On Board Monitoring Systems for Passenger Transport

TLC ENGINEERING SOLUTIONS (Pty) Ltd
TLC ENGINEERING SOLUTIONS

- Founded in 1988 as TLC Software.
- Joined Motswedi Group 2005
- Develop custom solutions to customer problems
- ISO9001:2000 Registered
- Internal skills
  - Project Management
  - Engineering
  - Software development
  - Hardware design
  - Manufacture
  - QC
- Multi-disciplinary / cross industry
- Solutions focus on solving technical issues
Bus Experience

- Technology Supplier to DOT KZN pilot project for fare subsidy monitoring
  - GPS / Satellite based unit
- On board monitoring of vehicle operation
  - Overspeed / over-rev / high temp / low levels
Objectives

- Vehicle tracking
- Engine Monitoring
- Driver Evaluation
- Route and Time adherence
- Fare Collection
Back Office Intelligence
• Exception Reports
• Routine Reporting
• Evaluations (Driver, Routes, Delivery Times)

Vehicle Mounted Unit
• Generic platform (Satellite / GSM / GPRS/Wireless)
• Digital (ON/OFF) contact or voltage inputs for monitoring state changes e.g. door open/close, High Water Temp, Low Water Level, Low Oil Pressure
• Analogue (Multi State) inputs e.g. fuel level, voltage etc.
• Counter (Pulsed) inputs e.g. flow rate, rpm, speed etc.
• Way Points

Driver ID
• Key, or
• Transponder

FTP
GPS
VMM

* GSM/GPRS
* Satellite
* Wireless

* VMM

* Key, or
* Transponder
Operation

VMM

Vehicle activated

Driver ID
* Key, or
* Transponder

Data transmitted:
- Heart beat (every hour say)
- Alarm condition

Data transmitted when unit enters way-point circle.
- On entering – arrival code
- On exit – Departure code
Back-Office Application

- Situated at Client’s Office
- Using SQL Database Engine and Crystal Reports
- Vehicle Data input via ftp site (Needs to be setup at client)
- Application customization via Windows front-end:
  - Driver Details
  - Routes
  - Time-tables
  - Bus Duty allocation (daily)
  - Passenger Count with locations
  - Fare reconciliation
- Access to GIS mapping
Reports

- Driver Evaluation
  - Driver ID, Routes, Driving time, Alarms during operation, route and time adherence
- Vehicle based reports (maps and coordinates)
- Vehicle Route adherence reports
- Passenger density
Mapping Application
### SATELLITE DATA REPORT

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**To:** 25/03/2001 12:09:18 PM  
**Print Date:** 25/03/2001

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# Route and Time Adherence Module

Routes are created using pre-defined stops (or Way-points)

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Route and Time Adherence...

Vehicles are assigned duties (i.e. trips) for specific days:

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26/03/2001
Route and Time Adherence...

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Duty allocations and field data are combined to produce adherence report:

### PENALTY REPORT

**NON DWENI BUS SERVICES VRYHEID**

From: 01/02/2001  
To: 01/02/2001  
Print Date: 26/03/2001

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## Operational Buses Report

**From:** 2000/07/01  
**To:** 2001/03/26  
**Print Date:** 26/03/2001

<table>
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<tr>
<th>Client Name</th>
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User benefits

- Real-time information on the fleet
- Accurate logging of trips and duties
- Asset protection capabilities
- Continuous logging of key safety parameters
- Break-down/emergency panic functionality
- Scalability. Any number of vehicles and depots can be accommodated.
Fare Collection

- Fast
- Simple
- Inexpensive (media)
- High reliability
- Foolproof
- Eliminate fare evasion
- Inter-modal
- Scalable
- Local Support
On-Board Units
Fare Experience

- 40 Countries
- 90,000 Devices
- $35m collected daily
- 30 years experience

Chattanooga Area Regional Transportation Authority (Chattanooga, TN)
Chicago Transit Authority (Chicago, IL)
Chula Vista Transit (Chula Vista, CA)
Command Bus (Brooklyn, NY)
Community Bus Lines (Passaic, NJ)
Corridor Transportation Corp. (Laurel, MD)
Culver City Municipal Bus Lines (Culver City, CA)
Direct Access to Regional Transit (Chula Vista, CA)
Fairfax Connector (Fairfax, VA)
Fairfax CUE Bus (Fairfax, VA)
Five Mile Beach (N. Cape May, NJ)
Foothill Transit (West Covina, CA)
Frederick Transit (Frederick, MD)
Golden Empire Transit (Bakersfield, CA)
Grand Rapids Area Transit Authority (Grand Rapids, MI)
Green Bus Lines, Inc. (Jamaica, NY)
Harford County Transportation Services (Bel Air, MD)
Houston Metropolitan Transit Authority (Houston, TX)
Howard County Transit (Laurel, MD)
Interurban Transit Partnership (Grand Rapids, MI)
Jacksonville Transportation Authority (Jacksonville, FL)
Jamaica Buses, Inc. (Jamaica, NY)
Los Angeles Dept of Transportation (Los Angeles, CA)
Summary

- Have products and solutions for on-board, depot and head-office
- Local expertise and support
- Able to provide a custom solution
- Fare collection from a global partner which will integrate with other transport system offerings
Contact Details

For more information contact:

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