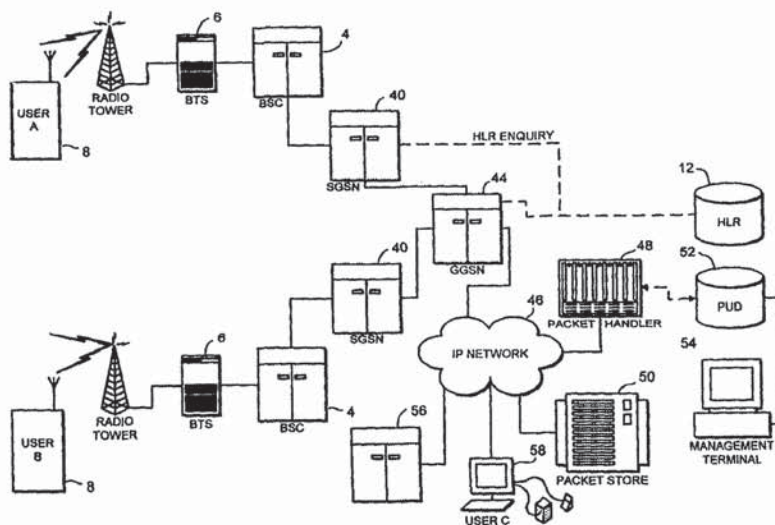




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<p>(21) International Application Number: PCT/GB99/01767 (22) International Filing Date: 3 June 1999 (03.06.99) (30) Priority Data: 9811966.2 3 June 1998 (03.06.98) GB (71) Applicant (for all designated States except US): ORANGE PERSONAL COMMUNICATIONS SERVICES LIMITED [GB/GB]; St. James Court, Great Park Road, Almondsbury Park, Bristol BS12 4QJ (GB). (72) Inventor; and (75) Inventor/Applicant (for US only): STUBBS, Martin [GB/CH]; Orange Communications S.A., World Trade Center, Avenue Gratta-Paille 2, Case postale 476, CH-1000 Lausanne 30 Grey (CH). (74) Agents: SPAARGAREN, Jerome et al.; R.G.C. Jenkins & Co., 26 Caxton Street, London SW1H 0RJ (GB).</p>	<p>(81) Designated States: AE, AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, EE (Utility model), ES, FI, FI (Utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p>	

(54) Title: DYNAMIC ALLOCATION OF RADIO RESOURCES IN A PACKET SWITCHED COMMUNICATIONS-SYSTEM



(57) Abstract

Voice and/or image data packets are transferred by a packet handler between user stations in a GSM-type mobile communications system using a General Packet Radio Service (GPRS) data link. Control data for controlling a call is stored in a data store accessible by the packet handler. The control data identifies call participants and the identity of a participant who has currently seized the call. A mobile station capable of video conferencing is operable in a half-duplex video conferencing mode, in which intermittent transmission of video data is controlled by depression of a transmit button.

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DYNAMIC ALLOCATION OF RADIO RESOURCES IN A PACKET SWITCHED COMMUNICATIONS-SYSTEM

This invention relates to mobile communications, such as cellular communications. The invention is particularly, but not exclusively, applicable to GSM-type mobile communications systems.

An example of a cellular communications system which provides voice dispatch services is the Motorola (trademark) integrated digital enhanced network, or iDEN (trademark), system. The system includes Enhanced Base Transceiver Systems (EBTSs) at cell sites which link mobile terminals to the fixed network equipment via a TDMA radio interface, and which are connected to controlling base station controllers (BSCs). The BSCs provide a link with a mobile switching centre (MSC) which provides conventional circuit switching with a public services telephone network (PSTN), and a Metro Packet Switch (MPS) which provides switching for the dispatch services. A Dispatch Application Processor (DAP) coordinates and controls dispatch communications, by registering the identifications and locations of mobile terminals active in the system.

The iDEN system provides both voice dispatch services, circuit-switched call services and other data communications services, such as a short message service.

US-A-5,416,770 describes a voice dispatch cellular communications system, in which audio data packets are transported via frame relay links.

Communication is established between a plurality of communication units by replicating the transmitted data packets, and distributing the replicated packets to identified target base stations.

5 US-A-5,448,620 describes a mobile terminal which is operable in both a voice dispatch mode and a telephone interconnect mode.

A known GSM network, referred to as a public land mobile network (PLMN), is schematically illustrated in Figure 1. A mobile switching centre (MSC) 2 is connected via communication links to a number of base station controller (BSCs) 4. The BSCs 4 are dispersed geographically across areas
10 served by the mobile switching centre 2. Each BSC 4 controls one or more base transceiver stations (BTSs) 6 located remote from, and connected by further communication links to, the BSC. Each BTS 6 transmits radio signals to, and receives radio signals from, mobile stations 8 which are in an area served by that BTS. That area is referred to as a "cell". A GSM network is provided with a
15 large number of such cells, which are ideally contiguous to provide continuous coverage over the whole network territory.

A mobile switching centre 2 is connected via communications links to other mobile switching centres in the remainder of the mobile communications network 10, and to other networks such as a public service telephone network
20 (PSTN), which is not illustrated. The mobile switching centre 2 is provided with a home location register (HLR) 12 which is a database storing subscriber authentication data including the international mobile subscriber identity (IMSI) which is unique to each mobile station 8. The IMSI is also stored in the mobile

station in a subscriber identity module (SIM) along with other subscriber-specific information.

The mobile switching centre is also provided with a visitor location register (VLR) 14 which is a database temporarily storing subscriber authentication data for mobile stations active in its area.

GSM was originally designed to support full duplex, circuit-switched voice calls.

A new element of functionality is added in the GSM Phase 2+ Technical Specifications, which is referred to as the advanced speech call items (ASCI). This provides for group calls which are broadcast to members within a group. In order to establish a broadcast group call, an originating mobile station sends a service request to the MSC, containing the requested group identity. The MSC authenticates the subscriber using the VLR.

If the authentication check is successful, the MSC requests identification data for the members of the group from a group call register. With this information, the MSC sets up connections between the receiving mobile stations and a group call dispatcher. Each of the cells in which recipient mobile stations are located pages a notification, containing the identity of the group being called and the description of the channel allocated for the group call broadcast. The group call dispatcher transmits the group call data to each of those cells, for broadcast on the allocated channels.

A further element of functionality which is added to GSM in the GSM Phase 2+ Technical Specification is the general packet radio service (GPRS).

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