



**CASE STUDY**

**HeadStart VMS (Vehicle Management System) Application integration with Manheim Auto Auction (MAA)  
For  
R. Hollenshead Auto Sales, Inc.**

## CASE STUDY HeadStart VMS and MAA Integration

### The Client

R. Hollenshead Auto Sales is a large volume wholesale auto dealer headquartered in Philadelphia. Hollenshead's weekly car sales average well in the thousands, largely due to their extensive dealer network, and positioning of professional "spotters" at various auto auctions to facilitate distant live trading.

**R. Hollenshead Auto Sales, Inc.**  
[www.rhollensheadautosales.com](http://www.rhollensheadautosales.com)  
1373 Lancaster Road  
Manheim, PA 17545



### A Few Challenges

Hollenshead is a thriving business with the potential to significantly increase returns by enhancing overall efficiency. The company is hindered by systems integration deficiencies and lack of automation for many time consuming tasks.

There is a positive correlation between Hollenshead's success and enhancement of its real-time synchronization capabilities. Hollenshead buys and sells thousands of cars through a huge dealer network, and a great deal of business is conducted at various off-site locations by remote traveling teams. The company, however, lacks comprehensive, direct access capability to track and analyze this activity. Integration of Hollenshead's data systems, communications, accounting, and auction activity would significantly enhance the company's control of car lifecycle.

Hollenshead sells the cars through Manheim Auto Auction (MAA) ([www.manheim.com](http://www.manheim.com)) Pennsylvania auction and they used to register the cars manually by sending FAX to Manheim Registration department and who used to enter cars manually in their system for the sale day.

Manheim Auto Auction – MAA, Pennsylvania is well known & largest auto auction provider in the Manheim, having large number of vehicle lanes. On Every Thursday & Friday car auctions take place here and thousands of vehicles got sold.

There was a strong business need to automate Vehicle Registration Process between MAA Pennsylvania and R. Hollenshead Auto Sales, Inc. HeadStartVMS system..

MAA conducts large scale auto auctions on every Thursday and Friday at Manheim, PA.

R. Hollenshead is the wholesale car dealer which needs to register thousands of cars every week for Friday/Thursday auctions take place at Manheim.

This involves following frequent activities between R. Hollenshead and Manheim:

- Registration of Vehicles with Manheim
- Cancellation of Registered Vehicle with Manheim
- Information about Sold Vehicles on sale day at auction

In the existing systems all these activities involved lot of manpower and time at both ends and all communication was taking place using calls/fax/emails.

### **Solutions**

MetaOption conducted a quick and thorough investigation to identify those areas which would facilitate the most significant returns as a result of enhanced efficiency. We then proposed and developed an integration of HeadStart VMS system and Manheim registration department systems utilizing the web services to achieve real-time car registrations in Manheim systems on a click of button.

MetaOption did onsite meeting with Manheim Pennsylvania project manager and technical team along with R. Hollenshead President Bob Hollenshead and identified steps involved in integration, goals, functionalities, and data formats for the communication.

Metaoption has designed/implemented Service Oriented Architecture (SOA) to automate vehicle registration process for both the clients using bi-directional web services. This saves lot of man power, time, and cost at both ends.

Process's automated for R. Hollenshead Client

- R. Hollenshead team able to send vehicle registration request to MAA from web interface, a request contains thousands of vehicles for registration.
- R. Hollenshead team able to send vehicle (s) cancellation request to MAA.
- R. Hollenshead team can check real time logs which tell the Vehicle Status at any moment of time along with the data submitted to MAA for registration i.e Registered/Cancelled/Sold.
- Get real time Information of Registered/Cancelled/Unregistered/Sold Vehicles from MAA.
- On Sale day R. Hollenshead team gets the information about sold vehicles in within few minutes of vehicle gets sold at auction. This enables them to close the sales very faster compared to the traditional way when they had to wait for sale receipt from Manheim in order to close the sale.

Process's automated at MAA (Manheim Auto Auction)

- Get updated list of Vehicles for Registration Requests from R. Hollenshead.
- MAA team able to acknowledge details of registration request confirmation information to R. Hollenshead.
- MAA team able to acknowledge details of registered vehicles to R. Hollenshead.
- MAA team able to acknowledge details of Unregistered/Cancelled vehicles to R. Hollenshead.
- MAA team able to acknowledge details of sold vehicles to R. Hollenshead with complete details of sold vehicle along with customer information.

