Vehicle Management System

The Vehicle Management System ES bundle service-enables SAP Vehicle Management for Automotive, which is run by automotive importers and distribution centers. Using the services in this ES bundle, importers and distribution centers can provide a composite application for their dealers to enable them to search for available vehicles and order vehicles that match a customer's specifications.

From Dealer Stock to Custom Orders

Because of many interrelated factors, today's automotive markets face increasing competition and slowing demand. Chiefly, the Internet has made customers far more astute by greatly increasing market transparency. This transparency has armed customers with the means to seek out dealers that can sell them the makes and models of vehicles of their choice with a wide array of personalized specifications, at prices they have negotiated. Given this market climate, dealers and manufacturers alike know that without the ability to respond rapidly to customer requirements, the odds of success will remain stacked against them. The made-to-stock model by which they once operated is no longer satisfactory. Instead, to generate and maintain competitive advantage, businesses have adopted sophisticated order-to-delivery models and are now taking steps to streamline them such that the time from order to delivery is greatly expedited.

In short, sales representatives at dealerships must be able to search for and locate vehicles whose configurations meet the demands of inquiring customers, at will. If the desired vehicle has not yet been manufactured, the dealer must be able to create an order for its manufacture and delivery in a manner that both manufacturers and distributors can accommodate, as well.

What the Vehicle Management System ES Bundle Does

Figure 1 shows the parties involved in this interaction. The OEM manufactures the vehicles, the importer or distribution center orders vehicles from the OEM, and dealers then sell the vehicles to the public. The Vehicle Management System ES bundle service-enables the interaction between the dealers and SAP Vehicle Management for Automotive, which importers and distribution centers run.

Deploying the services in this ES bundle, dealers using a composite application or dealer portal can:

- Create and modify vehicle configurations in SAP Vehicle Management for Automotive
- Find and read information about existing vehicles in SAP Vehicle Management for Automotive
- Vehicles can be located and accessed using configuration data and other elements such as customer data, reference numbers, and vehicle batch IDs
- Create, modify, find, and read sales orders for vehicles in SAP Vehicle Management for Automotive
- Generate detailed estimates for specific vehicle configurations
- The VMS ES bundle leverages enterprise SOA by service-enabling SAP Vehicle Management for Automotive.

Audience

Importers and distribution centers that want to extend the functionality of SAP Vehicle Management for Automotive to their dealers will find the Vehicle Management System ES bundle especially helpful.

The roles in these industries that can use this bundle include:

- System administrators
- Sales and importer representatives
- Dealers

For details on Service Operations, Business Objects and Process Components, please check the ES Workplace.
How to Use This ES Bundle

Until recently, the model upon which the automotive industry based most of its production and stock methods was "make-to-stock." Each year manufacturers used past sales patterns to determine production for the immediate future. They produced a given number of vehicles according to a given set of configurations and then shipped those vehicles to market, where they were kept in stock as available for purchase.

Within this context, SAP developed SAP Vehicle Management for Automotive. SAP Vehicle Management for Automotive provides OEMs, importers and distributors with a single, centralized tool for procuring, configuring, managing, selling and tracking vehicles in either the make-to-stock model or in some cases a make-to-order scenario. In this latter case, make-to-order primarily has allowed customers purchasing high-end vehicles to configure the vehicle to their particular tastes.

Today, however, the automotive industry is going through a transition that reflects greater demand by all customers—not just those purchasing high-end vehicles—to order vehicles configured to meet their particular needs. In response, the automotive industry is seeking ways to efficiently and cost effectively meet customer expectations.

Underlying successful implementation of this newer model is the ability to reduce the order-to-delivery time by providing a smooth and seamless process for the search and/or order of a vehicle configured to the customer's needs.

The Vehicle Management System ES bundle extends the functionality of SAP Vehicle Management for Automotive to the associated dealers of vehicle importers and distributors. This means that through a composite application or portal based on these services, a dealer's sales representative is able to search for a vehicle matching the customer's desired configuration or, if necessary, initiate the process to order a matching vehicle from an OEM.

For example, an importer in the US acts as a distribution point for vehicles manufactured by Toyota. This importer will use SAP Vehicle Management for Automotive to manage, configure, order, and sell vehicles. The dealer portal provided by the importer to its associated dealers will allow dealers to access SAP Vehicle Management for Automotive. The enterprise services contained in this bundle will enable dealers to search for vehicles in stock or on order from Toyota as well as create sales orders for those vehicles. If no vehicle matching the customer's configuration is in stock or on order, the dealer can submit a sales order to SAP Vehicle Management for Automotive, which in turn triggers the importer to place a sales order with Toyota indicating the specifications of the vehicle in question.

