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Title: Cabvision London DAB Application: A brief Overview

Abstract

Cabvision London claims to be "the world's first in-cab information and entertainment system" [1]. The taxi passenger is able to choose from a list of motion picture channels (people, city-guide, lifestyle, events, science, politics, comedy…). Part of the material is specifically designed for Cabvision.

The service's backbone is a set of video files stored on the Cabvision car unit. These videos are updated every few weeks. This "quasi-static" content is complemented with fast realtime information which primarily comprises news tickers and events, but also advertising trailers and still pictures.

At present (November 2005) 1,000 London cabs are equiped with the Cabvision technology. There are plannings to equip a further 4,000 vehicles during the next years.

Technics

The heart of the Cabvision system is a car PC located in the boot. A 14 inch colour LCD screen is located in the passenger room. Two keypads in the armrests allow to select the infotainment channel.

In order to save the vehicle's battery the car PC shuts down when the passenger gets off the cab or when the engine is turned off for longer.

The car PC carries a custom receiver card for Digital Radio (Digital Audio Broadcasting, DAB). In Cabvision a dedicated DAB packetmode channel is used to transport the realtime information (e.g. newstickers, pictures) to the cabs. The DAB chain can also be used to deploy software updates to the cabs.

[1] Cabvision safety trailer, February 2005

The car PC is furthermore equiped with a GPRS modem. Its primary purpose is to report the system status to a central monitoring system which automatically detects system failures, raises alarms and keeps a quality database of all Cabvision-enabled vehicles.

DAB details

The DAB data receiver used in Cabvision is a custom development. It allows to receive and store the broadcast files even if the car or the host is not operated. The receiver is permanently powered, possible due to its very low power consumption. The receiver continuously decodes the Cabvision data service (MOT) and stores the received files on its file system (located in the receiver's RAM). Once the Cabvision car PC starts up (i.e. when a passenger gets in), the host checks the receiver for the latest contents that were received via DAB. Thus the host gains immediate access to all the DAB objects on the air, no matter how many objects there are in the Cabvision DAB carousel or how often the host was powered off.

The DAB card is currently configured as a packetmode data receiver with a subsequent MOT decoder and a file server. As its behaviour is entirely software-driven, new features can be added by a simple firmware update.

The DAB reception system permanently monitors itself as well as the Cabvision data service on the air. In case of problems, e.g. malfunction or a corrupted on-air data stream, auto-recovery measures are triggered as a first level remedy. Should these measures fail, a notification message is sent via GPRS to the central supervision. For further diagnostics and evaluation each DAB unit periodically updates a daily log file which contains a detailed report on e.g. the signal levels, received objects, file system status, hour meter and general DAB system health. The log files can be accessed via GPRS for inspection.

Key companies

Cabvision: www.cabvision.com

Trident Microsystems: www.trident-uk.co.uk
                                  Car electronics (car PC, LCD, control panels, mechanics).

MEI UK: www.meiuk.tv
                                  Cabvision content provider

Esslinger Data Engineering: www.esslinger.de
                                  DAB reception technology

Arqiva (former NTL):   www.arqiva.com
                                  DAB network operator