and enterprises.

4. The Real-Time Enterprise

Throughout the past few years many of the business variables associated with industrial operations have transitioned from very high stability to real-time variability. For example, only five years ago many industrial sites were able to contract with their power supplier for as long as a year, essentially relegating the price they were paying for electricity to a constant over the contract period. Today, with the recent deregulation of the power grids, it is not unusual for the price an industrial site is paying for electricity to change every fifteen minutes. Similar levels of variability are starting to show up for other business variables as well, such as material costs, production value, environmental stewardship and safety. This has resulted in the business of production moving from transactional to real-time variability.

With real-time variability of many of the business variables of industry, monthly business management systems are no longer sufficient. Business decisions must start to be made in the time of business—real time. Getting the appropriate information to the right people at the right time has become the primary challenge of industry. The transactional enterprises of the past are inadequate to the challenge. What is required is the Real-Time Enterprise.

A Real-Time Enterprise is an industrial enterprise in which all the information required to support effective real-time decision making is made available when and where required. Building an effective real-time enterprise typically requires two basic steps. First is to develop the holistic real-time industrial infrastructure that technically enables real-time access to all critical information across the enterprise. Second is using that infrastructure to build the prioritized and contextualized information content for each person in the operation responsible for making decisions that drive business value. The combination of the real-time decision support system built on top of the InFusion Enterprise Control System provides industrial operations with the Real-Time Enterprise necessary to move to the next step in improved profitability.

5. Summary

Real-Time Enterprise is available today. Implementing InFusion technology across an industrial enterprise and using that technology to build the prioritized and contextualized decision support system to empower every person in the operation to make performance enhancing decisions results in a Real-Time Enterprise. Invensys Operations Management has pioneered the Real-Time Enterprise approach by developing the world's first Enterprise Control System—InFusion, and inventing the only financially-based real-time decision support structure. Not only is the Real-Time Enterprise feasible, but its implementation can be structure such that industrial companies realize up to 100% return on their investments within a year.

It is incumbent on every industrial enterprise to drive increase business and operations performance improvements. The best way to accomplish this is to move to the Real-Time Enterprise—only from Invensys Operations Management.

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