

The Design of Interactive Multi-media System for Wireless Environment

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Abstract. The study on the design of interactive multimedia system is a requirement of the development of information technology and satellite communications. In this paper, the author tries to explore the design of system for wireless environment with RTP agreement for the sake of solving the problems wired network has caused.

Background

The widespread application of computer network, satellite communications increases the humans' reliances on information technology. Moreover, people are more dependent on space information, especially in the outdoor or mobile events. So it is acknowledged that the requirement for the new approaches to get information is urgent. It is apparent that traditional wired networks fail to meet this requirement and then wireless network came into being. Wireless mobile facilities such as PDA, Laptop and wireless network technology such as Bluetooth, wifi, TD-SCHMA offers a mobile access to interactive multi-media function. The multi-media data transmission based on wireless network can be available for the mobile terminal users. Therefore, one good project for the solution to mobile multi-media problems can satisfy the increasing number of demands for the mobile service and enables them to enjoy the shared information without the restriction of time and space. According to this, the design and research on multi-media system for wireless environment has enormous research value and widespread market prospect.

The comparison of several kinds of wireless communication mode

As the table shows, Wifi adopts DSSS, Direct Sequence Spread Spectrum and CCK technology with the rate up to 53 Mbps and makes internet work flexibly and Independency as the supplementary of wired network. It can be classified into two modes: dot-to-dot mode and fundamental mode. The system in this article selects WIFI wireless communication for two reasons: one is limited experimental circumstances insufficient for the wireless transmission platform; On the other side, 802.11b can transmit more quickly with the speed of 11 Mbps sufficient for the load of huge data transmission

Although the above mentioned wireless communication modes have transfer rates ranging from 1 Mbps to 70Mbps , multimedia audio and video data contains a large amount of information in the process of multimedia network communication and can incorporate tens or hundreds of megabytes of data information without compression. Thus, there is a necessity for compression process in the wireless multi-media network communication aimed at the drawbacks of wireless transmission such as the instability and high error rate.

RTP agreement

Compared with fixed network, wireless network has the characteristics including instability and high error rate, so RTP agreement can be employed to solve problems such as delay, disorder and incoherent of audio and radio.

Besides, it has many schemes, split connection scheme and end-to-end will be introduced as follows. Split connection scheme divides the source end and CP connection into two segments with fixed CFH as the source end and MH as the terminal end with the BS as the connection. One end

connects FH and BS and the other side connects BS and FH.

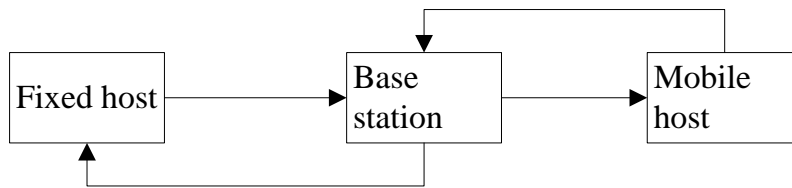


Fig 1 split connection scheme

As can be seen from the diagram, in this end-to-end scheme, only the host on the endpoint is in flow control. Receiving end provides the feedback message and the sending end determines congestion control. The purpose of this scheme is to enable the TCP sender or the receiver can separate congestion of data packets loss and other forms of packet loss. Only when the network congestion occurs, can the TCP congestion control processes be activated, while Other error recovery process for other forms of errors.

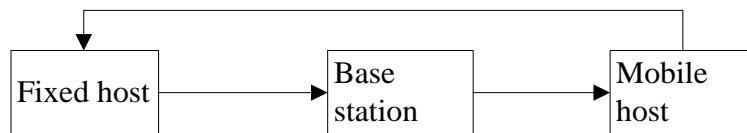


Fig 2 end-to-end scheme

Interactive multimedia design

Logical Design Sketch Map of Interactive System

After the design of interactive multimedia system for the wireless environment, we offered logical design of interactive system, as shown in the table, the whole system is designed in accordance with the flow of the inner data with data modules as logical position of each function. The logical design of the whole system is conducted with date and mobile chrome as center

RTP Packet

After RTP Packet is opened, the data generates a new linked node. First compare the time stamp removed with last node time stamp. If it is less than the time stamp of the last node, then compare the time stamp of the penultimate node until time stamp node not greater than that is found.