*Solution Technologies:*

- ASP.Net 3.5
- C#
- SQL Server 2005
- Web Services

*Sample Screen*

Registration Batches Requests Cancellation

AUCTION SEARCH  ALL BATCHES CURRENT BATCH PAGE SIZE: 25

|            |                      |            |                      |                                       |                      |
|------------|----------------------|------------|----------------------|---------------------------------------|----------------------|
| Batch ID   | <input type="text"/> | Request ID | <input type="text"/> | Scheduled By                          | All                  |
| Sale Type  | ALL                  | VIN        | <input type="text"/> | Lane Pattern                          | <input type="text"/> |
| Sale Start | <input type="text"/> | Sale End   | <input type="text"/> |                                       |                      |
| Status     | All                  | Log Status | All                  | <input type="button" value="Search"/> |                      |

| R.ID                  | B.ID | Sale   | Sale Date  | Year | Make      | Model      | Body                            | Color                 | Mileage | Floor    | Lane    | VIN    | Status                 |
|-----------------------|------|--------|------------|------|-----------|------------|---------------------------------|-----------------------|---------|----------|---------|--------|------------------------|
| <a href="#">26450</a> | 1503 | FRIDAY | 11/23/2010 | 2008 | Acura     | TL         | 4dr Sedan Manual Nav 3.2L       |                       | 99362   | 0.00     | 12-0114 | 19UUA  | Registration Confirmed |
| <a href="#">26449</a> | 1503 | FRIDAY | 11/23/2010 | 2002 | BMW       | 3-Series   | 4dr Sedan 325i                  | Silver                | 101386  | 0.00     | 12-0233 | WBAEV  | Inventory Sold         |
| <a href="#">26448</a> | 1503 | FRIDAY | 11/23/2010 | 2003 | Saab      | 9-5        | 4dr Wagon Automatic Arc V6 3.0L | Blue (Dark)           | 93665   | 0.00     | 12-0232 | YS3ED  | Registration Confirmed |
| <a href="#">26447</a> | 1503 | FRIDAY | 11/23/2010 | 2005 | Chevrolet | Avalanche  | Crew Cab 4WD LT 5.3L            | Bermuda Blue Metallic | 29809   | 0.00     | 12-0162 | 3GNEK  | Registration Confirmed |
| <a href="#">26446</a> | 1503 | FRIDAY | 11/23/2010 | 2001 | Hyundai   | Sonata     | 4dr Sedan V6 GLS 2.5L           | Silver                | 156853  | 0.00     | 12-0238 | KMHWF  | Registration Confirmed |
| <a href="#">26445</a> | 1503 | FRIDAY | 11/23/2010 | 2005 | Audi      | A4         | 4dr Sedan Quattro 3.0L          | Blue (Dark)           | 112256  | 0.00     | 12-0133 | WAULT  | Registration Confirmed |
| <a href="#">26444</a> | 1502 | FRIDAY | 11/23/2010 | 2008 | Chrysler  | 300-Series | 4dr Sedan C 5.7L                | Silver                | 11512   | 0.00     | 12-0192 | 2C3LA6 | Registration Confirmed |
| <a href="#">26443</a> | 1501 | FRIDAY | 11/23/2010 | 2000 | Honda     | Accord     | 2dr Coupe V6 Automatic EX-L     | Silver                | 126000  | 2,000.00 | 12-0231 | 1HGCG  | Registration Confirmed |
| <a href="#">26442</a> | 1500 | FRIDAY | 11/23/2010 | 2004 | Lexus     | RX 330     | 4dr SUV AWD                     | Green                 | 84335   | 0.00     | 12-0082 | JTJHA3 | Registration Cancelled |

*Major Highlights:*

Manheim Integration

Auto auctions, such as Manheim, require manual registration of each vehicle prior to auction. With weekly inventory in the thousands, the process was so time-consuming for Hollenshead that most cars ready for sale sat idle for an entire week or more before going to auction.

