BEACON

Vehicle Lot Management

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Publish Date: August 28th, 2009

8/28/09

Attn:

Ph:

Concept of operations, automotive yard tracking:

Quote: 82809-4

This document will address Software, Hardware, and Services to operate a single site drop lot storage and retrieval system. This is a budgetary estimate and is not meant to be considered a quote.

Assumptions

- Single site, area of coverage 10 to 50 sq acres of coverage.
- 500 to 5000 vehicles per site.
- Inventory turns 6 to 12 times per year as every 30 to 60 days.
- Outdoor.
- Storage locations are visible and can be recorded.
- Scope of this document is for a single site deployment, this could be extended to multiple sites using the same hardware and infrastructure.
- The site index and retrieval system will interface via an AS400 based legacy system. The AS400 will be the system of record.
- Vehicles moved via dedicated Loader.
- Multiple Loaders
- Loader Operators will interface with a hand held or mobile device to record locations and movements.

BEACON RFID & GPS Customer Software, Hardware & Networking Integration
Flowchart Description
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PHASE I

1 – Customer Requirements – Project overview is provided along with preliminary estimates for the custom software and integration services required.

2 - Requirements & Scope Updates – Existing requirements are reviewed and updated as necessary. The Project Scope is updated as needed to ensure all requirements are effectively addressed. If the scope is altered significantly from the initial scope and proposal, a re-proposal may be required.

3 - Integration Analysis – To the extent that integration is required with external software systems or hardware devices, it may be necessary to evaluate and test the available interfaces between these disparate components to validate the Project Scope. Unexpected results at this early stage allow scope to be adjusted at minimal costs and time delays.

4 - Detail Design Specifications – Detail Specifications are developed interactively with the client to define data structures and specific functions such as user interfaces, program logic, reports and external integration. These specification serve as a guide for the software development.

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PHASE II

5 - Development & Testing – Software is developed to comply with the Detail Software specifications. All software is unit tested and prepared for full integration test and operation.

6 – Deployment – Implementation includes on-site installation, full end to end integration testing and operator training. Implementation continues through initial live operations.

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PHASE III

7 - Support & Updates – Support is required to maintain the existing software solution. Periodically it may be necessary to enhance the software solution to meet changing business requirements, new computing platforms or changes to external systems and devices.

Preliminary Project Scope and Open Questions Provided by the Customer

The Vehicle Lot Management Software ("VLMS") is expected to integrate information from an existing AS400 with a front end application that supports vehicle lot activities described below. This preliminary scope is one approach to meeting the requirements of VLMS.   Customer has asked that Beacon propose its own approach that may be very different from the preliminary Project Scope (See Suggested Scope lower in this document).

- Workflow Receiving
  - Sub hauler brings in vehicle and brings paperwork into office dispatcher, trip confirms vehicle at which time RFID encoded label prints out.
  - Receiver docks handheld for downloading of inventoried vehicles and uploading of new vehicles they take labels with them to receive new inventory.
  - Receiver locates vehicle and matches label with lot. Scans barcode from label with handheld which brings up inventory screen and affixes label to vehicle.
  - Receiver docks handheld to upload inventory information to system putting lot into queue on Loader screen to be put into storage area.
  - Loader operator picks up vehicle if indicated on screen in Loader and RFID verifies they have correct lot.
  - Loader operator puts down vehicle in storage area at which time location information is uploaded to office via cellular transmission.

- Workflow Sale Setup
  - Loader operator opens cue for sale from onboard screen.
  - Loader locates vehicle from yard location and screen verifies they have correct vehicle and moves it to sale area
  - Computer updates move of lot and changes location to sale grid.