This section will explore a series of use cases for the Vehicle Management System ES bundle. Each scenario will show how different outcomes can be achieved by using the enterprise services in different combinations. While these examples illustrate a few of the ways that this ES bundle could be used, the intention is to show the flexibility and reusability of these business objects and enterprise service operations so that you will have a clearer understanding of how to best deploy them in your own environment. This wiki is also a space for you to share knowledge and collaborate with others who are implementing the Vehicle Management System ES bundle.

**Use Case 1: Searching for and purchasing an existing vehicle**

In this use case, a customer has entered a car dealership with the intent to purchase a new car. Before arriving, however, she has researched the various possible configurations that are available for the make and model she is interested in, including body color, upholstery type and color, audio, tire rims, and so forth, and made a definite decision about what she wants. In this scenario the customer will test drive a similar vehicle, search for the availability of a vehicle matching a particular configuration, read through a search list of vehicles, negotiate a price, and the sales representative will create a sales order.

**Finding a Vehicle that Matches a Specified Configuration**

After the customer has test driven the make and model of her choice, she wants to know whether she can buy her customized version of it. To determine if such a vehicle is available, the sales representative can enter all of the options she has chosen into the dealer portal UI. This gives the dealer access to the importer's or distributor's database as well as visibility to backend systems. The dealer can then select the search option and enter the search criteria for the vehicle. When the search is initiated the application invokes the **Find Automotive Vehicle Basic Data by Elements** service operation, which uses the **Automotive Vehicle** business object. This service will search within SAP Vehicle Management for Automotive by vehicle configuration and related elements and return a list of cars that match the specified search terms with each vehicle's ID number.

**Reading the Details of a Vehicle**

A list appears on the dealer's UI from which the customer can select and view the details of a vehicle. Clicking on the link to a vehicle invokes the **Read Automotive Vehicle** enterprise service, which presents the details of that particular car. The application uses the vehicle ID as the input for the read service. The business object used is **Automotive Vehicle**.

**Generating a List Price for a Vehicle**

The customer is satisfied with the car and its projected delivery date, but she needs to know how much it will cost as configured. To find out the list price, the sales representative selects an option that invokes the **Check Sales Order Creation** service operation, which uses the **Sales Order** business object.

**Creating a Sales Order for a Vehicle**

After negotiating a price with the customer, the sales representative can create a sales order for the vehicle. To complete the sale, the dealer
adds the customer's information such as name, contact information, payment type, and so on, and submits the order to the importer or distributor by selecting an option in the UI that invokes the Create Sales Order service operation. This enterprise service is actually a standard SAP Sales and Distribution service and is run with the data returned from the read service, such as the batch number (ID), configuration data, manufacturing plant, equipment number, usage code, initial registration date, counter reading, price, current location, production date and time, and planned date and delivery and time. Essentially, the composite application forwards the information from the Read Automotive Vehicle service to the Create Sales Order service seamlessly.

<table>
<thead>
<tr>
<th>Step</th>
<th>Enterprise Service Invoked</th>
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<tbody>
<tr>
<td>Step 1: A sales representative searches for a vehicle that matches a customer's configuration specifications</td>
<td>Find Automotive Vehicle Basic Data by Elements</td>
</tr>
<tr>
<td>Step 2: The sales rep selects a matching vehicle from the search results, which passes the vehicle's batch ID to the read service</td>
<td>Read Automotive Vehicle</td>
</tr>
<tr>
<td>Step 3: The customer is interested in purchasing the vehicle but first wants to know its price. The sales representative generates a list price based on the specified configuration</td>
<td>Check Sales Order Creation</td>
</tr>
<tr>
<td>Step 4: The customer wishes to purchase the vehicle, so the sales representative creates the sales order in SAP Vehicle Management for Automotive</td>
<td>Create Sales Order</td>
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Use Case 2: Ordering a New Vehicle with a Custom Configuration

In use case 1, the dealer was able to help the customer find and order a vehicle that met her specifications. Frequently, though, a new vehicle may need to be made to fill the customer's order.

The customer knows what she wants, and the sales rep at the dealership enters all of the options she has chosen into the dealer portal UI, which invokes the Find Automotive Vehicle Basic Data by Elements service operation, which uses the Automotive Vehicle business object. This service will search SAP Vehicle Management for Automotive by vehicle configuration and related elements and return a list of cars that match the specified search terms with each vehicle's ID number.