MetaOption worked directly with Manheim Pennsylvania's IT department to develop a bi-directional web service solution. Hollenshead may now register cars 30 minutes prior to auction. The company also benefits from near real-time sales data. The system updates auction sales every 15 minutes.

**Approach & Project Management**

MetaOption executed the entire Hollenshead project in 10 weeks. The approach:

- User Interface (UI) Design and Approval
- Database design and Approval
- Implementation, Demo and Feedback
- QA Testing
- Final Delivery

*Project Management Tools:*

MOSS (Microsoft Office SharePoint Portal Server)

MetaOption used MOSS to centralize all tasks, data, and documents in one accessible location.

Metaoption Welcome MOJahmedh | My Site | My Links |

**HeadStart VMS** This Site: HeadStart VMS

MetaOption  | **Projects** | Document Center | Search **Site Actions**

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View All Site Content | Metaoption > Projects > R. Hollenshead > HeadStart VMS

**Documents**  
 • Shared Documents

**Lists**  
 • Calendar  
 • Tasks  
 • Project Issue List  
 • Project Tasks  
 • QA feedback  
 • Development feedback

**Discussions**  
 • Team Discussion

**Sites**

**People and Groups**  
 Recycle Bin

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HeadStart VMS (Vehicle Management System) Inventory System

**Announcements**

**ATTN: Anwarul (RE: SQL Query Joining Doubt for Group Table)** 7/12/2009 9:06 PM  
 by N

/\*  
 Query to get Active Groups for Lane Assignment to display on,  
 I did added **GroupAbbreviation** (nvarchar(50)) column in Groups table, add  
 this in your database and now use abbreviation instead of G1, G2, G3...  
 \*/  
 Select G.GroupID

**ATTN: Nitin (Business Rule for Comeback)** 7/11/2009 12:39 AM  
 by N

If Comeback commission is YES and there is any ChargebackCommission entered then system will automatically post an expense against this car in Expense Table.


Fields:  
 ExpenseID - PK Auto generated  
 InventoryID - ID of Car you...

**UPDATE: On add Buyer screen, there are two fields (Fax and OtherNo) are missing but on view buyer we are showing these fields.** 7/10/2009 10:07 PM  
 I   
 C , there are two fields (Fax and OtherNo) are missing but on view buyer we are showing these fields.  
 On add vendor screen, there are two fields (Vendor DIN and OtherNo) are missing but on view buyer we are showing these fields.  
 ...

**Refer query No:7 Description indicate that bodies has to be fetched on the basis of MakeId But it is on ModelId in Sql Query.** 7/9/2009 6:35 PM  
 I   
 - to get all Bodies for a Make  
 select distinct BodyID, VINStyleName as Body from Chrome\_YMMS where ModelID = 501  
 order by Body

Nitin,  
 it's a mistake by me. Body will be fetched based upon model.  
 Year -> Make -> Model ->...

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 **R. Hollenshead** (since 1978)  
 Auto Sales, Inc.

**Shared Documents**

| Type | Name                  | Modified By    |
|------|-----------------------|----------------|
|      | Deliverables          | Nitin Pallwal  |
|      | Other Documents       | System Account |
|      | Documents from Client | System Account |
|      | QA Documents          | System Account |
|      | _TimeSheets           | System Account |

Add new document

**Calendar**

7/25/2009 12:30 AM **Demo to client**  
 Give demo to client over GoToMeeting, show features completed, define timelines for missing features, define possible acceptance date.

Add new event

**Links**

There are currently no favorite links to display. To add a new link, click "Add new link" below.

Add new link

**Development feedback**

**Completed remaining functionality on the following U.I:-** 7/17/2009 10:35 PM  
 1)add customer  
 by   
 C functionality on the following U.I:-1)  
 add customer 2)listing pages for buyer, vendor, 3)View

Internet | Protected Mode: On  100%

**Project Issue List**

Title  Assigned To

There are no items to show in this view of the "Project Issue List" list. To create a new item, click "Add new item" below.

Add new item

**Team Discussion**

Subject

There are no items to show in this view of the "Team Discussion" discussion board. To create a new item, click "Add new discussion" below.

