![Westlake Software, Inc. logo - Wireless Business Solutions]

Optimizing Data Collection and GPS Tracking for Nation's Largest Audited Alternative Direct-to-Door Delivery Distribution Network

A White Paper for Field Force Management Executives

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Overview

Westlake Software, Inc. is a Software as a Service (SaaS) provider located in Los Angeles, California. The predominant mission of the company is to help mid to large organizations automate their mobile distributed field forces with wireless technology. This is conducted by using Westlake's own mobile middleware platform known as AirMobility™ with both turn-key and new customization work as required. Most enterprise solutions implemented by Westlake have a combination of GPS tracking and management, barcode scanning, photo capture, automated job assignment driven from back office integration and wireless field form data collection. Solutions often support multiple devices, operating systems and wireless carriers.

CIPS Marketing Group, Inc. (CIPS) is a joint venture between The Tribune and The Media Company. Established over 25 years ago, the organization has grown to become the nation's largest audited alternative direct-to-door distribution company. This includes distribution of flyers, product samples, door hangers, phone books, etc. On average, the organization reaches approximately 5 Million household doors every week and distributes over 500 Million items annually. CIPS Marketing Group, Inc. provides its services nationwide and is expanding. As the cost of postage from the United States Postal Service continues to increase, this has given rise to alternative means of direct-to-door ad product distribution that can be highly targeted, more effective reaching consumers and provided at a lower distribution cost.

Direct-to-door distribution is a highly competitive business; it is also a highly labor intensive business. The largest challenges and concerns for any direct-to-door distribution company is to ensure to its customers that (1) their materials are actually being delivered (there is delivery fraud in this industry) and (2) being delivered per the customer's specifications with respect to territory and date of delivery requirements.

Objectives

To both differentiate themselves in the marketplace amongst many competitors and to ensure materials are being delivered properly and on time, CIPS sought to implement an advanced GPS tracking system for its 500+ contractors managing over 1000+ national routes and growing. The main challenge here was to find a highly effective solution that would balance the upside value this would bring for existing or potential new customers but not be so cost intensive as to make a deployment of new wireless technology an economic challenge.

Westlake was contracted by CIPS to modify its existing AirMobility™ middleware platform to accommodate the specific needs of the organization. The solution today combines the management of over 2 Million GPS coordinates monthly, near real-time mapping, support for back office integration for both pulling job assignments and pushing back collected data information, photo capture, barcode reading and cross carrier; cross device support. The result enables CIPS to monitor, manage and track their contractors to ensure a high level of performance and improved satisfaction for its customers.

AirMobility™ for CIPS Marketing

Although the core GPS tracking technology within AirMobility™ was largely adequate for most general fleet management requirements, additional programming was required to accommodate the specific needs of CIPS. Back office integration was required into the CIPS Guardian™ system to pull routes, job assignments, distribution volumes, delivery dates, do-not-delivery addresses, route geo-fence data and more. This information is used to accommodate two different work functions of their contractors. First, true consumer direct-to-door delivery; second, bulk drop news papers and magazines to news racks and stands.

For consumer direct-to-door delivery, contractors are equipped with both Motorola i580 units and Blackberry units on the Sprint Nextel iDEN network. Contractors are required to keep their handsets and AirMobility™ client side

software in the "on" position when making deliveries (the client side program is set to auto-load and start when the phone is turned on. For contractors, all they need to do is turn on their handset to start). This includes keeping the units open to the sky (place the unit on car dashboard) to capture better GPS data. GPS coordinates are captured on the handset multiple times per minute. The AirMobility™ application operates in a true store-and-forward state. If coverage is lost or if there is an interruption to cellular service, internet or Westlake's servers, AirMobility™ will continue to collect GPS data per the functional capabilities of the handsets. When coverage is re-established, data is batched together and sent to the AirMobility™ server for consistent and uninterrupted data collection and assessment.

All collected raw GPS data is instantly reverse geo-coded to build a database of approximate street addresses. All GPS data is analyzed through a complex series of filters in real-time. These filters are benchmarked through the back office pulled data to generate in near real time:

- Date, time and contractor name
- Arrival time to geo-fenced route
- Starting and stopping times in the route (geo-fence)
- Speed between coordinates
- Direction from coordinate to coordinate
- Length of time within the route
- Average delivery volumes per minute within the route
- Do-not-deliver address tracking and management
- Bread crumb trail of route served
- All data instantly map-ready

Driven by color code, CIPS can instantly see and sort which contractors arrived to their routes, which contractors arrived late and which have not arrived as of yet.

