The Value of Real Time Information Via Wireless Technology

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Subject: - The value to your business of real time information and the enabling wireless technologies

Summary outline for presentation to the Institute of Road Transport Engineers:

Business Activities

- **Fleet Management**
  people and machinery, their deployment, servicing, legal & business requirements
- **Dynamic Routing**
  active work management - dynamic work allocation event response - work or accident
- **Customer Service**
  tying into the overall delivery to customer, better quality information to customers, more accurate/flexible response to changing customer needs

Information

- **Location** - Where are vehicles, goods, people at any given time
- **Status** - What is the condition and availability of same
- **Decision-making** - What other information and decision-making processes are required at the host to leverage the benefits.

The Technology

- **Data Capture** - can encompass vehicle information (engine speed, temperature, air pressure), location, driver inputs, load information.
- **Transmission** - real time vs. periodic, coverage, availability
- **Host Connectivity** - oft forgotten, tying back into business management systems
- **Man & Machine** - impact on the user, impact on how you work, especially back end

Demonstration

Anthony Beresford -
Business Development Manager
Alpine Electronics

Case Study 1

Wireless Data Technology Helps Clawson Concrete Beat the Clock

There are very few companies in this country that understand the power of real-time communication more than those in the concrete industry. A case in point is Clawson Concrete of suburban Detroit, Mich. Each time Clawson loads one of its trucks with concrete, the clock starts ticking and the company has a 90-minute window in which to deliver its product. Once 90 minutes have passed, most inspectors will reject the load, and in some cases it could mean having to remove the concrete from the truck with a jackhammer.

The need for Clawson to communicate with its drivers and prevent time-consuming mistakes is critical to the very survival of the company. A quest for a better way to manage its 100-vehicle fleet of trucks and reduce product loss led Clawson to partner with Ameritech Cellular & Paging to develop an innovative wireless data solution.

Ameritech worked with Advanced Systems Group of Farmington Hills, Mich. to implement a state-of-the-art automated vehicle-location system utilising customised hardware and software. When paired with Ameritech's Cellular Digital Packet Data (CDPD) network, the result is a solution that enables Clawson to track its drivers accurately in real-time, prevent product loss and dramatically increase driver productivity. Continued

Clawson's vehicle location system helps its drivers navigate new subdivisions and building sites where there are not street signs and it's easy to become lost. Now when drivers lose their way, the dispatcher can locate their vehicle via a tracking mechanism and navigate them to the intended location. Each precious minute can mean the difference between saving the concrete and the customer, or losing both.

The new system also allows Clawson to get more trips out of each truck, because dispatchers receive real-time advanced vehicle tracking information (via a global positioning system) from each truck. Using a Vehicom status box located in the truck, drivers indicate the status of their job by pressing buttons such as "leaving plant" or "starting job." This kind of information prevents inefficient return trips to one of Clawson's seven concrete plants for dispatch to the next job. This is particularly useful since a large percentage of Clawson's customers schedule orders the day of delivery, often just minutes or hours before they are needed.

Previously this information was sent to the dispatcher over an 800 megahertz radio system, and could often take 20 minutes to get through. It is now sent via CDPD, which relays the message in an eye-blinking 3/10 of a second. CDPD allows Clawson to respond to customer requests more quickly, thus improving both customer service and costs.

Wireless data technology is not new to vehicle management. Until recently, most fleets used a private radio channel to communicate with their drivers. Depending on the number of vehicles in the fleet, the channel could get overcrowded, resulting in significant delays.

Ameritech's CDPD network offers Clawson the fastest, most cost-efficient method for short messaging. Other benefits include the speed and security that is inherent in this all-digital system, as well as ease of movement across different area codes. The system is easily expandable and, since it is maintained by Ameritech, Clawson is freed from day-to-day responsibilities typically associated with managing a private radio network.

Clawson's vehicle tracking system leverages a one-two punch of advanced hardware and software, and the latest in cellular technology. The solution is comprised of the following components:

- Mobile Data Terminal: Each vehicle is equipped with a mobile data terminal into which the driver keystrokes information. Drivers send and receive data from the dispatcher's computer via a CDPD modem.
- Customised Software: Clawson utilises a customised software program tailored specifically to meet its needs for tracking and gathering information.
- Ameritech CDPD Network: Provides Clawson with split-second, cost-effective short messaging capabilities. Clawson pays only for the amount of data transmitted, not connection time.

Case Study 2

Bell Atlantic Mobile Wireless Data Technology Helps Public Service Electric & Gas Cut Cost, Maintain Customer Service Guarantees:

Bedminster, NJ - Public Service Electric & Gas customers in New Jersey will be the first in the nation to benefit from the wide-scale deployment of Bell Atlantic Mobile wireless data technology that promises to reduce costs, speed service restoration and improve customer service, the companies announced today. In the largest application of Cellular Digital Packet Data (CDPD) technology to date, more than 750 field service workers in PSE&G's gas service business will use pen-based computers to send and receive real-time information on repair requests and customer orders over the Bell Atlantic Mobile cellular network.

CDPD is a technology which efficiently transmits short bursts or packets of data over the cellular infrastructure. Bell Atlantic Mobile offers CDPD service under the AirBridge Packet name.

"AirBridge Packet service will enable PSE&G service people to be a more efficient and effective workforce," said Stan Kosierowski, PSE&G's director of the gas service business. "This direct wireless connection to our field service specialists make us more responsive to our customers, reduce order processing and travel time, and increase 'wrench time' -- time spent actually working at customer homes. "

There will be significant cost savings in the time we're spending on paper processing. We'll be able to better serve more customers because access to real-time information will reduce the number of recurring orders, provide better resource management and support our service guarantee commitments," Kosierowski said.

