



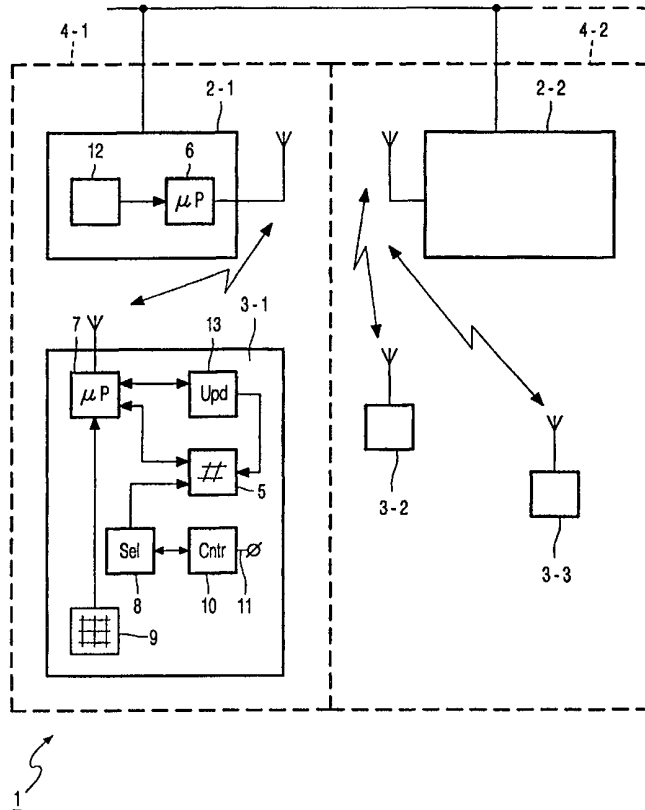
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(54) Title: A COMMUNICATION SYSTEM PROVIDING CALL TARIFF INFORMATION ABOUT NETWORK OPERATORS

(57) Abstract

A communication system comprising one or more base stations and one or more mobile stations set up for mutual communication through a network operated by several network operators, the mobile station having memory means comprising data about said network operators, which data also comprises additional data representing call tariff information about the network operators. The operators data can advantageously be used for minimising charges for a telephone call to be made.



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A communication system providing call tariff information about network operators.

The present invention relates to a communication system, comprising one or more base stations and one or more mobile stations set up for mutual communication through a network operated by several network operators, the mobile station having memory means comprising data about said network operators.

5 The present invention also relates to a mobile station and to a base station provided with communication means for communication with other stations, as well as to a method for generating user aided data in such a communication system.

10 Such a system, stations and method is known from WO 97/03514, disclosing in particular a telecommunications enhancement user interface system and method. The known system is provided with a memory device comprising a preprogrammed list of data, which is representative for long distance telecommunication providers. The data is used for providing enhanced telephone operations by reducing the number of push-buttons or keys  
15 that a user must push on a dial pad or keypad when dialling long distance numbers from customer premises equipment.

The present invention aims at extending the number of application  
20 possibilities of operator listings.

There to the communication system and mobile station according to the present invention are characterised in that the memory means comprises additional data representing call tariff information about the network operators. Similarly the base station according to the invention is characterised in that the base station comprises means for downloading the additional data  
25 in the memory means, which data represents call tariff information about the network operators. And the method according to the invention is, characterised in that the data generated represents a listing of call charges of network operators during specified periods of time.

It is an advantage of the present invention that the listing of call charges of network operators can be used by the user of in particular the mobile station to minimise the charges he has to pay when considering to make a call, such as a telephone call. The listing can be used as an aid to decide which operator to take depending on the time of the day and the type of call, such as for example a local, a national or an international call, when it comes to minimise the charges for such a call.

In an embodiment of the system according to the invention selection means are provided for in order to effect the selection of the wanted operator.

In a further embodiment the selection by the selection means is based on input selection parameters such as day, time and number of the call to be made. At wish the user can choose for automated selection of a wanted network operator or the network operator who has the lowest charges for a call given that particular moment, that particular place where the mobile station is situated and given the type of call, such as local, national, or international.

Preferably in a further embodiment the system according to the invention is provided with means for updating and/or amending the data and additional data stored in the memory means, so that at any time actual information about tariffs of several network operators is available.

In still a further embodiment of the system according to the invention the updating and/or amending means comprises downloading means included in the base station, and/or input means, such as a keyboard, included in the mobile station for downloading and inputting respectively data of present interest related to call charges of operators. Advantageously updating can take place automatically through the network and/or manually for inserting personal changes in the listed operators.

Furthermore in another embodiment of the system according to the invention the data in the memory means is used to shorten the number of digits to be keyed in during number dialling by automatically including an operating code of a selected operator in the number to be keyed in. This is an advantage in particular in those cases, wherein the number of digits to be keyed in upon preparing a telephone call is large.