- After Sale
  - Buyer or transporter obtains title work from office and digitally signs for vehicle putting lot in queue for Loader Operator and receives CC receipt/s for vehicle/s they are picking up.
  - Loader operator locates vehicle from sale grid and RFID verifies correct vehicle is being moved.
  - Once Loader passes gate to load lot for buyer, system automatically verifies vehicle has left yard, bring up a confirm or deny screen in Loader at which time they confirm lot is leaving yard.
  - If for some reason the lot does not bring up the confirm or deny screen Loader, the office has the ability to manually enter lot.
  - Office puts in multiple lots for single buyer into queue if they are going to be picking them all up. Loader operator selects that buyers vehicles verifying the CC receipt from the buyer which vehicles are being picked up from the queue removing all of their lots so that other Loaders do not try to pick them up.
  - Same confirm or deny screen will come up for vehicles reentering the yard to identify the vehicle.

- Same confirm or deny screen will come up in the office for heavies or vehicles driven out of the yard at which time office staff will identify the vehicle.

- Inspection
  - Law enforcement, insurance adjuster, owner, etc. request office personnel to inspect vehicle.
  - Office enters lot number into inspection queue.
  - Loader operator sees vehicle in inspection queue and brings up for inspection.
  - Upon completion of inspection vehicle is put back into storage queue for Loader operator to put away indicating vehicle is in inspection area and not receiving.

- Heavies and CDS
  - As heavies are not moved by Loader all same procedures will be used up to putting vehicle in storage, Loader operator will drive up to unit and verify it's location.
  - CDS vehicles are also not moved by Loaders and will be treated just like heavies and verified by Loader operator.

- Lots Sold In Yard
  - At the end of each day Loader operator brings up the lots sold in yard report on the in cab screen.
  - Loader drives down each row sale vehicles are located at which time RFID receiver on Loader confirms all vehicles on report are still located in rows.
  - In same manner Loader or multiple Loaders can bring up inventory report and drive down each row not only confirming correct row locations are input but that all inventory is accounted for.
  - This system is pending testing of RFID tags ability to transmit over a distance of entire width of rows.

- Open Questions
  - Can Loader operator screen have simple keypad instead of touch screen for wear issues?
    - Yes, we can provide keypad entry as an in cab Loader solution.
  - Is 4"x6" a standard size for the labels or can that be adjusted? Lot numbers are 8-10 characters long and only other information needed would be a barcode.
    - 4" x 18" Durable Poly Tag. Font shall be 3" Arial. Printed black text 10 characters wide on white background.
  - Can Loader operator screen also bring up photo (from database) as well as lot number and other lot specific information (year, make, model).
    - Yes we can do that
  - For heavies, CDS cars, and any other lot moved with anything besides Loader be tracked.
    - Yes, we are providing hand helds with RFID, GPS, Barcode and screen with entry buttons. This hand held unit will perform the same functions as the monitor/key pad unit mounted in the Loader. (The Operator will drive the vehicle out to storage and then after parking it will manually scan the RFID in the windshield for association with GPS location.

- What is the distance the Loader will pick up an RFID signal or will that have to be tested?
    - Environment dictates everything, testing is a must, 10' to 15' is standard with the tags we intend to use.
- Can exit gate be set up as endpoint, will any lot that passes this point be marked as "left yard" even if not taken out by Loader?
    - We can set up exit gate with RFID, reader and antenna. This price includes the RFID reader and 1 antenna, Site Survey is needed to determine best communication method to reader Cost would be more if heated enclosure and computer are needed.
- Distance RFID can transmit to Loaders?
    - RFID transmitted to the Loader when the vehicle in on the Loader. The RFID read range is 10' to 15'.
- Can Loader screen bring up multiple queues/reports as it can transmit information from the office? Maybe a home screen with a selection of all functions that can be performed depending on what the Loader is designated to do next? Maybe a priority listing of different queues with buyer load out pending at the top working downward to other needs?
    - The panel will be menu driven. The menu will be created by the customer and Beacon. The Menu on the Loader will support real time connectivity to the VLMS server through cellular data transmission. VLMS will interface with the AS400 at intervals determined by the customer and Beacon.