Unlike in the previous use case, no available vehicles match the search criteria. As a result, the dealer will create a sales order that includes all of the configuration details. The customer naturally wants to know how much that vehicle will cost as configured before committing to buy it, so the sales rep invokes Check Sales Order Creation, which checks all the data in the sales order, including a price.

The customer, experiencing a bit of sticker shock, attempts to negotiate the price downward. The dealer makes some adjustments, but also tells the customer that removing the most costly options will also bring down the price. The dealer changes the order accordingly and invokes Check Sales Order Creation again. The price is now acceptable to the customer, so the dealer invokes Create Sales Order, which sends the sales order to SAP Vehicle Management for Automotive. Note that the car itself has not been configured; the importer will handle this step.

The Importer Receives the Sales Order

The importer receives the sales order and uses the configuration details to order the car in SAP Vehicle Management for Automotive.

The Customer Changes Her Mind and the Sales Rep Updates the Configuration

The customer goes away from the dealership and thinks about the options she turned down. She puts the additional cost in perspective versus the monthly payment amount and decides to call the sales rep back to request the reinstatement of these options. The dealer then returns to the portal and invokes the Find Sales Order Basic Data by Elements enterprise service operation. He selects the customer's sales order from a list, which invokes Read Sales Order. The sales rep can see that the importer has already created the vehicle (the batch ID is now listed on the sales order), so he clicks on the batch ID which invokes the Find Automotive Vehicle by Batch ID enterprise service operation followed by the Read Automotive Vehicle enterprise service operation. The sales representative sees that there is still time to change the configuration, so he invokes the Update Sales Order enterprise service operation to change the sales order to reflect the new configuration. This will in turn update the vehicle in the backend system.

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<td>Step 1: A sales representative searches for a vehicle that matches a customer's configuration specifications</td>
<td>Find Automotive Vehicle by Property Valuation and Elements</td>
</tr>
<tr>
<td>Step 2: The search produces no matching results</td>
<td>(no enterprise service operation is invoked during this step)</td>
</tr>
</tbody>
</table>
Step 3: The customer explains the options she wants and the sales rep enters them. The sales rep simulates a sales order to get a price. The sales rep modifies the order and runs the service again

Check Sales Order Creation

Step 4: The customer wishes to purchase the vehicle, so the sales representative creates the sales order in SAP Vehicle Management for Automotive

Create Sales Order

Step 5: The importer receives the sales order and creates a vehicle in SAP Vehicle Management for Automotive

(no enterprise service operation is invoked during this step)

Step 6: The customer calls back and the sales rep looks up the sales order

Find Sales Order Basic Data by Elements

Step 7: The sales rep reviews the sales order

Read Sales Order

Step 8: The sales rep sees that a vehicle has been created for this order and looks it up

Find Automotive Vehicle by Batch ID

Read Automotive Vehicle

Step 9: The sales rep makes the changes the customer requested

Update Sales Order

Use Case 3: Customer Calls to Check on Order

The customer is now so excited about the new car that she calls the sales rep every few days to find out about the progress of the order. The sales rep uses the Find Sales Order Basic Data by Elements enterprise service to find the sales order and Read Sales Order to see the details. Clicking on the Batch ID for the vehicle invokes the Read Automotive Vehicle enterprise service operation and the dealer can update the customer with information about how her new car is progressing and the latest information about when she can expect delivery.

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<td>Step 1: A sales representative searches for the customer's sales order</td>
<td>Find Sales Order Basic Data by Elements</td>
</tr>
<tr>
<td>Step 2: The sales rep drills down into the batch ID that identifies the car, which invokes a service to search for the car by its ID</td>
<td>Find Automotive Vehicle by Batch ID</td>
</tr>
<tr>
<td>Step 3: The sales rep reviews the details about the new car and lets the customer know any updated information about the progress of her order</td>
<td>Read Automotive Vehicle</td>
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Future Directions

Future directions for the Vehicle Management System ES bundle may include additional service-enablement of SAP Vehicle Management for Automotive and Warranty Management. In addition, SAP's dealer portal will be service-enabled using the enterprise services in this ES bundle (at this time, the dealer portal is integrated using BAPIs). Support for additional accounting documents such as purchase orders, delivery documents, and goods receipts may also be included in a future release.

System Requirements

- SAP ERP 6.0
- SAP enhancement package 4 for SAP ERP 6.0

Related ES Bundles

- Order to Cash

Links

SDN and SAP Links
SOA Homepage on SDN
SAP for Automotive
BPX Community for the Automotive Industry