CARRIS

*1999 – PORTUGAL
BUS COMMUNICATION
AND
TRAFFIC INFORMATION
SYSTEM*

BACKGROUND

In September 1999, Motorola was awarded the contract for a TETRA communication system by the Portuguese system operator Rádiomóvel. The system, that went live in March 2000, provides advanced voice and data communications for the end user organization – the Lisbon bus company named Carris.

The system provides coverage of the Lisbon area. The system also provides coverage for the STCP (Sociedade de Transportes Colectivos do Porto) bus fleet in Porto. In total, the potential number of buses to be equipped with this system is 1600. Eventually nationwide coverage of Portugal is under consideration.

Motorola was the selected supplier for the TETRA system for the following reasons:
• Ability to deliver and implement the system in a short period of time
• Experience in TETRA technology
• Motorola TETRA solution, Dimetra is able to handle high data load

CUSTOMER NEEDS

Carris had the following needs for their new communication system:
• An automated bus fleet management system enabling Carris to
  - Improve reliability of timetables and level of on-time arrivals
  - Inform passengers about next bus departure
  - Ensure that passengers at all times are informed about the current traffic situation regarding delays and cancellations
  - Allowing informed decision-making for the daily operation of the bus fleet

• Reliable and instant voice communications between the bus fleet and the control center. This is of particular importance in case of unforeseen situations such as roadblocks, bus breakdowns or emergency situations

MOTOROLA SOLUTION

Motorola delivered a fully TETRA compliant system operating in the 410-430 MHz frequency band.

In integration with the Automatic Vehicle Location (AVL) system, which is developed by TECMIC, Dimetra enables Carris to supervise and monitor the day-to-day operation of their bus fleet. By the middle of 2002 the bus fleet will consist of 470 Dimetra-equipped buses, and within the year, the entire bus fleet of 800 buses operating on 110 routes will be Dimetra-equipped.

The AVL information is based on the Global Positioning System (GPS), complemented by doors sensors and radio beacons at street bus-stops which determines the location of the buses on a given route. Every 30 seconds each bus generates a message containing information on its location and time spent between busstops, which is sent to the control center. This data is collected for two purposes:

One is to gather statistics in order to improve the timetables based on actual traffic patterns in the city. The other purpose is to very accurately predict when the bus will reach its next stop. The time of arrival is updated in the bus stop information panels.

200 bus stops are planned to be equipped with these electronically updated panels, which, along with Dimetra and AVL, are based on the Passenger Information System (PIS), a system also developed by TECMIC in cooperation with EFACEC.

In addition, the free text data service is also very useful for the operator sending messages to the bus stop information panels with information on reason for delays or cancellations.

The three systems tied together provide the customer with one integrated communication solution.

DIMETRA + AVL + PIS = SOLUTION

BENEFITS

Cost reduction:
- Improved utilization of bus fleet
- Optimized allocation of resources

Increased customer satisfaction:
- Increased reliability of timetables
- Improved communication to passengers
- Fewer delays and cancellations

Operational improvements:
- Fast identification and correction of problems
- Enhanced capability to analyze traffic data
- Improved decision-making

MOTOROLA