Recommended Project Scope and Assumptions

The customer has two AS 400 computer systems. One is located at corporate headquarters and Las Vegas. Slave dummy servers are located at each lot facility.

The software in this proposal is   Microsoft   .NET based application software running in a Windows Server 2008 environment w/IIS (VLMS Server), XP or Vista operating system (Loader and entry gate) and Windows Mobile version 6.0 or 6.1 (mobile device). Other versions may be supported but must be verified.

The communication method between Devices and the VLMS Server utilizes a cellular broad band data plan on each device connected over the internet to the VLMS server.

It is recommended that the Windows Server reside centrally and near convenient access to customer staff that will manage servers.

Customer staff will provide all ongoing support on VLMS.

The Vehicle Lot Management Software ("VLMS") is primarily charged with locating vehicles in lots where vehicles are dynamically moved from one location to another. The challenge is efficiently locating vehicles when they are to be moved.

VLMS should address this challenge in the simplest and lowest cost way. The following scope describes the work flow utilizing the recommended VLMS Scope.

- Vehicle Induction

    As vehicles arrive at the lot and prior to moving them to storage, the vehicle information and photo will be available in the AS400 which has been entered in by the customer and will be available for data retrieval. VLMS will have connectivity to the AS400 to pull down vehicle data record and start the process. The person receiving the vehicle will validate the VIN on the vehicle and bring up the vehicle record in VLMS. At that time a picture may be taken and attached to the vehicle record. If the stock number has not been assigned, it will be assigned and attached to the vehicle record. A window label will then be printed from VLMS showing the Stock number and containing the RFID tag. The label is then affixed to the vehicle. The vehicle is now ready to move to a storage location.

- Vehicle Put Away

    Once vehicles have been received, they will need to be moved to the storage lot. At this time a Loader will approach the vehicle and a RF transceiver located on the Loader will be attempting to read the RFID tag on the inventoried vehicle. Once the RFID tag enters the RFID read field, it is displayed on the mobile device screen in the Loader. If the Loader picks up more than one RFID tag due to other vehicles being in the read field, the Loader Operator must visually select on the key pad by use of the monitor viewing means located in the Loader which of the vehicles it is loading. The Loader is then free to move the vehicle to any available open location in the lot. As the vehicle is placed in its storage location, the Loader indexes the vehicle to the storage location by pressing a key on the Loader device, utilizing the GPS Coordinates to assign the appropriate storage location (Row A-Z, slot 1-100) in VLMS. The vehicle record is then updated in VLMS wirelessly through real time cellular connection.

- Vehicle Moves

    Once vehicles are stored in the lot, there may be a need to move them. At this time a Loader will approach the vehicle and a RF transceiver located on the Loader will be attempting to read the RFID tag on the inventoried vehicle. Once the RFID tag enters the RFID read field, it is displayed on the mobile device screen in the Loader. If the Loader picks up more than one RFID tag due to other vehicles being in the read field, the Loader Operator must visually select on the key pad by use of the monitor viewing means located in the Loader which of the vehicles it is loading. The Loader is then free to move the vehicle to any available open location in the lot. As the vehicle is placed in its storage location, the Loader indexes the vehicle to the storage location by pressing a key on the Loader device, utilizing the GPS Coordinates to assign the appropriate storage location (Row A-Z, slot 1-100) in VLMS. The vehicle record is then updated in VLMS wirelessly through real time cellular connection.

