

# Internet Parts Ordering Industry White Paper

*Identifying Trends and Issues with Open E-Business  
Standards Faced by Automotive Aftermarket Companies*

---

**September 2006**  
**By Joseph Register**

Sponsored By

**AAIA**<sup>®</sup> **Automotive Aftermarket**  
Industry Association

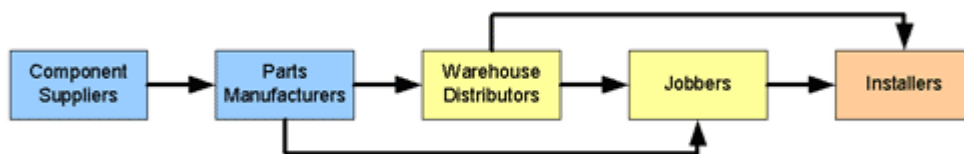
## Aftermarket Internet Parts Ordering Bringing Supply Chain Efficiency to Special Orders

Managers responsible for electronic commerce in the automotive aftermarket have made great strides in streamlining the order process for most of their merchandise, but special orders have remained the inefficient exception to the rule. These data intensive, manual workflows fraught with exception handling have been difficult to streamline and automate. The Internet Parts Ordering (IPO) standard from AAIA removes the barriers to efficient processing, and dramatically reducing the need for manual intervention. This white paper explores the advantages in adopting the AAIA IPO standard.

### What is a Special Order?

Providing an accurate description for special orders is complicated because they can be referenced using number of different names, including “emergency”, “factory”, “warehouse”, “custom”, and others. While all of these order types still fit the broadest description for Special Orders, they also attempt to describe subtle differences between the product itself and delivery expectations. Repair facilities request “emergency orders” to specify the need for immediate fulfillment, with an added emphasis on speed of delivery. A retailer placing a “warehouse order” could be acknowledging the order is for a seldom stocked, slower moving product that will likely take additional time to locate and deliver.

In this paper, we’ll use the term ‘special order’ to describe any ad-hoc order for an installed part offered by the supplier but not stocked by the buyer. The order may be placed with any stocking location in the supply chain including manufacturers, warehouse distributors or jobbers. In some cases, these orders may be orders for products the manufacturer builds to a custom specification. Depending on product’s availability within the supply chain, the order may flow through several layers of distribution as illustrated in this diagram:



### Special Orders Present a Special Challenge

Orders for installed parts are data intensive, requiring detailed information about the customer, buyer, seller and the product. Since the special order is

placed for a non-stocking item, the seller must provide much of this information ad hoc before an order can be placed. This often includes a unique product identifier, selling price, shipping costs, and occasionally the vehicle application(s) for the part.

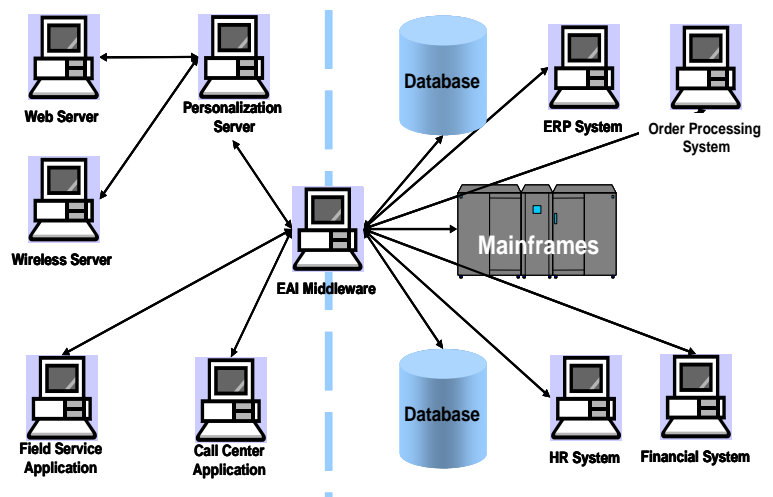
If we examine the special order process closely, we see that ordering a part is actually a second step. In most cases, the buyer must know the 'price and availability' of a part before actually placing the order. And because there are so many defining attributes, a real-time conversation between buyer and seller is usually required before the right part is identified and the order can be placed.

Because special orders are so common in the Aftermarket, many companies have developed their own unique business rules and processes to handle them. Order placement often requires an experienced employee to initiate and follow-up on these transactions using a telephone or fax machine. The lack of any system controls underscores a need for well written documentation to ensure accurate information is recorded and to limit the possibility of employee theft through misdirected shipments.

