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(54) TELECOMMUNICATIONS NETWORK COMPRISING A BASE STATION AND A MOBILE STATION, AND A METHOD OF TRANSFERRING TO AND/OR ADDING INTO A CALL CONNECTION AT LEAST ONE OTHER UPLINK CHANNEL FOR USER DATA

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(57) **ABSTRACT**

A telecommunications network comprises a base station and a mobile station in use in call connection on at least one uplink channel for communicating user data. The base station is operative such that on receipt of a command to transfer to and/or add at least one other uplink channel for communicating user data, said at least one other uplink channel is allocated to the call connection after a predetermined period during which power level adjustment is undertaken to compensate for mobile station movement.

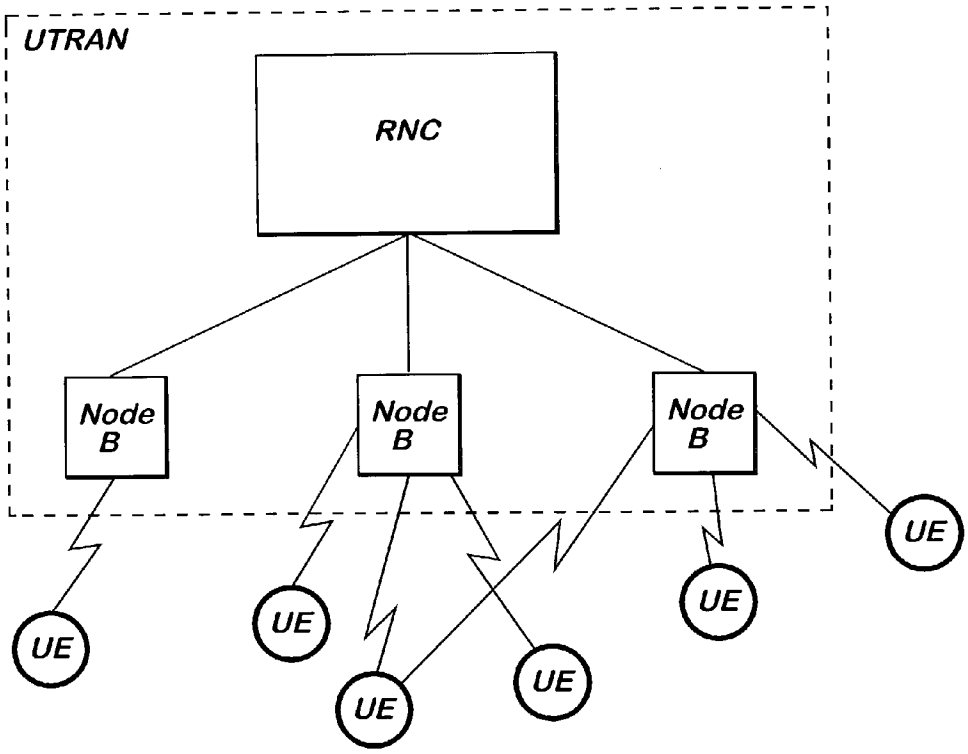


Fig. 1
Prior Art

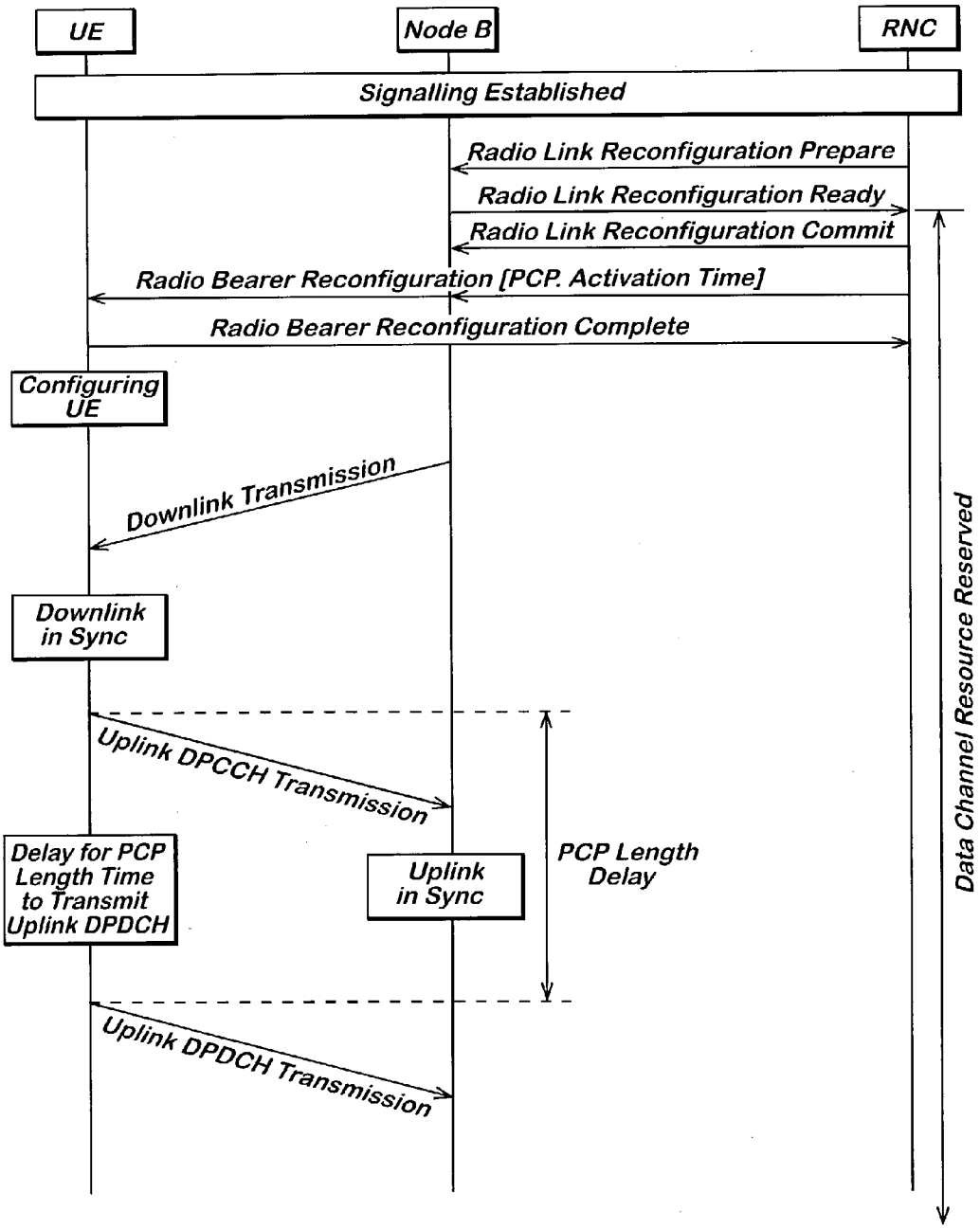


