Top Trends in Tracking and Communications:

21st Century Technology...Today

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Introduction

- Technology adoption trends in other industries
- Waste industry: technology is accelerating

Underserved—far too long
- Technology had to catch up to the complexity of the industry

What can technology do for you?
- Profitable pricing—and win
- Provide outstanding customer service
- Drive revenue and margin
- Build shareholder value
Why is Technology Important?

- Fleet Operators identify five top reasons by priority:
  - Improve customer satisfaction and retention (70%)
  - Maintain or enhance competitive position (61%)
  - Meet customer mandates for better service and delivery (58%)
  - Improve operating margins (44%)
  - Improve cash flow (32%)

- Safety and sustainability will dramatically increase in importance in the years ahead

Source: Aberdeen Group 2005-2008
Trend: The Smart Truck

Real Time Data Transmission
RFID
Scales Integration
Onboard Computing
J1708 Fleet Maintenance
Backup Cameras
Photographic Proof
On-Board Computing

- **Trend**
  - Installation of On-Board Computers

- The natural ‘next step” beyond GPS

- Integrates existing GPS technologies

- Ties field activity to individual customer records
Real Time Transmission

- Trend
  - Immediate transmission of all field data to the back office

- Customer Service Reps and Dispatchers now more productive

- All activity monitored: pickups, breaks, landfills

- Allows for office “war rooms”
RFID

- **Trend**
  - Well-established in Europe and Asia
  - Coming to the US

- Provides automatic service verification and container asset tracking

- Match container with customer

- Solves many container-related pick-up issues
Photographic Proof & Scales

- **Trend**
  - Integrate scale systems and digital snapshot cameras with on-board computers

- A powerful add-on to automatic service verification

- Improve billing accuracy with scales

- Provide irrefutable proof of service activity with digital camera
Safe Driving

- Trend
  - Integration of backup camera with the on-board computer

- Image displayed through on-board computer

- Gives driver critical visibility

- May lead to insurance premium reductions
Fleet Maintenance / J1708

- Trend
  - Install J1708/J1939 hardware in concert with fleet maintenance software

- Proactively manage fleet maintenance through engine bus monitoring

- A key component of sustainability. Well-maintained trucks = reduced carbon footprint
The Trend: A Smart Back Office
Software

- **Trend**
  - Integration!

- Software is a critical component of your Smart Fleet

- Route Management System is a cornerstone

- Goal: integrate all applications into one seamless data system
Driver Kiosk

- Trend
  - Installation of driver kiosk to replace paper log book

- Report shows detail of all route activity (skips, misses, breaks, landfills)

- Goals
  - Objective, accountable route reporting
  - Reduce driver in-office time
Dispatcher Workstation

- **Trend**
  - Improve productivity of commercial and roll-off work order dispatching

- Visually link work order, landfill, and vehicle location via GIS mapping

- More pulls per day = more top-line revenue

- Integrates with route optimization software
The Trend: Real-Time Communication
Communication

- **Trend**
  - Install a blend of communications services to get real-time data

- Outdoor WiFi for the yard

- Cell for the field. Lower prices mean more availability

- Satellite when cell coverage is unavailable
The Trend: Strategic Management Reporting

Executive & Management Insights

- Executive Management
- SUMMARY REPORT
- Operations Management
- ALERTS
- Fleet Supervision
- IMMEDIATE LOCATION
- Driver Behavior
- VERIFICATION
Reporting

- **Trend**
  - Create internal and external management reporting systems

- **Visibility**
  - Fleet
  - Driver

- **Accountability**
  - Management to hold the organization accountable for results

- **Productivity**
  - Increase top line revenue growth and bottom-line profits
Where is the Technology Headed?

- Consumer-Consumer Portals
- Consumer-Company Portal
- Interactive Web

Smart Truck
Smart Office
Real Time Communications
Strategic Management
Reporting

IM
Video
Mobile Devices
Sustainability

2008
Current Technologies

2009
Consumerization

2010
Community
Conclusion

- Early adoption gives you a competitive advantage in the market place
  - Waste industry passed this point in the last five years

- Industry is moving to mainstream use of mobile technology
  - Large public haulers with big IT staffs are bringing this technology to market
  - Integration is now an expected feature
  - Price points for hardware have come down
  - Focus on improving customer satisfaction / retention

- Technology becomes the competitive necessity to compete and survive