Gathering all the information needed to accurately process a special order can be difficult. In many cases, the only information the buyer has is the supplier's part identifier taken from a paper or electronic catalog. In this case, the seller must provide all additional product information necessary to complete order. Given the breadth of this information, it is uncommon to find all the data needed to complete a special order is available in any one system.

## Automating Enterprise Support for Special Orders

All this exception handling can be a challenge to even the best Enterprise Application Integration (EAI) designs. EAI is often accomplished using integration middleware, where proprietary maps translate content between disparate systems. For business process automation, EAI automates the internal business processes initiated by an internally generated event or an event generated by an incoming message from a customer or partner.



In other words, EAI systems automate information flow between applications according to business rules. Within the enterprise, EAI maps messages into logical transactions, units of work that succeed or fail together. Transactions are not complete until data is updated across all integrated applications, so no part of the data processing can fall out of sync with the others.

Some aftermarket companies have gone an extra step in providing application and EAI support for special orders, collecting and presenting enterprise data for their specialists. These applications collect the new information, and use EAI to retrieve any relevant existing information from other systems within the enterprise. All that remains now is to share this electronically data with their trading partner. Unfortunately, EAI solutions were never designed to supply this information flow outside the enterprise.

EAI systems are generally able to assume that messages are secure and that all applications share a high level of reliability and manageability within a single enterprise. In other words, most EAI systems are designed to manage transaction flows behind a secure firewall managed by a centralized IT authority. Companies using an Application Service Provider (ASP) would find similar functionality to EAI has been provided behind the scenes at their location. But in either case, EAI will gather the necessary data from any physical location within that enterprise, but integration stops at the corporate firewall.

## **Automating Trading Partner Integration**

The B2B world exists between firewalls where there is no common infrastructure shared by the different business partners. The internet itself has poor security, little reliability guarantees, and even less accountability. This are some of the reasons even the most technically advanced aftermarket buyers continue to use the telephone or supplier's website to process special orders, both presenting their own set of problems.

Gathering price and availability information for a special order part over the phone is always difficult, especially when there's a line at the parts counter. Visual clues are often necessary in identifying the right part, and these must be explained by the supplier and then translated by the counterman for the customer. In these cases, a picture of the part(s) in question would definitely be worth a thousand words. Worse still is this conversation leaves no physical record for the counterman or the customer, and additional time must be taken to record the information or rely of the employee's memory.

Using the supplier's website will usually provide a picture and printout of the necessary part information, but managing the plethora of unique passwords in order to access each site can be a real pain. Memorizing and recalling these passwords at a busy parts counter is a real challenge for the full-timers, and nearly impossible for part-time employees. When passwords are recorded and left generally accessible behind the counter, some confidential aspects of buyer/seller trade agreements can be compromised.

Watching these completely manually special order processes in action can be painful. Unfortunately, things aren't much better for countermen with special order application support. Although the information about the customer and requested part can be collected by an internal application, communication between the buyer and seller is still limited to telephone conversations or supplier websites. Once the price and availability information is accepted by the customer, another phone call is needed to order the part and expedite the shipping. Finally, the resulting order confirmation information must be manually entered into the application after the manual process is completed.

Of course, there are commercial solutions that will collect and broker special orders over the internet. Yet these solutions may not connect with all your partners, or provide the detail you could receive by connecting directly with a supplier's system. According to John P. Desmond of SoftwareMag.com, "The hidden, dirty, little secret that causes problems and brings B2B solutions to a halt is the [external] integration problem. You've got to have standards that bring you leverage to design the maps and integration solutions fast and deploy them quickly."

## **Standards Lay a Foundation for Partner Integration**

*"Standards are like keys always hung at the same nail they free up your mind for more useful thoughts." -- Anonymous.*

The value in adopting standards is well known and documented. John Hurd, Chair ITIC Standardization Policy Committee, said "Standards establish a clear communication of capability between the customer and the supplier. We see this every day as consumers: from light bulbs and shoe sizes, to electrical codes and highway signs. Customer confidence and purchasing is governed by a combination of the value of the standard and the credibility that suppliers have in terms of delivering that value. User investment in retraining, re-engineering, and acquiring new capabilities can be minimized through effective application of standards."

It hasn't taken long for companies to recognize these benefits, adopting technology standards in both commercial and private systems development. Although the proliferation of new e-Business technologies, especially the eXtended Markup Language (XML) has laid an excellent foundation for firms to share information with trading partners, that foundation can't provide a complete business solution by itself.

Yet taking standards to the next step is critical to achieving interoperability, inter-firm coordination and collaboration, all of which are among the most important factors of e-Business. Since it's unlikely the large standards bodies providing standard definitions such as XML would ever make their way to consider an exchange standard that will solve our special order problem, we need a standards solution that's closer to home.