Fig. 2

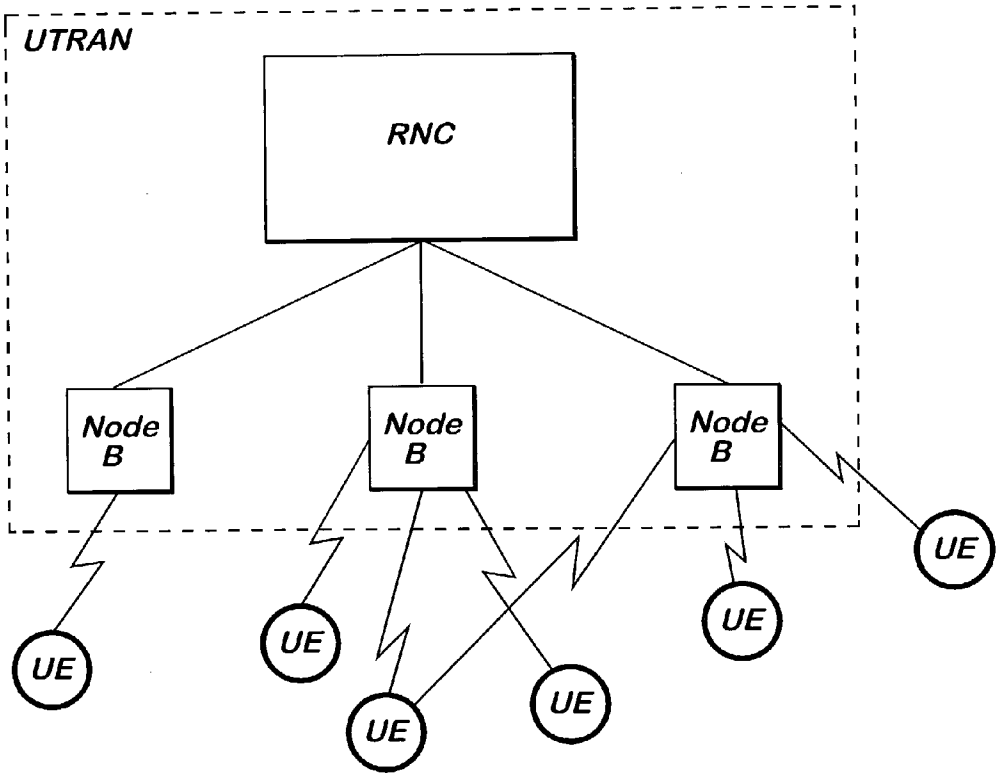
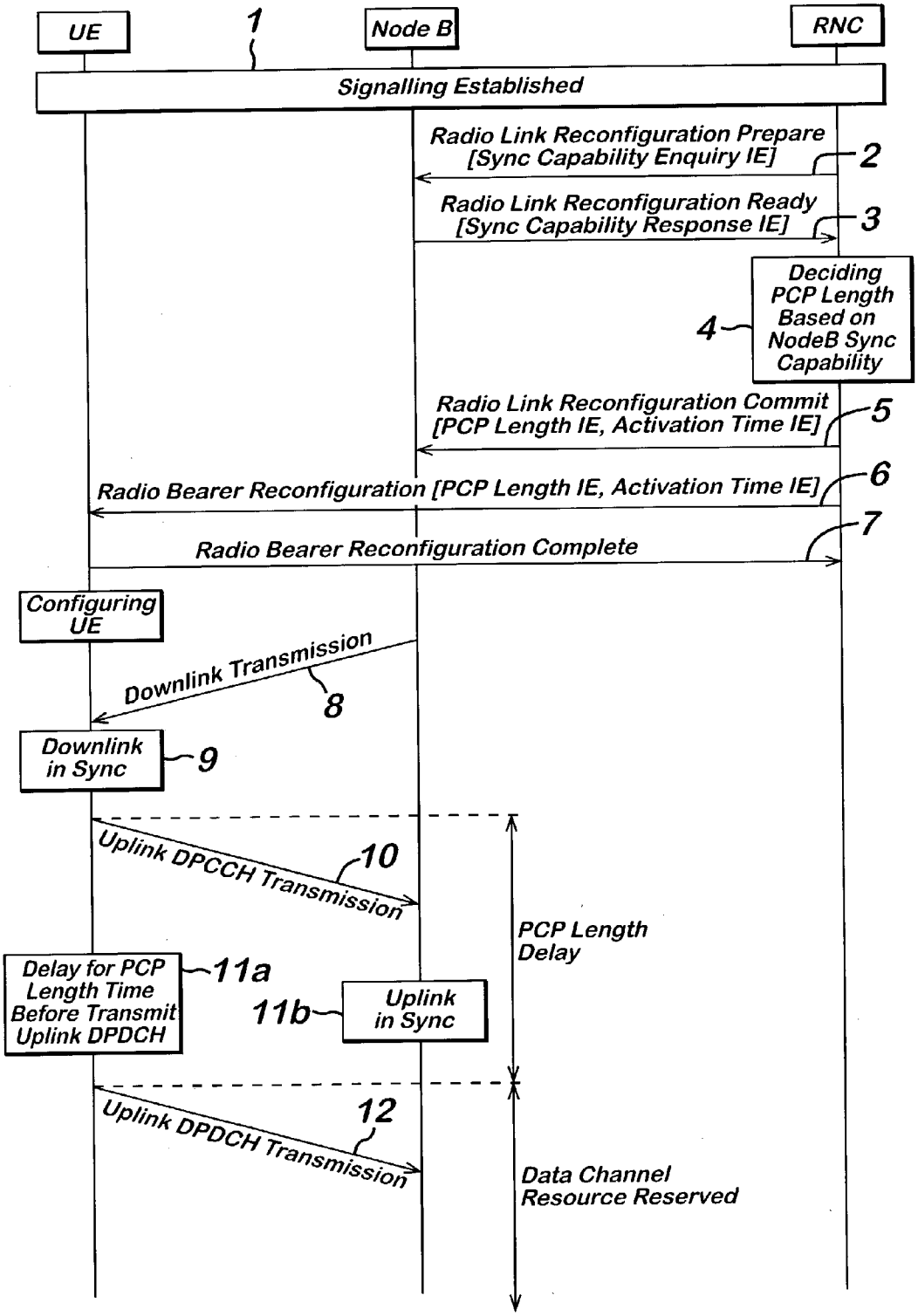


Fig. 3



TELECOMMUNICATIONS NETWORK COMPRISING A BASE STATION AND A MOBILE STATION, AND A METHOD OF TRANSFERRING TO AND/OR ADDING INTO A CALL CONNECTION AT LEAST ONE OTHER UPLINK CHANNEL FOR USER DATA

CROSS REFERENCE TO RELATED APPLICATION

[0001] This application claims priority of European Application No. 0201880.2 filed on Jan. 28, 2002.