Add new discussion

**Project Tasks**

| Title                                 | 4/26/2009 |   |   |   |   |   |   | 5/3/2009 |   |   |   |   |   |   | 5/10/2009 |   |   |   |   |   |   | 5/17/2009 |   |   |   |   |   |   |
|---------------------------------------|-----------|---|---|---|---|---|---|----------|---|---|---|---|---|---|-----------|---|---|---|---|---|---|-----------|---|---|---|---|---|---|
|                                       | S         | M | T | W | T | F | S | S        | M | T | W | T | F | S | S         | M | T | W | T | F | S | S         | M | T | W | T | F | S |
| HTML page designs                     |           |   |   |   |   |   |   |          |   |   |   |   |   |   |           |   |   |   |   |   |   |           |   |   |   |   |   |   |
| Database design                       |           |   |   |   |   |   |   |          |   |   |   |   |   |   |           |   |   |   |   |   |   |           |   |   |   |   |   |   |
| LogIn, Security, HomePage and Forg... |           |   |   |   |   |   |   |          |   |   |   |   |   |   |           |   |   |   |   |   |   |           |   |   |   |   |   |   |
| Accounts Payable                      |           |   |   |   |   |   |   |          |   |   |   |   |   |   |           |   |   |   |   |   |   |           |   |   |   |   |   |   |
| Lane Assignments                      |           |   |   |   |   |   |   |          |   |   |   |   |   |   |           |   |   |   |   |   |   |           |   |   |   |   |   |   |
| Inventory Module                      |           |   |   |   |   |   |   |          |   |   |   |   |   |   |           |   |   |   |   |   |   |           |   |   |   |   |   |   |
| Dealer                                |           |   |   |   |   |   |   |          |   |   |   |   |   |   |           |   |   |   |   |   |   |           |   |   |   |   |   |   |
| Buyer                                 |           |   |   |   |   |   |   |          |   |   |   |   |   |   |           |   |   |   |   |   |   |           |   |   |   |   |   |   |
| Vendor                                |           |   |   |   |   |   |   |          |   |   |   |   |   |   |           |   |   |   |   |   |   |           |   |   |   |   |   |   |

| Title                                 | Assigned To | Due Date  |
|---------------------------------------|-------------|-----------|
| HTML page designs                     | M in        | 6/27/2009 |
| Database design                       | M in        | 7/4/2009  |
| LogIn, Security, HomePage and Forg... | F mad       | 7/24/2009 |
| Accounts Payable                      | J an Das    | 7/15/2009 |
| Lane Assignments                      | A aque      | 7/15/2009 |
| Inventory Module                      | N li        | 7/15/2009 |
| Dealer                                | F mad       | 7/15/2009 |
| Buyer                                 | F mad       | 7/15/2009 |
| Vendor                                | F mad       | 7/15/2009 |
| Utility Company                       | F mad       | 7/15/2009 |

Completed Dealer Details Search  
 Popup functionality of Add Inventory  
 Screen(without paging) and added  
 missing dropdownlist for States On  
 AddEmployee Page.

Worked on Lane Assignment 7/16/2009 9:27 PM  
 by A [redacted] ue  
 1. I I [redacted] eted Edit Lane & its Groups 2. Filter & Sorting  
 completed but List View not refreshing. This filter is working  
 with Grid View 3. Hide/Un hide dynamically solved.

Work on Inventory report, SB  
 Payables, Special Run List. Call  
 reports from page, do some  
 changes in report parameters.  
 Adjust the reports on page etc  
 by [redacted]  
 Work on Accounts Payable report, SB Payables, Special Run List.  
 Call reports from page, done some changes in report  
 parameters. Adjust the reports on page etc. I have  
 completed the seven reports only three remains such as  
 Block List, After Sales, Registration...

(More Announcements...)

Add new announcement

**QA feedback**

There are currently no active announcements. To add a new  
 announcement, click "Add new announcement" below.

Add new announcement

### PMS (Project Management System & Bug Tracking)

PMS allows the development team to breakdown modules into smaller tasks and track progress. When a module is completed, it gets updated in MOSS.

