SAE100 Future look

In celebration of SAE's Centennial in 2005, industry executives discuss the future of mobility technology.

The battle for information flow

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In combat, both on the ground and in the air, seconds count. **Epic Data** recognizes that the recent development of highly secure, futuristic real-time information flows provides a tremendous competitive advantage to field commanders making decisions that will have life or death consequences. In war, getting the right information to the right place at the right time is critical to victory.

Similarly, aerospace manufacturers are battling hard in today's markets as significant cost pressures, originating with deregulation and volatile military sales, pass through OEMs to affect every tier in the supply chain. Competitive pressures continuously raise the bar in terms of greater selection, with quicker delivery and higher quality at lower cost, often driving down margins. In the new global marketplace demanding "cheaper, faster, and better" competitive advantage depends on delivering products designed precisely to meet customer requirements.

This accelerated shift toward mass customization, outsourcing, and lean-enterprise performance management has brought new challenges to aerospace manufacturing and ground support and repair operations. Chief among these is the need for information systems to automatically begin matching the requirements of accelerated and more complex physical production systems, enabling better information to arrive at the right time and the right place.

The manufacturing value stream (MVS) is made up of two interconnected flows. Physical flow encompasses the movement of goods and materials aimed at improving velocity by the reduction of work-in-progress inventory and cycle times. The second aspect involves data (or information) flows that trigger value-added work, the physical movement of parts and inventories, and status visibility across the MVS.

Accelerated physical flows through more complex and globalized supply chains are straining the capabilities of manufacturer and supplier information systems. In addition, poor information visibility caused by delays in delivering "batched" and error-prone "hand-entered" information and IS bottlenecks drives companies to build expensive just-in-case inventory, and slows the rate of transactions, often to a snail's pace. The time it takes to generate useful information from raw data contributes to extended cycle times and cost increases.

Advanced technologies such as automatic identification and data collection, bar codes, RFID tags, scanning devices, and software to connect this information to the main ERP system are now delivering fully integrated and real-time information processes. These technologies work together to herald a just-in-time manufacturing information system that matches the physical flow, and reduces marginal-value work and its associated staffing cost.

One of the biggest challenges in data collection has been the elimination of the "islands of automated information" that typify older, legacy data-collection systems dating back 10 to 20 years. It has been very difficult to get these systems to speak to each other. As a result, decisions requiring information flows between different cells and departments are often delayed until someone puts the data on paper. Now, however, online collaborative decision-making is here and occurring in real time.

Lockheed Martin Aeronautics, for example, has implemented this type of system at its plants in Dallas–Fort Worth, Marietta, GA, and Palmdale, CA, to enable the company to record and validate details of all work performed as it occurs and transmit it across various legacy platforms.

In the future, more and more manufacturers will be harnessing the same benefits of real-time information systems used so effectively on the real battlefield to get equipment into the battle faster.

MPT9100 shop-floor terminal system

Two-way information flows are the future of data collection.