TECHNICAL FIELD

[0002] The present invention relates to a telecommunications network comprising a base station and a mobile station in use in call connection on at least one uplink channel for communicating user data.

[0003] The present invention also relates to a method of transferring to and/or adding into a call connection at least one other uplink channel for user data in a telecommunications network.

BACKGROUND OF THE INVENTION

[0004] In current Third Generation Partnership Project 3GPP standards for mobile telecommunications such as Universal Mobile Telecommunications System UMTS, as shown in **FIG. 1** when a radio network controller RNC requests a base station (Node B in UMTS terminology) to reconfigure its radio channel (bearer) to any particular mobile station (User Equipment in UMTS terminology, UE), the base station (Node B) will effect the reconfiguration only after it receives a Radio Link Reconfiguration Prepare message including configuration parameters as to the new uplink and downlink radio channels to be used, responds with a Radio Link Reconfiguration Ready message and then receives Radio Link Reconfiguration Commit message. The configuration parameters, i.e. which other new channels are to be used, are specified in the Radio Link Reconfiguration Prepare message. The radio link is, of course, synchronous, requiring both base station and mobile station to transmit and receive at expected times.

[0005] Importantly, as shown in **FIG. 1**, receipt of the Radio Link Reconfiguration Ready message by the base station results in the new radio data channels being allocated by the base station although not used until later. These significant resources are thus unused for a considerable time.

[0006] As also shown in **FIG. 1, a** Radio Bearer Reconfiguration message is then sent from the radio network controller RNC to the mobile station UE. Once reconfiguration is complete, a Radio Bearer Configuration Complete message is returned to the radio network controller RNC. Both the mobile station (UE) and base station (Node B) then start transmission with new channel configuration at a specified activation time denoted by a connection frame number CFN as part of the Radio Bearer Reconfiguration message.

[0007] Once the radio network controller RNC and a base station (Node B) making up the UMTS terrestrial radio access network UTRAN have performed these steps of instructing synchronous radio link reconfiguration, downlink transmission starts but both the mobile station (UE) and UMTS terrestrial radio access network UTRAN may need to re-run the so-called inner loop power control procedure described in the 3GPP UMTS standards due to the new radio channel configuration. This is to ensure that before user data is transmitted, the inner loop power control, which compensates for fluctuations due to mobile station movement and consequential fading, is properly set up and functioning. The time period required for inner loop power control can be up to 7 frames (70 ms). This time period is denoted Power Control Preamble (PCP) length, and is indicated to the mobile station in the Radio Bearer Reconfiguration message sent from the radio network controller RNC. As shown in **FIG. 1**, whilst the inner loop power control is running (in the PCP length period) no user data is transmitted uplink but the channel designated for transmission of user data uplink is reserved—i.e., allocated but not used. This means that the channels are committed by the base station (Node B) for at least the duration of the PCP length period doing nothing (i.e., not communicating user data), which is a waste of scarce radio resources.

[0008] In this text, uplink means from the mobile station to the base station, and downlink means from the base station to the mobile station.

SUMMARY OF THE INVENTION

[0009] The present invention provides a telecommunications network comprising a base station and a mobile station in use in call connection on at least one uplink channel for communicating user data, the base station being operative such that following receipt of a command to transfer to and/or add at least one other uplink channel for communicating user data, the at least one other uplink channel is allocated to the call connection after a predetermined period during which power level adjustment is undertaken to compensate for mobile station movement.

[0010] Advantageously the power level adjustment is uplink power level adjustment, and preferably comprises adjusting power of a signal transmitted by the mobile station in a channel for control signalling until a target accuracy for reception by the base station is reached, the mobile station being operative to note this power as that to be used on said at least one other uplink channel for user data.

[0011] Advantageously the network is a network in accordance with Universal Mobile Telecommunications System UMTS standards. The uplink channels are preferably dedicated physical data channels (DPDCHs). Advantageously, the predetermined period is the Power Control Preamble PCP length, inner loop power control at the mobile station being undertaken during the predetermined period. The base station is preferably commanded to transfer to the or each other uplink channel by a radio network controller RNC, information as to the predetermined period being sent to the base station in a Radio Link Reconfiguration Commit command.

[0012] Advantages of the present invention in its preferred embodiments are that when the RNC sends message to base station (Node B) for radio link reconfiguration, PCP length information is included such that base station (Node B) can commit the channel specified in the message at the end of PCP period. This allows for dynamic channel allocation, which efficiently uses the channel for other calls during the PCP period. This advantageously increases overall UMTS

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