Mobile data communications

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Gandalf is currently involved in the design and manufacturing of wide-area mobile data communications systems. We have currently targeted the computer dispatching market. By wide-area, we typically think of communication within a metropolitan range. However, wide-area mobile data communications could be expanded to include state and nation-wide interconnection through the deployment of the same kinds of techniques.

Gandalf provides mobile data communication *systems* as opposed to just equipment in that we provide application software for the end user along with the minicomputers, video display terminals, tape and hard disk storage, and a variety of printers.

This equipment is typically located in the dispatch office. The communications subsystem includes the mobile and base radio equipment, and a base signaling unit at the base radio site. The computer subsystem may also require modem links between the computer and the base signaling unit. The mobile data terminals are connected to the mobile radios in the vehicle. Mobile computer data terminals are now being used by businesses and large fleet operators in an effort to increase productivity but also to help keep costs down and aid management in running a fleet.

In Anaheim, California, for example, Yellow Cab Co. has installed the nation's first fully computerized taxi dispatch system. The system relies on our computers for dispatching taxi cabs on call. Voice communications are virtually eliminated. Those tuning in Yellow Cab's channels in Anaheim will hear computer whines and tones on the air—hardly interesting for most scanner listeners. It may also help stop other outlaw taxis from stealing fares.

Our system in Anaheim is being used in 85 taxis. Mobile data terminals are installed in the cabs and the cab company's dispatch center is equipped with computer hardware and software for dispatching and fleet management. Those who call for a cab in Anaheim don't have to wait as long as before the system was installed because the computerized system speeds up the dispatching process, which traditionally depends on the individual skill of the dispatcher on duty. At this time, they
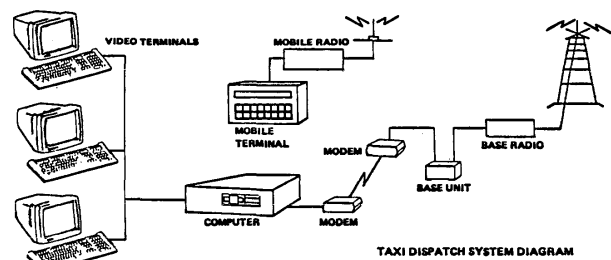

Figure 1—The communication system for Gandalf's taxi dispatch system

are handling nearly 30 percent more volume with the same fleet of cars and drivers.

The system also can automatically dispatch standard fares, calls for a particular time, regular runs, and priority calls. Further, the system can verify street names and numbers. The system typically includes call-taker terminals, the dispatch computer system, the communications subsystem, maintenance test equipment, and the mobile data terminals. Each communications subsystem channel can service more than 400 taxis.

In the future, we intend to continue use of radio frequency (RF) transport technologies for specific terminal to computer interconnections. We have researched the employment of RF technologies in actual LAN-type office configurations as well as wide-area monitoring via satellite systems. In the wide-area applications, data devices, modems, and radio transceivers in a vehicle would be polled periodically to determine distance related factors. Such information could be used to estimate when a truck shipment would arrive at the dock and aid in the scheduling of loads.

Overall we see continued growth in the RF delivery of data over distances. This growth will be driven by the economics of the transport medium plus the applications software that can provide efficiency and productivity in the monitoring and control of vehicles.

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