Tab-driven user interface makes for easy navigation of the server functions.

Cumulative day statistics are displayed for all routes nationally.

Statuses of contractors are displayed in color based on their arrival time to their denoted route. Green is on time, red is arrived late; bold red is yet to arrive.

CIPS Marketing monitors the initial arrival of contractors each morning to their assigned routes. Once contractors have started their distribution of materials, street selection, direction, speed, distribution volume statistics, etc. are all accessible online and in near real-time.

Geo-fenced routes, contractor bread crumb trail and quality control driver can be displayed with user-defined varying multi-color selection.

Contractor, route ID, and route statistics are displayed in near real-time.

Any number of contractors and quality control personnel can be mapped together for jobs in which expand to multiple routes.

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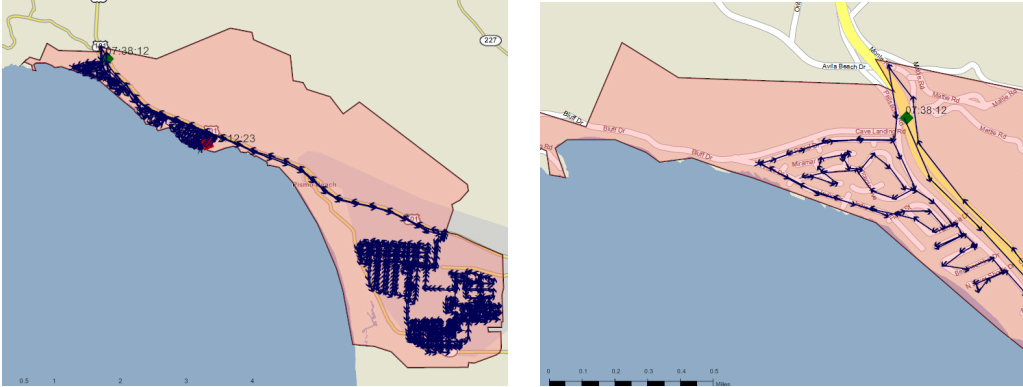
Maps display geo-fence and contractor path within a route. Maps can zoom to street corner level. Coordinates are displayed with multi-directional arrows to show direction of the contractor. Above, the geo-fence/route is screened back in red; contractor route and direction is in dark blue.