Under the old system, service calls are transmitted by radio from one of two call centres to regional dispatchers and to field personnel who write down details on repair calls and orders. Once a particular job is completed, a time sheet is filled out and the information is called into a dispatcher, who manually enters it into the database. The call and dispatch centres cannot track customer calls.

The new system will let field personnel directly receive real-time information on customer orders, repair requests and existing maintenance contracts and previous problems. Once a job is completed, details are entered onto the pen-based computer and sent back in real time to the appropriate databases. "Our alliance with Bell Atlantic Mobile is just one of the ways in which we meet and exceed the customer service guarantees announced in July," Kosierowski said. "We are guaranteeing our customers that we will do everything possible to meet their service expectations and if we fall short, they will receive bill credits in return."

"No other wireless carrier can match the coverage and utility of our CDPD network," Lauer said. "For a relatively new technology, CDPD has proven itself a viable 'industrial-strength' service that has widespread potential. The quality of the Bell Atlantic Mobile network is allowing organisations in both the public and private sectors to re-engineer the flow of critical information. The technology is already working for law enforcement agencies, including the Bridgewater Police here in New Jersey, and others along the Northeast Corridor."

The PSE&G contract represents the largest CDPD deployment announced to date. Bell Atlantic Mobile's data system was chosen over a number of other wireless services tested by PSE&G over the past two years. Only CDPD was found to meet the utility's high throughput requirements. CDPD also offers a completely open and widely supported standard, inherent encryption, and a specification based on the widely used Internet protocol (TCP/IP) for ease of implementation by customers.

"By choosing to integrate Bell Atlantic Mobile's CDPD technology into its Gas Service Information System, PSE&G has demonstrated its commitment to use the best, most advanced technology available to serve customers and take the lead in the increasingly competitive utility business," Lauer said. "Utility companies throughout our region and across the nation will be watching this system -- and following in PSE&G's footsteps."

Under the terms of the five-year contract, PSE&G will begin phasing in the new system in the Plainfield area in central New Jersey. Deployment will expand to include dispatch centres in Clifton and Summit in the northern part of the state and Burlington in the south. Training and installation will begin later this year and service specialists will begin using the system in February of next year. Completion is scheduled for September 1996. The value of the contract was not disclosed.

Newark-based Public Service Electric & Gas Company is New Jersey's largest power utility, serving 2.2 million customers, including 1.5 million gas customers.

With more than three million customers, Bell Atlantic Mobile is the largest wireless service provider on the East Coast. Headquartered in Bedminster, NJ, the company offers a full range of wireless voice, data and paging services to the Northeast, mid-Atlantic, Southeast and, through a separate subsidiary, in the Southwest.

Case Study 3

New York Heating Oil Company Adopts AT&T Wireless Packet Data Service For New Solutions, Increased Productivity:

Kirkland, WA - The Wireless Data Division of AT&T Wireless Services has announced a new customer, Robison Oil, a Westchester County, N.Y. heating oil supplier. Robison Oil's fleet of almost 100 delivery and service vehicles will use AT&T's Wireless Packet Data Service, also known as wireless IP or CDPD, for a variety of dispatch, delivery and service functions.

Robison Oil has adopted a wireless data solution using AT&T's wireless network to create greater efficiency and productivity and to hold down costs and improve quality of service to its heating oil customers, thereby achieving an economic advantage over competitors. Each of the company's 46 oil delivery trucks are equipped with a dockable, rugged handheld computer that sends important information back to the company's central database in real time. It provides instantaneous dispatch instructions, automatically meters the oil that is delivered, keeps a running inventory, and communicates account-specific instructions to the driver. With the help of an onboard printer, billing is calculated instantly, and a receipt and invoice are printed and delivered with an envelope before the driver leaves the customer's residence.

"We have been very pleased with our initial trials," said Saul Singer, CEO of Robison Oil. "The benefits to the customer will be tremendous. We'll reach more customers each day, and they will know instantly what their heating oil bill is and how much fuel they used since their last 'fill-up.' We reduce paperwork and save on postage and all the labour that is associated with billing functions."

Software developer ICC International, working in tandem with AT&T Wireless Services, developed a custom solution that relies on Norand's PenKey 6100 handheld computer, an Epson printer and a custom application interfaced to Liquid Control Meter Corp.'s LectroCount3. Using AT&T's Wireless Packet Data Service, information travels over AT&T's wireless IP network, or CDPD, throughout the greater New York and New Jersey area.

Using technology such as this keeps Robison Oil at the forefront of an industry whose service providers have to work harder than some other energy providers to stay competitive, but Robison Oil is no stranger to technology. Three years ago, Robison was the first heating oil company to work with another wireless data provider to implement a solution, also developed by ICC International, for Robison's 48 service vehicles. Now that AT&T's network is available in Robison's territory, the company will move its service truck dispatch system over to the AT&T network as well, citing its coverage and speed as "unsurpassed."

In the three years since Robison first deployed a wireless data solution, it has increased the number of service calls each truck makes and reduced office staff by two people.

"We've always been happy with our use of wireless technology, but now that we can migrate both systems to the AT&T network, we're especially pleased," added Singer. "AT&T has always provided us a high level of satisfaction with all of its products and services. We like the fact that we can handle all our communication needs with one vendor; there are definite economic and service advantages to one-stop shopping."

Robison Oil provides service to more than 24,000 homes throughout Westchester and Putnam counties in New York, just outside of New York City.

AT&T Wireless Services is the leading provider of wireless communications services in the United States. The Wireless Data Division of AT&T Wireless Services is a recognised leader in the development of wireless data communications.