- Vehicle Retrieval

  Once a vehicle is sold, a Loader must locate it in the lot and move it to a sale area. On given intervals as determined by the Customer and Beacon, the AS400 will periodically provide Dealer Orders to VLMS. Each Dealer Order will contain one or more vehicles to retrieve and move to the Dealer's transport (outside of the lot "choke point"). VLMS will display all Dealer Orders on each of the Loader's devices until a Loader selects an order from the list. At that point the Loader will be responsible to find all vehicles on that order and move them through the lot choke point and onto the dealer's transport. For each vehicle on that order, the display record will show the vehicle's index location (Row A-Z and Slot 1-100) based on its GPS coordinates along with the stock number and the picture if available. The Loader Operator may select any vehicle on the dealer order and proceed to that location on a map (based on previous GPS Indexed location) to locate and move the vehicle. Once the Loader approaches the vehicle, the Loader Operator will identify the vehicle location by the GPS coordinates as seen on his monitor. The Loader Operator will verify the stock number on the decal located on the vehicle by visual inspection. As the Loader drives up to the vehicle, the RFID tag enters the RFID read field and the vehicle is tested to be sure it matches the vehicle selected to pickup. If no match, the Loader will be notified that is does not have the correct vehicle. If the Loader picks up more than one RFID tag due to other vehicles being in the read field, the Loader Operator must visually select which of the vehicles it is loading. The Loader will then pickup the vehicle for retrieval. The Loader is then free to move the vehicle through the gate (choke point) to load it on the transport. At this point the vehicle is marked as delivered to the Dealer Transport and is not longer in the yard. The vehicle record is then updated in VLMS wirelessly through real time cellular connection.

- Inspection

  Periodically a vehicle must be inspected and a Loader must locate it in the lot and move it to an inspection area.   The AS400 will periodically provide lists of these vehicles to VLMS and VLMS will continually display these vehicles that must be moved to the inspection area. Each display record will show the vehicle's index location (Row A- and Slot 1-100) based on its GPS coordinates along with the stock number and the picture if available. The Loader may select any vehicle on that list and proceed to that location and move the vehicle. When a vehicle is selected, it will display the vehicle record and remove it from the list (no other Loaders will be able to select that same vehicle).   Once the Loader approaches the vehicle, the Loader Operator will identify the vehicle location by the GPS coordinates as seen on his monitor. The Loader Operator will verify the stock number on the decal located on the vehicle by visual inspection. As the Loader drives up to the vehicle, the RFID tag enters the RFID read field and the vehicle is tested to be sure it matches the vehicle selected to pickup. If no match, the Loader will be notified that is does not have the correct vehicle. If the Loader picks up more than one RFID tag due to other vehicles being in the read field, the Loader must visually select which of the vehicles it is loading. The Loader is then free to move the vehicle to the inspection area. At anytime following inspection, a Loader may move the vehicle back into the lot (see vehicle moves). The vehicle record is then updated in VLMS wirelessly through real time cellular connection.

- Heavies and CDS

  Heavies and CDS follow the same procedures above. VLMS will provide the same functionality using hand held devices.

Project Understanding and Assumptions

All vehicle information originates in the AS400 and will be made available to VLMS through a transactional interface that must be evaluated and/or developed. The AS400 will then provide transactions for incoming vehicles, vehicles needing inspections and vehicles being sold. All VLMS functionality is for the purpose of efficiently storing and retrieving vehicles in the storage lot.

All communication between the VLMS server and the transport mobile devices will be done through real time cellular data connection.   The Loader devices and handheld devices will each contain the same functionality, as described above and operate with cellular, GPS and RFID.

The map overlay will be designed specific to the client's whisker mapping model.

Periodically, vehicles will be covered with snow and it will be necessary for a Loader to brush the snow off to visually verify the vehicle by stock number on the windshield label or by vehicle description on the Loader display.

This proposal is for initial software and a single implementation. As additional sites are implemented, there will be additional time required for configuring the system to meet the specific requirements of each lot (IE: updated map configurations, system setup, etc).

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Proposed Engagement and Deliverables

As described in our flowchart, Phase I of this RFID & GPS Customer Software, Hardware & Networking Integration project includes (1) Customer Requirements, (2) Requirements and Scope Updates, (3) Integration Analysis and (4) Detail Design Specification**.**   This project will require a number of conversations with key subject matter experts at Customer and with other team members involved in this VLMS project.