| 858 | 4/13/2010 | A & A Distribution | SLOAS002 | 11:14:11 | 0.00 | 0:43:07 | Stopped | 0.00 | 13TH Street GROVER BEACH CA 93433 | 93433 |
859	4/13/2010	A & A Distribution	SLOAS002	11:14:27	0.02	0:43:23	Stopped	7.50	13TH Street GROVER BEACH CA 93433	93433
860	4/13/2010	A & A Distribution	SLOAS002	11:14:41	0.05	0:43:37	Stopped	9.16	13TH Street GROVER BEACH CA 93433	93433
861	4/13/2010	A & A Distribution	SLOAS002	11:14:56	0.11	0:43:52	Stopped	13.61	13TH Street GROVER BEACH CA 93433	93433
862	4/13/2010	A & A Distribution	SLOAS002	11:15:11	0.09	0:44:07	Stopped	2.50	13TH Street GROVER BEACH CA 93433	93433
863	4/13/2010	A & A Distribution	SLOAS002	11:15:26	0.07	--	Departing	5.83	FARROLL Road GROVER BEACH CA 93433	93433
864	4/13/2010	A & A Distribution	SLOAS002	11:15:42	0.07	--	Moving	11.38	S 14TH Street GROVER BEACH CA 93433	93433
865	4/13/2010	A & A Distribution	SLOAS002	11:15:57	0.07	0:00:15	Moving	9.16	S 14TH Street GROVER BEACH CA 93433	93433
866	4/13/2010	A & A Distribution	SLOAS002	11:16:11	0.06	0:00:29	Moving	7.77	S 14TH Street GROVER BEACH CA 93433	93433
867	4/13/2010	A & A Distribution	SLOAS002	11:16:28	0.06	0:00:46	Moving	6.38	S 14TH Street GROVER BEACH CA 93433	93433
868	4/13/2010	A & A Distribution	SLOAS002	11:16:42	0.06	0:01:00	Arriving	2.77	S 14TH Street GROVER BEACH CA 93433	93433
869	4/13/2010	A & A Distribution	SLOAS002	11:16:58	0.11	0:01:16	Stopped	12.22	S 14TH Street GROVER BEACH CA 93433	93433
870	4/13/2010	A & A Distribution	SLOAS002	11:17:12	0.06	0:01:30	Stopped	10.00	S 14TH Street GROVER BEACH CA 93433	93433
871	4/13/2010	A & A Distribution	SLOAS002	11:17:28	0.11	0:01:46	Stopped	12.77	S 14TH Street GROVER BEACH CA 93433	93433
872	4/13/2010	A & A Distribution	SLOAS002	11:17:42	0.08	0:02:00	Stopped	3.88	S 14TH Street GROVER BEACH CA 93433	93433
873	4/13/2010	A & A Distribution	SLOAS002	11:17:57	0.10	--	Departing	8.05	GRAND Avenue GROVER BEACH CA 93433	93433
874	4/13/2010	A & A Distribution	SLOAS002	11:18:13	0.02	0:00:16	Moving	0.00	GRAND Avenue GROVER BEACH CA 93433	93433
875	4/13/2010	A & A Distribution	SLOAS002	11:18:28	0.07	0:00:31	Moving	11.94	GRAND Avenue GROVER BEACH CA 93433	93433
876	4/13/2010	A & A Distribution	SLOAS002	11:18:43	0.08	0:00:46	Moving	0.00	GRAND Avenue GROVER BEACH CA 93433	93433
877	4/13/2010	A & A Distribution	SLOAS002	11:18:58	0.00	0:01:01	Arriving	0.00	GRAND Avenue GROVER BEACH CA 93433	93433
878	4/13/2010	A & A Distribution	SLOAS002	11:19:13	0.00	0:01:16	Stopped	0.00	GRAND Avenue GROVER BEACH CA 93433	93433
879	4/13/2010	A & A Distribution	SLOAS002	11:19:27	0.05	--	Departing	11.66	OAK PARK Blvd GROVER BEACH CA 93433	93433
880	4/13/2010	A & A Distribution	SLOAS002	11:19:43	0.13	--	Moving	15.00	306 OAK PARK Blvd GROVER BEACH CA 93433	93433
881	4/13/2010	A & A Distribution	SLOAS002	11:19:59	0.14	--	Moving	10.83	458 OAK PARK Blvd GROVER BEACH CA 93433	93433
882	4/13/2010	A & A Distribution	SLOAS002	11:20:13	0.06	--	Moving	10.55	530 OAK PARK Blvd GROVER BEACH CA 93433	93433
883	4/13/2010	A & A Distribution	SLOAS002	11:20:29	0.12	--	Moving	11.94	687 OAK PARK Blvd GROVER BEACH CA 93433	93433
884	4/13/2010	A & A Distribution	SLOAS002	11:20:44	0.11	--	Moving	9.16	CHILTON Street ARROYO GRANDE CA 93420	93420

All raw GPS tracked data is viewable with reverse geo-coded addresses. Color is used to show a contractor stopped, departing, arriving and moving. Speed is calculated between each coordinate

For Bulk-drop news paper and magazine delivery to street and store racks, contractors continue to be subject to the GPS tracking methods implemented for the direct-to-door delivery contractors but now are required to complete a simple wireless based form when distributing their materials.

Hundreds of routes and rack addresses are pulled from Guardian and automatically distributed out to contractors using a Blackberry daily. Each location of the route displays on the handset *the last known delivery order conducted*. So, if the contractor changes their route to make deliveries more efficient, the rack locations are automatically re-distributed in that order upon the next time a contractor manages that same route.

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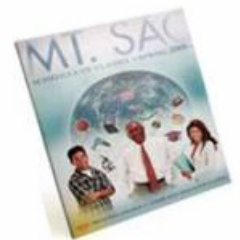
At each rack location, contractors must barcode their location, denote the number of outdated magazines/news papers they are collected (returns) and how many new papers they are distributing.

