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# Evolution of waste collection management

Evolution equals Devolution, says Chris Wiener, Solutions Architect, ArabIT LLC as he writes on the general use of Telemetry systems such as the Telargo Waste Disposal Services Management Solution by the municipalities whether outsourced or internal.

Over the past few years, municipalities have increasingly awarded concessions or outsourced the collection and management of the municipal waste. This means that while the municipalities are still responsible for the collection of the waste, they are no longer the active party. Because the industry has evolved, the activity has devolved both on a financial basis as well as a practical and operational basis. Contractors either buy or are awarded concessions, or outsource contracts to operate the management of waste for a specific segment or region or both. The level of autonomy within the territory are defined in the contract and maybe restricted to adhering to a specific route and schedule or maybe as liberal as a general SLA which specifies that the service will be as required and agreed.

This article is going to focus on the general use of Telemetry systems such as the Telargo Waste Disposal Services Management Solution by the municipalities whether outsourced or internal. The focus will be to look at operational issues and how systems can be used to support them.

Over the next several articles we are going to explore how these relationships develop and how systems such as the Telargo Waste Disposal Services Management Solution can positively impact these relationships. We will explore in detail features like the Programming Logic Controller and the Trip Order management system for schedule adherence and ultimately how the Resource Scheduler system can be used to dynamically manage waste collection routing, assignment of drivers and vehicles, and how it can be used to deal with on the day scheduling of pickups.

## Telemetry & Waste Disposal Services Management Systems

Telemetry systems provide management with a significant tool in providing transparency into the business process. The Telargo solution has one of the greatest range of solution offerings because it brings with it best practice from over a dozen industry verticals which can be applied to various aspects of the Waste Management Transportation industry. Regardless of the industry there are many things which a fleet manager needs to control, such as:

- Communication – message, voice
- Dispatching – Closest Vehicle, CRM Support
- Event Notifications
- Expense management
- Location Management
- Maintenance Support
- Remote Diagnostics
- Safety & Security
- Track & Trace
- Workforce management – driver assignment, time accounting

The Telargo Waste Disposal Services Management Solution provides all of these advanced features over and above the basic fleet management features of traditional track and trace units; but more importantly it provides industry specific features such as:

- Routing and Scheduling Management
- Sensor Telemetry
- Workflow Automation
- 3<sup>rd</sup> party in-vehicle device integration

Let's look at a couple of these in a little detail:



The Telargo solution potentially provides the municipal services organization with all of the tools to remotely monitor the work that is being carried out.

## Routing and Scheduling Management

These features are combined to allow managers to observe the work which is being done. In the case of the Waste Disposal Services industry we combine the 4 services above to create an effective solution for controlling and monitoring the work which is being done.

The following diagram shows a line chart of two trucks executing a route:



The line chart details show that the truck is behind schedule and the white and red dots should which stops have been completed. This provides a quick graphical interface to understanding what work is still pending.

The Trip Order Overview and the details view shows the status of the trip, which vehicle is executing the trip, completion % and which was the last stop reached in the trip, and it shows additional details, such as scheduled and actual arrival and departure time along with delay:

Number	Scheduled arrival	Arrived at	Arrival delay (Min)	Scheduled depart	Departed at	Departure delay (Min)	Stop duration
1	15/07/2009 13:15	15/07/2009 13:51	0:36	15/07/2009 13:51	15/07/2009 14:00	0:09	00:09:00
2	15/07/2009 13:25	15/07/2009 14:05	0:40	15/07/2009 14:05	15/07/2009 14:15	0:10	00:07:15
3	15/07/2009 13:35	15/07/2009 14:05	0:40	15/07/2009 14:05	15/07/2009 14:15	0:10	00:07:15
4	15/07/2009 13:35	15/07/2009 14:25	0:50	15/07/2009 14:25	15/07/2009 14:35	0:10	00:03:30
5	15/07/2009 13:45	15/07/2009 14:35	0:47	15/07/2009 14:35	15/07/2009 14:45	0:10	00:00:00

Businesses in every industry are looking for ways to do more business, utilize fewer resources and drive less miles - all without sacrificing customer service. As such, the trip order system can be augmented by the addition of the resource scheduler.

Resource Scheduler helps companies to overcome most or all of these challenges:

- Insufficient visibility into the activities and locations of mobile workforce
- Not being able to or being slow in finding the resources closest to a service need

- Inefficient routes that do not maximize mobile workers' time
- Lack of efficient communication with mobile workforce
- Low responsiveness to customers demands
- Lack of information for strategic decision making
- Underutilized assets and mobile workforce
- Unnecessary fuel consumption and vehicle wear from indirect routes, speeding, excess idling or unauthorized after-hours use

- Inability to consistently meet promised delivery/visit time-windows
- High transportation costs
- Inefficient and slow administration

By combining strategic, short-term and real-time views on planning & optimization of their mobile workforce, businesses can benefit from optimized, cost effective routes and customer-oriented schedules.

Resource Scheduler easily coordinates employees, vehicles and customer demands, taking the guesswork out of planning processes, while constantly optimizing for the best solution at any given time. By using various artificial intelligence algorithms fed by real-time data, Resource Scheduler provides businesses with the best possible solutions from both operational and customer perspectives.

## 3rd party in-vehicle device integration

Telargo has designed an integration protocol using the On-Board Unit's serial port that allows third-party device integration with Telargo systems. Devices such as bar-code readers or electronic signature capture devices can be used to transfer data to the Telargo Fleet Center. This data can be used in the Telargo system or exported to the customer's information system.

Some of the additional sensors and other equipment can be connected to the On-Board Unit specific to the Waste Disposal Industry are:

- Hydrostatic Weight Sensors
- RFID Bin Identification Sensors
- "Power Take Off" monitoring sensors

## Conclusion:

By not only providing location information, but more importantly operational status information, and hardware level component information, the Telargo solution potentially provides the municipal services organization with all of the tools to remotely monitor the work that is being done, to ensure compliance with Service Level Agreements and to ensure that all health, safety and environmental standards are being complied with. In future articles we will dig deeper into how these features work and how they can individually benefit your company.