The comparison of the scheme

Piece connection scheme is aimed at solving the wireless problem based on the principle of "partial solutions to partial problems" Therefore, wireless and wired environment should be considered respectively to ensure that the cable link remains the same while modify the wireless link protocol. It has hidden the features of TCP wireless link. Besides, both ends of the transmission parameters can be independently optimized, which is also an advantage. But the drawbacks are also salient, which means this scheme violets the conception of end-to-end and increases the burden

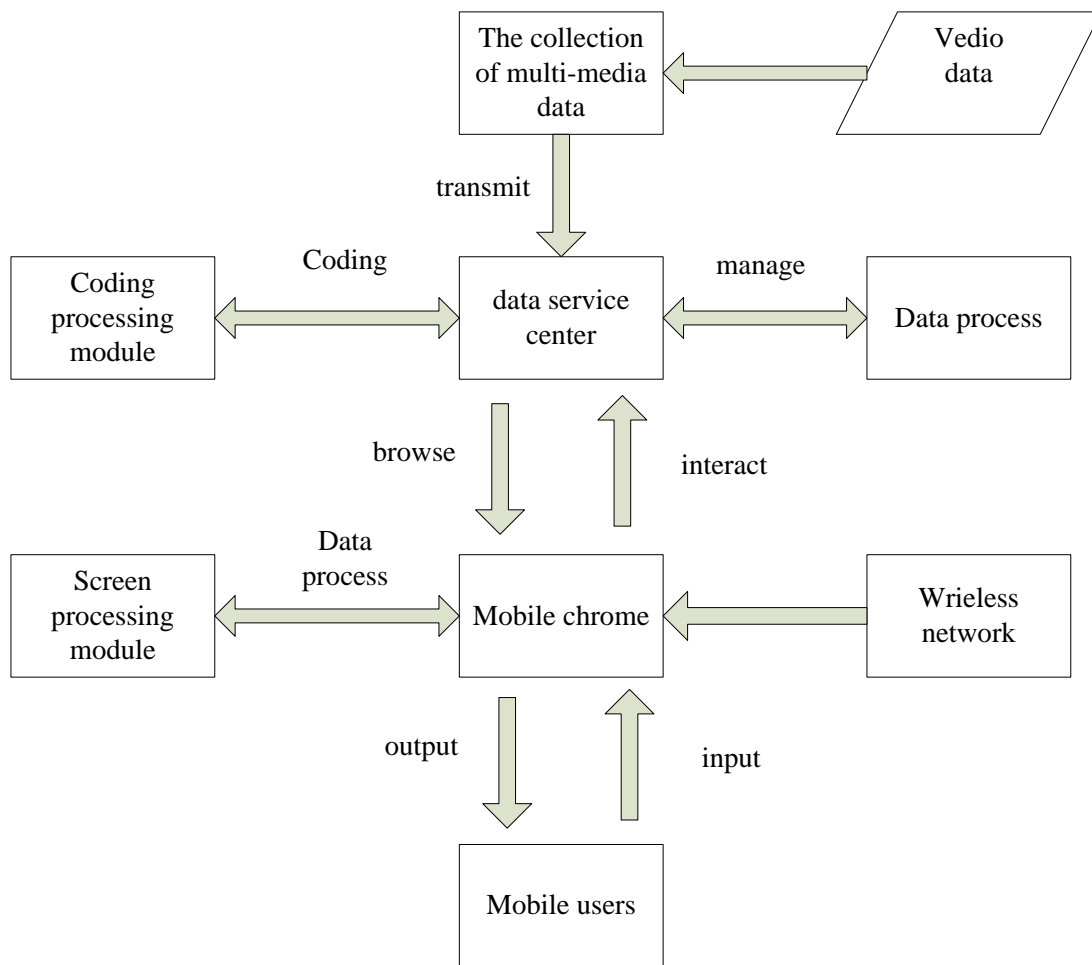


Fig 3 The comparison of the scheme

After RTPPacket is opened, the data generates a new linked node. First compare the timestamp removed with last node timestamp. If it is less than the timestamp of the last node, then compare the timestamp of the penultimate node until timestamp node not greater than that is found.

The display module of terminal screen

In the process of program calculation, the location of surrounding points should be measured.

Mathematical method for the location of the various points but will increase the complexity, so the method of checking the table is employed in the practice. The location of the corresponding points can decrease of calculation.

Operating environment

The operating environment of interactive system is: the server is the wireless Laptop and the terminal is simulation PDA developed based on Windows environment. Their communication is dependent on 802.11 b(11 Mbps). In the following is the Configuration Parameters of PDA

Operating system	Pocket PC Mobile 2003
CPU	ARMV4
RAM	64M
resolution ratio	320*240
Color bits	16 bits 65536 colors
Audio input	Built-in
Network	802.11b

Table 1: Configuration Parameters of PDA

Summary

The significance of the research lies in the the application of interactive multimedia technology in

the wireless environment and changes the traditional service system restricted by location and mobile users-centered. This also enables mobile users to be free from the time and space and makes digital mobile campus, interactive entertainment service and assignment system possible.

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