r Code anned	Location Name	Rack Photo	Delivered	No Delivery Reason	Returns	Rack Condition	Start Time	End Time	Latitude	Longitude	GPS Add
SC1506	FOOD FOR LESS ATTN DENISE SCARCELLI	4			0	OK-No Issue	00:56:10	01:11:31	33.873248	-118.240936	W ARTESIA Blvd CON
SC1508	ELECTRIC	60			0	OK-No Issue	01:11:32	01:14:29	33.870256	-118.216584	17857 S ALAMEDA Street
SC1509	HOMESTEAD BUSINESS	50			0	OK-No Issue	01:14:30	01:15:21	33.868356	-118.216168	S ALAMEDA Street CO
SC1511	LOWE WAREHOUSE	60			0	OK-No Issue	01:15:22	01:17:57	33.851384	-118.218432	19784 S ALAMEDA Street
SC1510	THE SHOP WAREHOUSE	60			0	OK-No Issue	01:17:58	01:19:14	33.856512	-118.217032	19240 S ALAMEDA Street
SC1547	DMV	50			0	OK-No Issue	01:19:15	01:21:47	33.876576	-118.215	2053 S SANTA FE Avenue
SC1545	DIRECT SHIPPING LINE	50			0	OK-No Issue	01:21:48	01:28:50	33.883816	-118.215808	1385 S SANTA FE Avenue
SC1544	SANTA FE AUTO	60			0	OK-No Issue	01:28:51	01:29:51	33.88574	-118.216024	1205 S SANTA FE Avenue
SC1543	POST OFFICE	60			0	OK-No Issue	01:29:52	01:31:27	33.890148	-118.21624	733 S SANTA FE Avenue
SC1513	MCDONALDS	60			0	OK-No Issue	01:31:28	01:38:09	33.888332	-118.207096	939 S LONG BEACH Blvd
SC1514	WAREHOUSE	60			0	OK-No Issue	01:38:10	01:40:00	33.8887	-118.195984	2550 E ALONDRA Blvd C
SC1515	METTLI CHICKEN	60			0	OK-No Issue	01:40:01	01:41:18	33.888568	-118.194632	916 S WHITE Avenue C
SC1516	JOHN'S BURGER	60			0	OK-No Issue	01:41:20	01:41:27	33.888676	-118.194752	2684 E ALONDRA Blvd C
SC1517	THE DONUT HOUSE	60			0	OK-No Issue	01:41:28	01:42:35	33.888848	-118.193264	E ALONDRA Blvd CON
SC2207	CHEVRON FOOD MART	20			0	OK-No Issue	01:42:37	01:44:51	33.888752	-118.182144	6622 ALONDRA Blvd PAF
SC2224	EL POLLO LOCO	60			0	OK-No Issue	01:44:52	01:46:26	33.88932	-118.177504	15777 ORANGE Avenue P.
SC2208	H & H LIQUOR	60			0	OK-No Issue	01:46:28	01:48:18	33.88904	-118.169072	7474 ALONDRA Blvd PAF
SC2209	MCDONALD	60			0	OK-No Issue	01:48:19	01:48:36	33.889032	-118.169072	7474 ALONDRA Blvd PAF
SC2227	GIFT SHOP	45			0	OK-No Issue	01:48:37	01:51:31	33.892796	-118.16004	15512 PARAMOUNT Blvd F
SC2211	U1 MARKET	60			0	OK-No Issue	01:51:32	01:53:27	33.88958	-118.156216	15861 GEORGIA Avenue P
SC2212	DOLLAR PLUS	60			0	OK-No Issue	01:53:29	01:53:41	33.889504	-118.156504	8169 ALONDRA Blvd PAF
SC2214	STARLIGHT LIQUOR	60			0	Broken Display Holder	01:53:42	01:54:55	33.889236	-118.152488	8445 ALONDRA Blvd PAF
SC2216	TIJUANA BAKERY	20			0	OK-No Issue	01:54:56	01:55:36	33.888912	-118.151912	8472 ALONDRA Blvd PAF

This data is highly analyzed to ensure, week-to-week, that where a paper or magazine may be in more demand, a larger supply of that publication is being distributed to that location the following week. In the event of a problem with a rack, a store owner for example not allowing a contractor to distribute their materials, etc., contractors also have an option to capture a photo to show proof of performance or proof of a problem as uncovered while conducting their work. All collected data is pushed back to Guardian for deeper analysis for individual customers.

Second Level Quality Control

For both direct-to-door deliveries and bulk drops of news papers and magazine publications, a secondary level of quality control; both technically and personally, have been implemented to create a higher level of customer satisfaction.

CIPS has a field force of quality control personnel in which monitors and assesses multiple routes throughout each day. AirMobility™ is used to help locate a contractor within a large route to approximate both where they are and the homes or businesses that have been delivered to. Materials by contractors

are assessed for driveway accuracy, support of do-not-deliver addresses and volume of distribution.

For ease of use, information about each route being assessed is pulled from Guardian and display atop of each assessment form.

Using in-field wireless lap-tops, quality control personnel assess both quantitative and qualitative aspects on the distribution work performed by the contractor.