### **The Need for Vertical Industry Standards**

According to a University of Illinois paper, "the lack of open, e-Business standards (OEBS), a specific set of IT standards for e-Business, has greatly hindered electronic information sharing among companies. The high developing cost due to the enormous scope of such standards, together with the uncertainty of adoption, has made it economically infeasible for the development to be done by any single firm."

An unprecedented number of industry consortiums have risen recently to address that need, giving rise to a new sector in standards development. These vertical information systems (VIS) standards are technical specifications designed to promote the coordination among the organizations within vertical industry sectors. Source #6

The University of Illinois study determined that firms within an industry that defines its own e-Business standards have three choices:

- joining the standards development
- being an adopter only
- not adopting at all

As might be expected, they also found the benefits for an OEBS adopter increases with the number of firms within the network. When more companies adopt the same OEBS, new trading relationships are more easily and efficiently established. Although the size of the adopter network is also a major factor in determining the payoff for a vertical standard developer, developers do enjoy a couple of additional benefits over adopters:

- There is positive impact related to the “insider” effect of being a developer
- This “insider” effect reduces the myopia for their internal developers, increasing the value of the standards in their company

## **Differences in OEBS and EDI**

No one promoting OEBS is predicting the demise of EDI anytime soon. It seems reasonable to predict that established EDI transactional solutions will continue to provide benefits for those who have made the investment. In fact, other internet standards have diminished the need for expensive private networks, removing a major cost consideration in EDI adoption.

But the University of Illinois authors were quick to note that OEBS is not the same as Electronic Data Interchange (EDI). They see EDI as facilitating business-to-business transactional data, while OEBS can also define a set of e-Business standards which cover many other aspects of a trading partner relationship, such as product development and inventory management. Even more intriguing is the possibility of establishing business relationships real time in a highly dynamic, inter-enterprise network; an impossibility with EDI.

The same study also observed that despite a lot of promotion, EDI standards have achieved only limited adoption globally; an estimated 2% of the world’s businesses have adopted EDI. The low penetration of global electronic interconnection standards, particularly around business semantics, is believed to hinder electronic business and supply-chain integration which can not be properly addressed through EDI transactions. Only OEBS has the flexibility to expand trading partner collaboration to maximize the potential of global electronic business collaboration.

## **Barriers to Adoption of Vertical Standards**

It seems the barriers in vertical standards adoption aren’t typically technical or financial in nature, but tend to be more cultural or politically motivated.

Research reveals these motivations offer several reasons a potential adopter may drag their heels and fail to commit to an industry standard. Comparing the results of two case studies on standards adoption taken from other industries provides some interesting explanations for this behavior.

## Healthcare

Carol Rozwell, a distinguished Analyst from Gartner and one of the authors of the CDISC report, says she had one burning question after reviewing all the benefits of vertical standards adoption in her industry, “If we’ve got all this information telling us how much standards can improve the clinical study process, then why aren’t we seeing an incredible increase in adoption?”

Looking through her stakeholder interviews, she found several answers:

- Pride and expended effort in the proprietary solution
- Getting consensus among functional areas
- Specifics in how to implement
- Lack of tools from industry vendors

It seems that many potential adopters are very proud of their proprietary solutions, and reluctant to give way to an open standard. In other cases, some areas of a company are ready to embrace the change, but others groups in that same company are either unready or unwilling to follow along. Other stakeholders indicated the company didn’t know how to begin, and said they needed better guidance in how to start their implementation. Still others expressed frustration that industry software vendors had been the slowest of all in adopting vertical standards, and felt helpless because they depended on this software for compliance.

## Residential Mortgages

A study was published in a recent issue of MIS Quarterly on VIS standards in the home mortgage industry. Their paper offers some candid feedback from a stakeholder on standards development and related some counterproductive adoption behavior by two industry leaders.

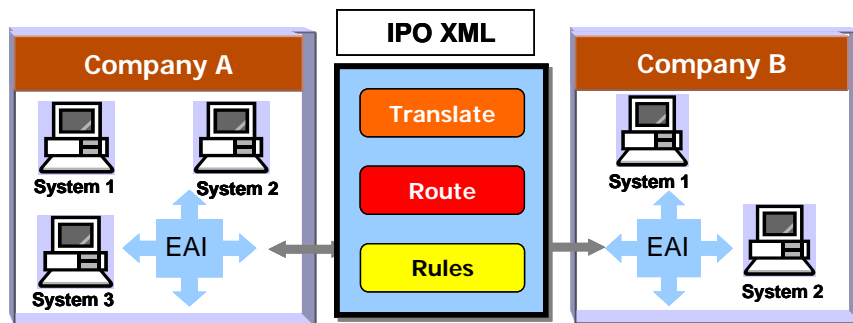
“If you believe you’re going to have a commodity product at some point, do you want to become widely accessible [or do you continue] thinking there’s a competitive advantage in how you get connected to people? There’s always some aspect [of our business] that are more competitive that everybody withholds something [in standards setting meeting] to a certain extent. “

