

# Newer systems to improve business performance?



The three traditional classes of automation and information systems, MES, business systems

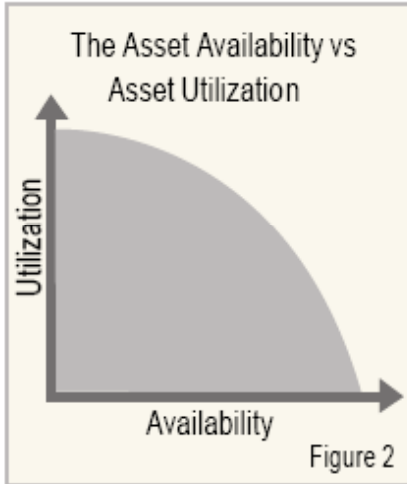
By Peter G. Martin

Traditional automation and information systems results in islands of information and automation, and the lack of focus on using the technologies to solve business problems in new ways. The recent emergence of enterprise control systems (ECS) resolves the first issue and a new business paradigm for managing industrial assets for business performance through ECS technology, asset performance management (APM), helps to resolve the second issue.

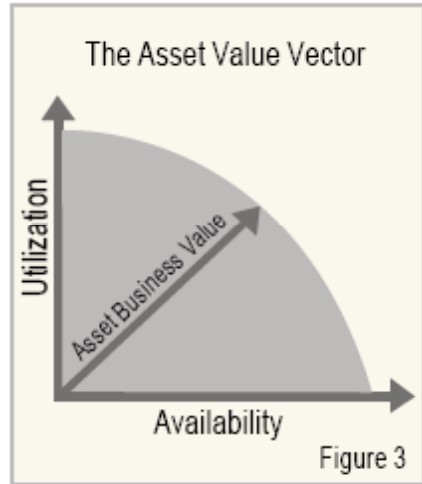
Together these two emerging paradigms are posed to finally provide the business performance improvements that have been long expected and desired.

### Enterprise Control Systems

The functional requirements of traditional automation systems led to classes of systems which would not work together. Now, there is opportunity to build truly universal automation



The Asset Availability vs Asset Utilization



The Asset Value Vector

platforms that cover all the traditional automation, providing inherently integrated systems.

Also, with the information technology groups in companies utilising the same technologies for business computing, true enterprise automation and information systems are finally available.

Enterprise Control Systems are specifically designed to breakdown the traditional barriers that have resulted in the islands of automation and information. The elimination of the barriers to effective solutions has resulted from three specific characteristics of ECSs.

First is full plant floor interoperation. It is achieved by investigating the three traditional classes of automation and information systems, automation, MES and Business systems (Figure 1).

Automation systems are not quite as open as they often advertise primarily because the priorities for these systems are safety, security, environment then openness. By collapsing the MES and automation levels into a single domain, safety, security and environment priorities can be maintained while also achieving new levels of openness.

ECSs allows the entire intelligent plant floor to work as a single system environment even when the base technologies have been provided

by multiple suppliers.

The second ECS characteristic is full open communication access throughout the business enterprise. ECSs support all the latest open standards. By incorporating these standards into the ECS infrastructure, the cost and effort required to drive business solutions throughout the enterprise can be reduced.

The third key characteristic is a unified engineering environment across all plant floor domains. There are two aspects to this environment, the control level configuration environment and the application level configuration environment.

At the control level, ECSs move the efficiency of system engineering to a new level by providing one state-of-the-art engineering environment that operates across multiple plant floor domains. At the application level, cross domain applications must be able to be configured using standard configuration tools familiar to every plant application engineer yet capable of interoperating with any system at the control level.

These three characteristics of an ECS combine to provide the ideal, enterprise-wide system environment for solving business problems.

### Performance Management

The first step to accomplishing more business value from capital and non capital assets is to extend the accounting measures to the plant floor and calculate them in real.

ECSS provides this platform for collaboration across the various organisations within an industrial enterprise. At the plant level the two organizations most responsible for the minute-to-minute performance of the industrial assets are Operations and Maintenance. In many manufacturing plants, Operations and Maintenance do not work effectively or efficiently together and are often in conflict.

Discussions with plant managers revealed that the primary performance measure of Operations is asset utilisation while the primary performance measure for Maintenance is asset availability. Measuring real time equivalents of asset availability and asset utilisation in a variety of industrial asset sets demonstrated that they form an inverse relationship as they move toward their optimal point (Figure 2).

This means that the primary measures of performance for Operations and Maintenance actually drive them into a conflicting relationship. Executives do not really care about availability or

utilisation per se, rather their primary interest was the economic value generated from the asset set.

Another interesting relationship that was identified was that the manipulation of availability and utilization could be used to drive the real-time accounting values. The length and direction of the vector determines the business value and can be altered by changing the values of availability and utilisation (Figure 3).

Automation technology has traditionally either been deployed to manage Maintenance or Operations independently. Manipulating the availability vector and the utilization vector to control the asset business value vector is referred to as asset performance management (APM). Applying APM at the plant level provides a new paradigm for driving business performance from industrial enterprises.

This level of business and operational performance measurement and the growing ability to predict the outcome of changes to availability and utilisation in terms of business value creates the potential to move to greater levels of control in industrial plants and enterprises. The next step in the progression may actually be true closed loop business control.