Log Out | Bug Tracking

Welcome MetaOption Admin  
19 July 2009 - Sunday

Milestones Manage Tasks Time Sheet My Tasks Browse Timesheet Reports Admin Section


### My Tasks List

Project Name: RHOLLENSHEADAUT-Head Stat Assigned By: ALL Assigned To: ALL Task Status: Open

| Project - Milestone  | Task Name   | Description   | Assigned To | Priority | Edit | Due Date     | Completed | Active Status |
|--|---|---|-------------|----------|------|--------------|-----------|---------------|
| Head Start VMS (Vehicle Management System) - Write Code for U.I, Business layer, data access layer and stored procedures.                      | Coding U.I Screen (Write business and data classes,stored procedures).                              | Coding U.I Screen (Write business and data classes,stored procedures). ... More                               |             | Normal   | Edit | 10 Jul, 2009 | 65%       |               |
| Head Start VMS (Vehicle Management System) - Write Code for U.I, Business layer, data access layer and stored procedures.                      | Coding for U.I Screen Including (Write business and data classes,stored procedures).                | Coding for U.I Screen Including (Write business and data classes,stored procedures). ... More                 |             | Normal   | Edit | 10 Jul, 2009 | 5%        |               |
| Head Start VMS (Vehicle Management System) - Lane Assignment Module  | Lane Assignment Module  | I will be working on Lane Assignment Module. HTML pages will be in "Document from Client"-> "HTML" f ... More |             | Normal   | Edit | 09 Jul, 2009 | 0%        |               |
| Head Start VMS (Vehicle Management System) - Head Start VMS - Payment Module   | HeadStartVMS - Payment Module   | All task of this module ... More  |             | Normal   | Edit | 24 Jul, 2009 | 100%      |               |
| Head Start VMS (Vehicle Management System) - Explore reports in MS-Access application, explore used queries and tables. Create reports in SSRS | Try to run report in MS-Access application, learn used tables relationships, create reports in SQL. | Try to run report in MS-Access application, learn used tables relationships, create reports in SQL. ... More  |             | High     | Edit | 31 Jul, 2009 | 70%       |               |
| Head Start VMS (Vehicle Management System) - Help ANWARUL & GYAN in project setup and understanding of architecture                            | Assisting in setting db locally and basic project understanding                                     | Assisting in setting db locally and basic project understanding ... More                                      |             | Normal   | Edit | 15 Sep, 2009 | 60%       |               |
| Head Start VMS (Vehicle Management System) - Write Code for U.I, Business layer, data access layer and stored procedures.                      | Re-Write Dbml class as to accomodate db changes   | Re-Write Dbml class as to accomodate db changes ... More  |             | Normal   | Edit | 20 Aug, 2009 | 50%       |               |
| Head Start VMS (Vehicle Management System) - SVN Project Setup   | Re-Setup Headstartvms project in SVN as all underlying database tables changed.                     | Re-Setup Headstartvms project in SVN as all underlying database tables changed. ... More                      |             | Normal   | Edit | 10 Sep, 2009 | 65%       |               |
| Head Start VMS (Vehicle Management System) - Write Code for U.I, Business layer, data access layer and stored procedures.                      | Write Methods in Common DAL and Common BAL  | Write Methods in Common DAL and Common BAL class ... More   |             | Normal   | Edit | 16 Sep, 2009 | 55%       |               |

## Timesheet

Timesheet is a brief status report that tracks time spent and tasks accomplished for each project.



**METAOPTION**

Log Out | Bug Tracking

Welcome MetaOption Admin

19 July 2009 - Sunday

Milestones
Manage Tasks
Time Sheet
My Tasks
Browse Timesheet
Reports
Admin Section