The study also points out there are two Government Sponsored Enterprises who are fierce rivals in the secondary mortgage market. Although they both had pioneered the use of EDI in the 1980s, each had its own proprietary format. When the OEBS standards were released, they continued to offer support for their proprietary EDI standards, avoiding adoption of industry-wide standards until forced by the industry’s press.

## The AAIA Internet Parts Ordering Standard

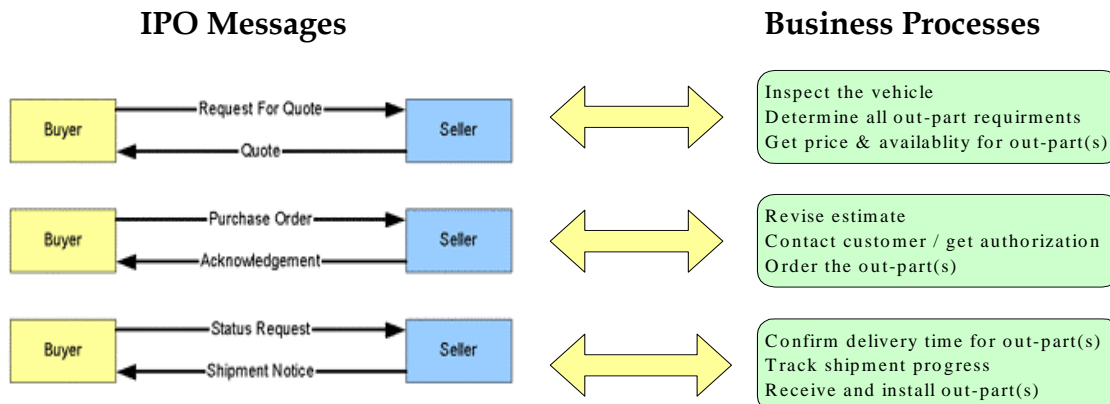
To help businesses in the automotive aftermarket lower their costs and improve efficiency, AAIA has taken the lead in developing VIS standards, including electronic cataloging, shop integration, and electronic product information exchange. The Technology Standards and Solutions committee is the VIS standards body.

Internet Parts Ordering is the AAIA OEBS standard for exchanging Special Order information for buyers and sellers in the Automotive Aftermarket. IPO uses the eXtended Markup Language (XML) to define documents used in this exchange. These documents are transmitted over a secure internet connection, avoiding the cost of private networks and third party processing charges.



IPO provides an automated alternative to phones and faxes using an inexpensive Internet connection already available at most business locations. You will remember that placing a special order for part requires a series of conversations between buyer and seller. Typically, these conversations involve the exchange of written documents such as a quote, a purchase order, or ship notice. IPO generates these same documents without manual data entry.

The following diagram provides a high-level overview of how XML Business Object Documents (BOD) are exchanged by the buyer / seller, automating the manual special orders processing we discussed earlier in this paper.



The IPO subcommittee decided to adopt the Open Applications Group Incorporated (OAGI) BOD definitions as their canonical standard for XML document exchange. OAGI is a not-for-profit industry consortium whose purpose is to promote interoperability among business software applications through a standardized data exchange methodology. Some advantages of using OAGI's proven methodology are:

- High re-use, i.e., less "reinventing the wheel"
- Faster development
- Smaller learning curve
- High consistency among business partners of architecture and terminology

The IPO subcommittee also selected Web Services as its implementation framework; the technical mechanisms for transporting, securing and describing IPO interactions. Web services have since gained wide acceptance as a preferred technology enabler for OEBS solutions.

Using the OAGIS standard to define the XML messages, and web services to support the transport of these messages, leverages the value of broader industry standards. Since IPO, OAGIS, and Web Services are all open standards, there are no usage fees creating a barrier to adoption. Providing a single, cost effective solution for both buyer and sellers makes IPO an ideal solution for aftermarket special orders. Since the IPO solution is adaptable to any system, there is no need to change your current merchandising or logistics software to take advantage of the benefits IPO delivers. Simply use IPO to extend your existing EAI solution beyond the firewall to integrate with your trading partner.