Quality control personnel are also supported with near real-time GPS tracking. This data is also collected and can be custom color coded and mapped on top of the geo-fence with contractor's route. This combined personnel map is used to show the highest level of proof of performance to a customer.
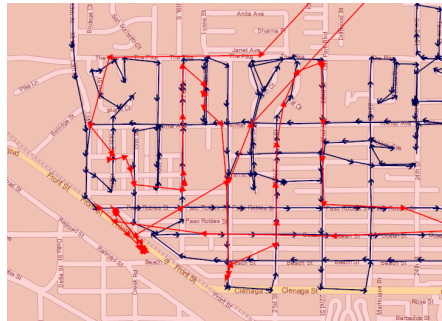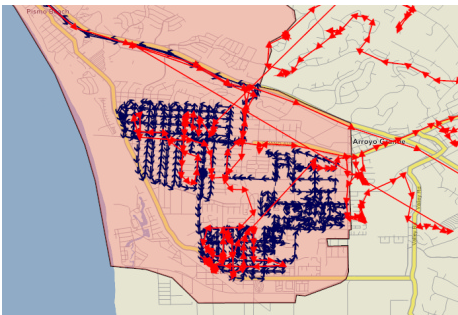
Geo-fence is displayed in screened back red, dark blue is the contractor, red is the quality control personnel. Multiple-level zoomed maps are provided back to customers as proof of performance guidance.

To further minimize fraud, all known recycling centers in the greater areas in which materials are distributed nationally are coded into AirMobility™ as their own geo-fences. Any contractor coming within 1000 feet of any known recycling center immediately generates an alert to CIPS management.

One of the most important attributes of AirMobility™ for CIPS is the do-not-deliver (DND) management module. Similar to a do not call list, direct-to-door distribution companies (materials often thrown onto a driveway or left on a

porch), consumers have the right to request that materials no longer be delivered. DND management continues to be top-of-mind for CIPS and has implemented the first and second stage of using technology to help management this ongoing issue.

Handsets for contractors have been adapted to enable and require the user to *mark* that they have acknowledged a DND address within that particular route. When a route is completed and there are 20 known DND addresses within that route, a contractor is required to push a button on the handset 20 times. Each push of the button notes the GPS coordinate of the handset at that time. Those coordinates can be instantly mapped against the actual DND addresses to show proof of performance and support of these locations. Next stage of development (in production) is to integrate an automated notification system on the handset to prompt the contractor when they are getting close to a DND address.

Other Functionality

All spreadsheet type data online for CIPS is instantaneously exportable to MS Excel. All data from all contractors and routes can be filtered by date and other user defined options. All core AirMobility™ form building functionality has been built into the system so that when CIPS approaches a potential new customer, they can immediately show that new customer's data collection needs functioning on a handset live and right to their specifications. AirMobility™ automatically synchronized with Guardian every 3 hours; however administrative controls have been established for CIPS to synchronize on-demand. A full login and password management system has been established to enable CIPS to set up and configure new logins and passwords for both internal personnel to access data but to also enable customers to directly track and access their data. Other tools include viewing imported geo-fenced data, user-defined distance thresholds for geo-fence distances when applicable, cumulative statistics throughout (number of routes for the day, how many have been completed, routes checked by quality control, percentage completed, etc.).

The millions of coordinates and math calculations being managed in real-time daily are also rolled up into a data management dashboard to show overall user statistics in which can be filtered by date range as required.

Results

The response from existing customers as well as potential new customers has been favorable. AirMobility™ is used as one of the strongest differentiators CIPS has as an offering against an industry filled with competitors. Tools around tracking and fraud management are the hot topics. Knowing where and when a contractor was, ensuring the materials are being delivered backed by human quality control, showing proof by GPS tracking that both the contractor and quality control personnel completed and assessed the given routes, superior DND address management and recycling center alert mechanisms have CIPS rapidly expanding.

Contacts

If you are interested in information related to field force automation, GPS tracking, data collection, photo capture, wireless bar-coding, converting paperwork into wireless forms, please contact Alan Gould, Westlake Software, Inc. (818) 932 9120, www.airmobility.net, www.westlakesoftware.com or by email at alan.gould@westlakesoftware.com.

If you are interested in information about direct-to-door delivery services, TMC conversions, etc., please contact Kennedy Higdon, CIPS Marketing Group, Inc. at (310) 769 6900, www.cipsmarketing.com or khigdon@cipsmarketing.com.

CIPS Marketing, Inc. was recently awarded a contract to distribute 2.4 Million energy efficient light bulbs to 1.2 Million homes in Los Angeles.

Distribution project was widely covered in the media in Southern California and promoted with Los Angeles Mayor Antonio Villaraigosa.

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