**Nitin Palwal**

| Search By :  | Subject   | Description   | Time Spent | On Date    | Project                                    | Task Name  | Status |                          |
|--|---|---|------------|------------|--|--|--------|--------------------------|
| <div style="border: 1px solid #ccc; padding: 2px;"> <p><b>Project Names:</b></p> <p>CTION-Judith Ste...</p> <p>NSHEADAUT-Head...</p> <p>eNet</p> <p>BK-Salon Assistan...</p> <p>Pub-Catholic Ste...</p> </div> <div style="margin-top: 5px;"> <p><b>Status:</b></p> <p>Not Approved</p> <p><input type="checkbox"/> Start Date : 7/19/2009</p> <p><input type="checkbox"/> Completion Date: 7/19/2009</p> <p><input type="button" value="Search"/></p> </div> <div style="margin-top: 5px;"> <p>shchik</p> <p>que</p> <p>nyala</p> <p>umar</p> <p>akh</p> <p>Ahmad</p> <p>ad</p> <p>mad</p> <p>Das</p> <p>n</p> <p>am</p> </div> | <p><a href="#">Sit with Fareed to identify approach for paging inside javascript popup extender control and also discussed with Gyan</a></p>  | <p>Sit with Fareed to identify approach for paging inside javascript popup extender control and also discussed with Gyan</p>  | 00:55      | 07/15/2009 | Head Start VMS (Vehicle Management System) | Coding U.I Screen (Write business and data classes,stored procedures). | 65%    | <input type="checkbox"/> |
|  | <p><a href="#">Write U.I methods for Binding dropdownlists(In Edit Car Details popup) for Year,Make,Model,Body,Engine,Exterior Color, Interior Colors etc.</a></p>                                      | <p>Write U.I methods for Binding dropdownlists(In Edit Car Details popup) for Year,Make,Model,Body,Engine,Exterior Color, Interior Colors etc.</p>  | 03:00      | 07/13/2009 | Head Start VMS (Vehicle Management System) | Coding U.I Screen (Write business and data classes,stored procedures). | 50%    | <input type="checkbox"/> |
|  | <p><a href="#">Write code for implementing ajax for asynchronous postbacks of dropdownlists.</a></p>  | <p>Write code for implementing ajax for asynchronous postbacks of dropdownlists.</p>  | 02:00      | 07/13/2009 | Head Start VMS (Vehicle Management System) | Coding U.I Screen (Write business and data classes,stored procedures). | 55%    | <input type="checkbox"/> |
|  | <p><a href="#">Bug fixing of Postback Event Validation Error</a></p>  | <p>Bug fixing of Postback Event Validation Error due to implementation of AJAX inside dropdownlists of formview control.</p>  | 02:00      | 07/13/2009 | Head Start VMS (Vehicle Management System) | Coding U.I Screen (Write business and data classes,stored procedures). | 55%    | <input type="checkbox"/> |
|  | <p><a href="#">Discuss problem of handling selected value of dropdownlists along use of Ajax Popup extender control.</a></p>  | <p>Discuss problem of handling selected value of dropdownlists along use of Ajax Popup extender control with ALL Sir and sit with him for finding alternatives to handle NULL event of dropdownlists.</p>   | 01:00      | 07/13/2009 | Head Start VMS (Vehicle Management System) | Coding U.I Screen (Write business and data classes,stored procedures). | 55%    | <input type="checkbox"/> |
|  | <p><a href="#">Write code for Binding Selected values in Edit popup of Car Details for all controls by providing Database Binding.</a></p>  | <p>Write code for Binding Selected values in Edit popup of Car Details for all controls by providing Database Binding and try different approaches for Null Value handling of Dropdownlist SelectedValue Property at the time of Page Loading along with ajax extender popup control.</p> | 01:10      | 07/13/2009 | Head Start VMS (Vehicle Management System) | Coding U.I Screen (Write business and data classes,stored procedures). | 55%    | <input type="checkbox"/> |
|  | <p><a href="#">Re-Write Stored Procedure for Car Details Select as per new tables and Re-mapped with U.I. as per new fields/tables and update names of fields as implement joins on new tables.</a></p> | <p>Re-Write Stored Procedure for Car Details Select as per new tables and Re-mapped with U.I. as per new fields/tables and update names of fields as implement joins on new tables.</p>   | 01:15      | 07/11/2009 | Head Start VMS (Vehicle Management System) | Coding U.I Screen (Write business and data classes,stored procedures). | 50%    | <input type="checkbox"/> |

## SVN (Subversion) & Client Control

SVN is a configuration management system that manages versioning and allows check-in-check-out over the internet. We provided Hollenshead with login to the SVN environment to give them more control of the code written by us.

Login may be provided to clients for all systems. This option gives the client greater control to manage projects more effectively.