The IPO OEBS standard was developed with broad industry participation, including representatives from these AAIA member companies:

Manufacturers

ArvinMeritor, Dana Corporation, Gates Corporation, Global Accessories (formerly Saddleman), and Hunter Engineering;

Distributors and Retailers

Advance Auto Parts, CARQUEST Auto Parts, CSK Auto (which also does business under the Checker, Schuck's, and Kragen brands), Genuine Parts Company, and O'Reilly Auto Parts;

Software Providers

ALLDATA, BayMaster, GarageOperator, and Wrenchhead.

The IPO standard was officially released in 2002; the current version is 1.2.1 released in March of 2005. Documentation is available for download at the AAIA IPO Portal at [www.ipoport.com](http://www.ipoport.com), which can also be reached through a link at the AAIA website, [www.aftermarket.org](http://www.aftermarket.org).

## **Maintaining the IPO Standard**

The job of managing OEBS standards isn't trivial; new technologies and versions of those already adopted are frequently released. It isn't always apparent when a change to an existing specification is warranted. Ongoing consideration for existing adopters is an important factor when considering these options, and critical in maintaining trust as a VIS standards body.

A recent University of Illinois study has recommended an approach to help ensure success in managing these standards. The paper observes, "Vertical e-business SDOs [standards developing organizations] face a lot of challenges such as rapid technology development, and divergent preferences between various supply chain sectors."

In order to address these issues, they propose a Participant-Technical Content-Institutional structure framework as outlined below:

### Participants

- Number of participants - can be several to several hundred
- Sectors of participants - vertical SDOs need to address sector divergence
- Bargaining power - market share, resources, lobbying influence

### Technical Content (with regard to technical maturity)

- Established - resolve conflicting interests over established base
- Emerging - inter-firm knowledge sharing, anticipate future use

### Institutional Structure

- Organizational Structures - usually two part
  - Administrative committee - guides policy and strategic direction
  - Work groups - focusing on sub-areas speed up development
- Procedures
  - Proposal development - send delegates to define or draft proposals
  - Decision making - voting rights, votes required for acceptance
  - Openness
    - Open - available to all interested parties
    - Closed - invited members only source #4

The all volunteer IPO subcommittee structure is well aligned with these recommendations, consisting of a Management Group, Technical Team, and a proposal generated development processes that is open to all AAIA members. Because fairness, sustainability and continuity are all important considerations when adopting any VIS OEBS standard, our organizational structure is designed to provide the necessary checks and balances to represent the interests of all AAIA members.

## The Case for Immediate Adoption

Special orders provide an important service to customers of the automotive aftermarket, and adoption of the AAIA IPO standard makes them cost effective and easier to manage. Knowing that the IPO OEBS is based on broader industry standards, and the organizational structure of the IPO standards body is aligned with SDO best practices, provides IPO adopters with confidence in both the standard itself and the ongoing definition and support process. And because IPO provides synchronous, real-time communication using XML and web services technologies, it provides an ideal collaborative infrastructure for other OEBS trading partner activities.

The AAIA Technology Solutions and Standards committee invites you to join score of other member companies in adopting IPO and enjoy the benefits of enhanced special order capabilities this standard affords.



## End Notes

- #1 John P. Desmond SoftwareMag.com SoftwareGram Newsletter, Feb. 21, 2002
- #2 Open E-Business Standard Development and Adoption: An Integrated Perspective; Mu Xia, Kevin Xhao, Michael J Shaw ©2003
- #3 Vertical Industry Information Technology Standards and Standardization; Rolf T. Wigand, M. Lynne Markus, Charles W. Steinfield ©2005
- #4 Vertical E-Business Standards and Standards Developing Organizations: A Conceptual Framework Kevin Zhao, Mu Xia, Michael J Shaw ©2005
- #5 John Hurd, Jim Isaak, IT Standardization: The Billion Dollar Strategy – CCIT Conference ©2001
- #6 BetterManagement Presents, Diving into Details: An Expanded Business Case for CDISC Standards by Rebecca Kush, Carol Rozwell and Ed Helton Copyright © 2006 BetterManagement.com
- #7 M. Lynne Markus, Charles W. Steinfield, Rolf T. Wigand, Gabe Minton : Industry-wide Standardization as Collective Action: The Case of the US Residential Mortgage Industry ©2005

## References

### About the Author

**Joseph Register** is President of Prescient Technologies, Inc. (PTI), a company specializing in system architecture and B2B integration for the Automotive Aftermarket. He is an active member of the Automotive Aftermarket Industry Association (AAIA), a member of the Board of Directors, past chairman of the AAIA Technology Standards and Solutions Committee, and currently serves as chairman of the Internet Parts Ordering (IPO) subcommittee.