

REPEATER UNIT SOFTWARE DEVELOPMENT IN WIRELESS INTERACTIVE VIDEO DATA SERVICE SYSTEM

Raza Shah

ABSTRACT

Information, products and services can be requested and purchased via the Interactive Video Data Service (IVDS) system developed by The Center for Wireless Telecommunications, Virginia Tech. This system consists of three components - User control, Repeater unit and a Host program.

The user requests a service using his/her television remote (User control). A transceiver (User control) located near the television set responds to user requests by extracting information hidden in the commercial's audio, and transmitting information to the repeater unit.

The receiver unit decodes received messages and forwards them in capsules to the Host component. Thus the user requests are received by the host system. The repeater unit is a real-time operating system with its in-built hardware and software functions. Application specific software can be written using the existing software drivers and libraries (kernel) to decode and process messages.

The Host program monitors and responds to received user messages.

This thesis focuses on the repeater unit hardware setup and discusses the application software implementation developed to receive messages from the transceiver box and to retransmit the messages in a different format over the Internet. The software specifications included no incoming message loss, ability to statically hold 10000 user messages, time-stamp and location-stamp (using a GPS receiver) forwarded messages, scheduling messages for retransmission based on message priority, and retransmission using the point-to-point protocol (PPP) using a dial-up modem connection. In order to achieve better performance the existing software kernel was re-written in some sections. This thesis also discusses some of the system limitations from the repeater unit's perspective.