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The deliverables for Phase I include:
- Findings determined as a result of evaluating the AS400 interface.
  - Method of either exporting information from the AS400 (and importing to VLMS) or for VLMS to retrieve data directly from AS400 database tables.
  - Trial code to test the interface method.

- A written Requirements and Scope document incorporating the recommended scope above including any scope updates resulting from changing requirements and/or AS400 interface findings.
    - Each work flow step will be reviewed in detail to identify and document specific requirements.
    - The Scope is tested against all detail requirements to ensure that that the new work flow process in VLMS meets all requirements and remains in budget. If new requirements cause the scope to be adjusted, the new scope adjustments are reviewed with the customer before proceeding on the project.
- A written Design Specification document including all database designs, user interfaces and work flow logic as follows:
    - Specific database tables, fields, data characteristics and relationships.
    - Monitor screens designs for step in each work flow..
    - Communication details for the interface between the AS400 and the VLMS Server.
    - Communication details for the interface between the Loader devices and VLMS Server.
    - Communication details for the interface between the handheld devices and VLMS Server.
- Updated project budgets and timeline.

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As described in our flowchart, Phase II of this RFID & GPS Customer Software, Hardware & Networking Integration project includes (5) software development, testing and implementation. For the most part, all programming and testing is done to meet all requirements and specifications documented in Phase I.

This project will require a number of conversations with key subject matter experts at Customer and with other team members involved in this VLMS project.

The deliverables for Phase II include:
- All programming of software as documented in the Phase I specification.
- Testing of all VLMS software on the customer's VLMS Server (or similarly configured server) at Beacon.
- Testing of all Loader device software on a test device provided by Beacon at Beacon's test facility.
- Testing of all Handheld device software on a test device provided by Beacon at Beacon's test facility.
- Testing of RFID tag reads by the Loader Device and the HandHeld device in a controlled environment at Beacon test facility.
- Testing of the label printing software on a test printer provided by Beacon at Beacon test facility.
- Executables of the software such that the software may be easily installed onto a VLMS server.

- Server configuration instructions to enable the VLMS server to operate the VLMS software.
- Executables of the software such that the software may be easily installed onto one or more Loader devices.
- Loader device configuration instructions to enable the device to operate the VLMS software.
- Executables of the software such that the software may be easily installed onto one or more Handheld devices.
- Handheld device configuration instructions to enable the device to operate the VLMS software.
- Telephone support to Beacon's support center, Customer during installation (ongoing support plans and software enhancements available and not included in this estimate).

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As described in our flowchart, Phase III of this RFID & GPS Customer Software, Hardware & Networking Integration includes Support and Updates. This is an optional Phase and dependent on the level of support desired. Upon completed deliver of Phase II deliverables, the customer may decide to support and enhance the VLMS system internally or contract with a third party. Estimates for support and enhancements typically are provided once the customer decides what is needed.

Estimated Software Costs and Timelines

Actual hours will be highly dependent on the level of complexity and details discovered during the evaluation effort. As a result, the estimate below is derived from similar types of efforts conducted by Beacon in the past. The effort will be conducted by providing hourly consulting services. Customer may terminate the effort at any time. If terminated, customer will be responsible only for hours completed as of the time of termination.

The estimated timeline for completing this phase is dependent upon the availability of the requested persons for the various discussions and interaction. Wherever possible, Beacon will combine as many discussions as possible into a single meeting to conserve time. Phone conversations will also be conducted when possible to reduce travel and meeting time.

NOTE: the hours and amounts listed are estimates only. Actual hours will be invoiced and summarized in periodic project management reports that track project progress.

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Phase I   Services as described above:

                                                       3 weeks/100 hours $295/hr $29,500*

Beacon Site Survey to determine exact hardware components

 and configuration estimate 2 days   1 site $6000

Cost of travel will be less if a site can be surveyed in the greater Minneapolis Area, our HQ is in St. Louis, MO.

