

Our platform and partners with deep automotive experience enable small- and medium-size manufacturers and suppliers to quickly deploy an integrated set of leading-edge business applications inexpensively without complicated customizations. Our applications support:

- Lean manufacturing
- Release accounting
- Integrated EDI and bar coding
- Production planning and delivery control
- Contract and supplier management
- Alternative payment schemes
- Subcontracting
- Advanced Product Quality Planning (APQP)
- Product Lifecycle Management (PLM)
- Collaborative design and engineering
- In Line Vehicle Sequencing (ILVS)
- Feature-based assembly
- Shop floor data collection
- Returnable container tracking
- Field service/warranty tracking

To learn more about how integrated, affordable business solutions from Microsoft can help you get the competitive edge in automotive manufacturing, go to:

<http://www.microsoft.com/BusinessSolutions/Industry/Automotive/default.mspx>

### Constant Change

The automotive industry is always on the cutting edge, adopting new technologies for the industry's constantly emerging challenges. Original equipment manufacturers (OEMs) are continually pushing supply-chain pressures on their tiered suppliers to reduce costs, increase output, increase quality, and provide more frequent deliveries.

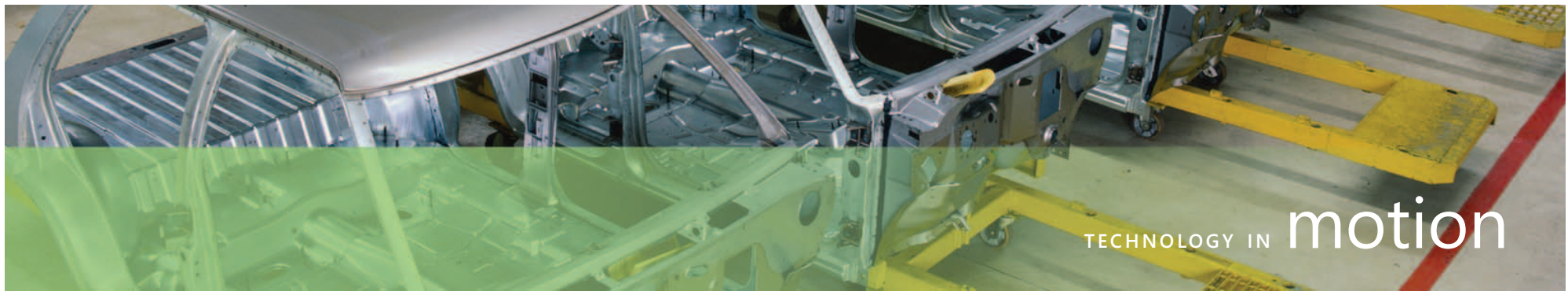
Additionally, new global markets are emerging and consumer tastes are changing. At the same time, pricing, quality, and design cycle times have radically shifted in the past two decades. Manufacturing overcapacity has created an environment for OEM rebate programs and supplier consolidation. Then there are the government regulations and industry standards bodies that are placing additional pressures on the automotive supply chain.

These challenges place demands on automotive manufacturers and suppliers to improve quality and increase the flexibility of their production systems. A robust computing infrastructure makes it easy to exchange product and design data while supporting the rapid evolution of business processes.

### Lean and Communicative Suppliers

A flexible IT environment enables automotive companies and their suppliers to reduce time to market, improve plant floor production, and increase visibility between production and supply chains. For example, many of the 50,000 automotive suppliers have embraced manufacturing and supply-chain system ideas first introduced by Toyota. Software applications that support lean manufacturing techniques allow suppliers to carry lower inventories, minimize operational costs, meet just-in-time (JIT) delivery expectations, and reduce bottlenecks.

Collaborative design and engineering is now possible; enabling the codevelopment of products creates a tighter synergy between suppliers and results in shorter time-to-market deliveries. Additionally, higher quality products emerge from more agile and efficient facilities.



With enterprise resource planning (ERP) systems that support release accounting, automotive suppliers can accurately track shipping and delivery of parts. Cumulative quantities are recorded for each part, plant, and model year combination. The ERP system accepts this cumulative quantity information in electronic format, translating it into a work requirement, and then updating the cumulative quantity upon shipment.

Automotive companies also utilize electronic supply-chain-collaborative capabilities with their trading partners to easily and flexibly exchange business documents and transactions that seamlessly integrate with their business applications. Electronic Data Interchange (EDI) and Extensible Markup Language (XML) documents are exchanged within a construct of standard message definitions and rules (ANSI X.12, Odette, Edifact, CAP ebXML, etc.). Advanced shipment notifications (ASNs) are prepared to alert customers of impending shipments. Gathering the right data on a real-time basis is critical to making decisions in the fast-paced automotive manufacturing world.

### Supply Chain Planning and Inventory Management

Automotive suppliers can better deliver the correct product, at the right time, in sequence, at an appropriate price. Suppliers can continually manage their vendor's performance to assess their ability to adequately supply product to feed their repetitive manufacturing environments. All activities associated with acquiring new business can be tracked throughout the bidding, estimating, and prototype phases of new products and/or new customer business relationships.

A flexible computing environment provides the infrastructure for the variety of different manufacturing capabilities being used in the industry today. For instance, the planning and scheduling needs for automotive suppliers can vary depending on the customers served and their position within the supply chain. In a highly repetitive environment, software for demand planning and/or blanket orders can be used to establish inventory levels and production schedules.

However, in a pull-based environment, suppliers rely on system electronic or visual kanbans to signal a request for product from a downstream operation. Agile automotive suppliers are utilizing simplified bills of material (BOMs) and flexible factory layouts to maintain flexibility and increase responsiveness. Some sophisticated supply chains may even require In Line Vehicle Sequencing (ILVS) where suppliers must deliver JIT as well as in the proper build sequence.

Shop floor control systems allow automotive suppliers to effectively manage their work-in-process from a scheduling, reporting, and costing perspective. Utilizing radio-frequency (RF) bar codes increases data collection speed, accuracy, and traceability. Additionally, the suppliers need to meet the OEM- and customer-specified bar code labeling requirements, and returnable container procedures.

### Effective Information

Gathering the right data on a real-time basis is critical to making effective and timely management decisions. Microsoft offers a variety of ways to access the critical data—a client-server interface, Internet portals, remote devices, sophisticated data reporting, and OLAP analysis.

With the passage of the National Highway Traffic Safety Administration's (NHTSA) Transportation Recall Enhancement Accountability Documentation (TREAD) Act, traceability is a requirement for compliance. Complete lot and serial number traceability is crucial to producing the appropriate level of documentation required. Audit trails are available for all system transactions while drill-down inquiries provide immediate access to information.

### Competing to Win

Microsoft® Business Solutions understands the challenges of automotive manufacturing and suppliers, developing a portfolio of applications for this demanding industry. Technologies from Microsoft Business Solutions give automotive manufacturers the key capabilities needed to be more responsive to customers and suppliers.