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Contact: Gary Wosk/Marc Littman
MTA MEDIA RELATIONS
(213) 922-2712/922-2700

www.mta.net/press/pressroom
e-mail: mediarelations@mta.net
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(TRADE JOURNAL VERSION)

Cerebral Cortex Coaches Coming!

MASTERMINDS OF MOTOROLA CREATING BRAINY METRO BUSES

The Metro Bus fleet is about to be transformed into a motor pool of highly intelligent, quick-thinking coaches capable of spewing forth a steady stream of real-time information to emergency personnel and planners, which will lead to more efficient service and a safer environment for operators and customers alike.

Motorola, a global leader in providing integrated communications and embedded electronic solutions, has taken on the task of developing and installing a new integrated radio system for the entire Metro Bus fleet. Additional "Advanced Transportation Management System" (ATMS) components will provide MTA with a sophisticated new tool to help manage and operate its bus fleet, improve fleet reliability, and in the process reduce operating costs.

Motorola was awarded a \$72 million by the MTA Board in November, and will be responsible for installation and overseeing the start-up and testing as well as managing the system.

MTA will become the first transit agency in the United States to sport such a comprehensive fleet of "Smart Buses" (another name for ATMS). These buses will begin traversing the streets and highways of LA County within three years, about the same time MTA is unveiling its new "Universal Fare System" (UFS) featuring "Smart Cards." The plastic, wallet-sized Smart Cards, embedded with computer chips, will interface with MTA's ATMS and

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could eventually eliminate the need for cash, tokens and coins as the method of payment in a seamless public transit system that includes all LA County transit providers.

"The Advanced Transportation Management System will provide MTA with a sophisticated new 21st century tool to help operate and manage the bus fleet," said MTA Deputy CEO John Catoe. "ATMS offers the potential for MTA to realize service improvements, increased efficiency, reduced operating costs and enhanced safety by providing the Agency with more comprehensive, accurate and detailed data for routine analysis."

Motorola will be the prime ATMS System Integrator teamed with Orbital Science Corp as the sub-contractor. MTA, in conjunction with TM TechSystems Inc., has developed the technical specification, which details the implementation approach.

The core equipment group consists of the Voice/Data radio communications system, Computer Aided Dispatch (CAD), a Wireless Local Area Network radio (WLAN), Automatic Vehicle Location (AVL), Automatic Passenger Counters (APC), Universal Fare System (UFS) interface and Video Security System (VSS). Optional ATMS equipment defined are the Automatic Vehicle Annunciator (AVA) and Vehicle Health Monitoring (VHM). All 2,400 Metro Buses will be equipped with ATMS core equipment.

"LACMTA has designed one of the most advanced transportation management systems in the world," said Rick Neal, Motorola vice president and general manager, western division of the North America Group.

"Motorola has implemented many of the largest and most complex communication systems that exist today. We welcome the opportunity to work with LACMTA to provide communications and management tools that will increase the efficiency of the system and enhance service to the public.

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"Motorola has teamed with outstanding companies, including Orbital Transportation Management Systems, to offer LACMTA a combination of proven products and expert project management."

The core group of the ATMS consists of the following components:

- **Voice and Data Radio system:** bus operators experiencing a problem on route can communicate instantly by voice on expanded channels with the dispatch center or transit police. Contact also can be made using Data Radio by depressing numerical buttons on the Driver Control Module (DVM). Because of limited channels on the current radio system, if the dispatch center receives too many calls at once, response time can be slow. The present radio system is more than 15 years old.
- **Automatic Vehicle Locator (AVL):** In case of an emergency, global positioning satellites will be able to provide Dispatch Center with the exact location of the bus. A moving image of a bus will appear on a map displayed on the dispatcher's monitor. Currently, buses emit a frequency when passing posted street signal boxes.
- **Automatic Passenger Counters (APC):** 2" x 3" rectangular infrared beam sensors located at bus entrance and exit doors will detect boarding and alighting passengers. The information will be processed by an on-board computer and downloaded at end of day onto a main computer at bus division where it will be analyzed. Based on this data, adjustments in service can be made within 24 hours. Currently, schedulers using handheld computers perform MTA's passenger counting. The collection of such data is now done manually.
- **Video Surveillance System (VSS):** Surveillance cameras on MTA buses will be able to interface with the ATMS. Each new bus since 1996 has featured three internal cameras and two external cameras with a 7-inch monitor that is used by the operator to see the environment on the right side of the bus. A hard drive stores 72 hours of images until

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they are downloaded on a central processor.

- **Computer Aided Dispatch (CAD):** designed to ensure an immediate priority response, streamlined data collection and faster construction and update of input database.
- MTA is also evaluating an option to install a **Automatic Voice Annunciation (AVA)** and **Vehicle Health Monitoring (VHM)** as part of this package.
- **AVA:** Acting in tandem with global positioning satellites, customers will be greeted with bilingual, computerized announcements about safety and forthcoming bus stops through eight speakers hidden behind advertising panels. Currently, MTA's stop announcements are made verbally over a microphone by the bus operator and only at major streets along a fixed route. Variable message signs will be located at the front of the bus.
- **VHM:** similar to APC in that a report can downloaded at end of day with detailed information about the performance of the bus engine. This will result in better preventive maintenance, better schedule adherence and cost savings.

"The overall mission of the MTA bus system is to ensure Los Angeles bus riders a safe, efficient mode of transportation throughout the greater Los Angeles region," Catoe said. "To accomplish this mission into the 21st century, ATMS must provide a reliable, flexible and expandable communication service to meet the needs of controllers, bus operators, road supervisors, riders and management."

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