*Travel and incidental expenses to be preapproved by client

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Upon completion of Phase I, the following estimates will be updated to reflect final specifications on this VLMS project.

Phase II   Software Development, Testing and Implementation:

                                                       8 weeks/320 hours $295/hr $94,400*

*Travel and incidental expenses to be preapproved by client.

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Phase III   Ongoing Support and Enhancements: TBD by Customer

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Hardware Estimates: these are estimates are for budgeting only, pricing can change once exact configurations are determined by Beacon and client, cellular plan to be determined by client, Beacon, and ATT

Server to be provided by Client   TBD

Loader Computer includes slot for cellular sim card from ATT, GPS,
wifi 802.11g, WM6.1, Qwerty keypad with color touch screen, included power supply
and necessary cable plus 3 year service contract **$5200 each**

RFID Read and Antennas for Loader includes necessary mounting hardware
and accessories plus external RFID antenna and 3 year service contract **$5000 each**

RFID Reader and Antennas for Choke Point
includes reader and 1 antenna only, and 3 year service contract **$5000 each**
Cost could be higher if enclosure and computer is needed, or multiple antennas, TBD by site survey

Choke Point Framework to support RFID Reader and Antennas. **$5000 each**
Installation of Framework bv others.

Handheld Computer with slot for cellular sim card from ATT, 802.11g, Qwerty,
WM6.1, GPS, scanner, camera, spare battery, charger, holster
and 3 year service contract, and RFID Reader Module **$5200 each**

Option 1 RFID/Thermal Printer, Prints Labels and Encodes RFID Tags 4''x18'' **$4250 each**
With 3 year service contract

Cellular Data Plan Estimates
Cellular Data Plan, this is an estimated cost for each loader computer
and each handheld to use a ATT sim card with standard data plan **$600 each**
Beacon can assist with negotiating rate plans, this is an estimated annual cost per sim card

Label and RFID Tag Options Estimated Pricing each
RFID Windshield Tag non reusable
Durable Poly Tag for Human Readable adhered to outside window
Custom All in One 4"x 18" with RFID embedded read range 10-15ft **$ 2.50   each**
Adhere to outside window
Hardware Implementation: these are estimates are for budgeting only, pricing can change once exact configurations are determined by Factory and client for installation, travel expenses are extra

Configuration of Each Vehicle Computer **$1600 each**
Client to provide personnel to mount and hardwire computer so loader warranty is not voided by factory
Installation of Each RFID Reader for Loader and Choke Point **$5000 each**
Configuration of Each Handheld Computer and RFID Printer **$800 each**

System Support: TBD by Beacon and Client
Multi site pricing TBD
Example: Annual Remote Support by Beacon for Each Site **$3000 each site**
Monday-Friday 8am to 5pm With Live Technician Via Phone and Email
4 Hour Response Time Through Professional Dispatch Service
Access to Support Documentation
Issue Diagnosis and Escalation Plan

Remote Control of Client PC, Mobile or Wired Devices

Secure Remote View Only for Security Conscious Organizations

Device Level Control of Mobile Data Collection Terminal and Printers

Service Case History and Reporting Program for Expedited Resolution and Performance Tracking

Billing and Payment Terms

Beacon Software Development included a 20% deposit and invoices on a semi-monthly basis and includes amounts incurred from work conducted during the previous semi-monthly period. All Software Development invoices are due and payable to Beacon within 15 days of the invoice date. Hardware invoices are Net30 terms

ACCEPTED

	Company: Beacon Industries Inc.
Company: _____	_____
By: _____	By: _____
Name: _____ (Print)	Name: _____ (Print)
Title: _____	Title: _____
Date: __8__ / __28__ / __2009__	Date: __8__ / __28__ / __2009__

This quote is protected by US Patent US 7,333,016.
A written explanation of the patent is attached with this quote.

http://www.beacontechnology.com/rfid/