At present the system, method, mobile station and base station according to the invention will be elucidated further together with their additional advantages while reference is being made to the appended drawing. In the drawing:

Fig. 1 shows a schematically illustrated embodiment of the system according to the invention, and

Fig. 2 shows a list of operator information stored in the memory means of the mobile station in the system of fig.1.

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Fig. 1 shows a system 1 comprising one or more base stations 2-1, 2-2 and mobile stations 3-1, 3-2, and 3-3. These stations 2 and 3 are capable of communicating with one another either through the air, satellites and/or cables. The whole forms a communication network with network operators, network providers, network managers or network administrators commercially exploiting the network or parts thereof. Users of the network are being provided with mobile stations, such as pagers, mobile telephones etcetera and they are allowed to use network facilities, such as telephone facilities against payment of a certain tariff, which tariff may vary dependent on the required services, data transmission rate, time of the day, distance between communicating parties, operator, types of calls, such as local, national, international etcetera. The system 1 in fig. 1 is shown to have cells 4-1, 4-2, wherein respective base stations 2-1, 2-2 are capable to communicate with mobile stations present therein in a way generally known. The mobile stations 3-1,...,3-3 are provided with memory means 5 containing data representing call tariff information about the network operators.

A possible listing of operator related data stored in the memory means 5 is shown in figure 2 and will be explained later. In general both the base station 2-1 and the mobile station 3-1 are provided with a respective processor 6 and 7, such as a microprocessor for control of the various functions to be performed by the communication system 1. The mobile station 3-1 comprises selection means 8 coupled to the memory means 5 for selection of an available network operator in the list such that the call charges become minimal. The selection is usually menu driven and programmable, while use is being made of a keyboard 9 coupled to the processor 7. The list shown in fig. 2 contains the days of the week and/or the dates, columns with several time periods, her indicated in hours, the type of call viz. local, national, international, and operator information: "operator 1...", including call charges. The selection in the list can be effected manually or automatically, whereto the communication system 1 comprises control means 10 for automatically optimising selecting for minimal call charges. The control means 10 then simply look for minimum charges in the list for a specified call concerned. The control means 10 are provided with an selection

parameter input 11, whereto a selection signal can be applied as the selection in the list is based on input selection parameters, such as day, time and number of the call to be made. Day and time are generally already available in the mobile station 3-1, whereas the number to be called can provide information about the distance the call has to cover, which distance is also a measure for the actual amount charged.

The communication system 1 is provided with means for updating and/or amending the data and additional data stored in the memory means. The updating and/or amending means comprises downloading means 12 included in the base station 2-1, and/or input means, such as said keyboard 9, included in the mobile station 3-1 for downloading and inputting respectively data of present interest in the memory means 5 related to call charges of operators. The downloading means 12 cooperate with an updating circuit 13 coupled between the processor 7 and the memory means 5 in the mobile station 3-1. Because information, in particular operating codes, about the available operators is part of the data stored in the memory means 5, this data can be used to shorten the number of digits to be keyed in during number dialling. The operating code of a selected operator is then automatically inserted in the number to be keyed in, instead of being inputted separately and generally manually.

## CLAIMS:

1. A communication system comprising one or more base stations and one or more mobile stations set up for mutual communication through a network operated by several network operators, the mobile station having memory means comprising data about said network operators, characterised in that the memory means comprises additional data  
5 representing call tariff information about the network operators.
2. The communication system according to claim 1, wherein the system contains selection means coupled to the memory means for selection of an available network operator such that the call charges become minimal.  
10
3. The communication system according to claim 2, wherein the selection by the selection means is based on input selection parameters such as day, time and number of the call to be made.
- 15 4. The communication system according to claim 2 or 3, wherein the system comprises control means for automatically optimising selecting for minimal call charges.
5. The communication system according to one of the claims 1-4, wherein the system is provided with means for updating and/or amending the data and additional data  
20 stored in the memory means.
6. The communication system according to claim 5, wherein the updating and/or amending means comprises downloading means included in the base station, and/or input means, such as a keyboard, included in the mobile station for downloading and  
25 inputting respectively data of present interest related to call charges of operators.
7. The communication system according to one of the claims 1-6, whereby the data in the memory means is used to shorten the number of digits to be keyed in during number dialling by automatically including an operating code of a selected operator in the

number to be keyed in.

8. A mobile station, for example a mobile communication device, such as a mobile telephone provided with communication means for communication with other stations,  
5 the mobile station having memory means comprising information about said network operators, characterised in that the memory means comprises additional data representing call tariff information about the network operators.
9. A base station provided with communication means for communication  
10 with other stations, characterised in that the base station comprises means for downloading the additional data in the memory means, which data represents call tariff information about the network operators.
10. A method for generating user aided data in a communication system,  
15 characterised in that the data generated represents a listing of call charges of network operators during specified periods of time.

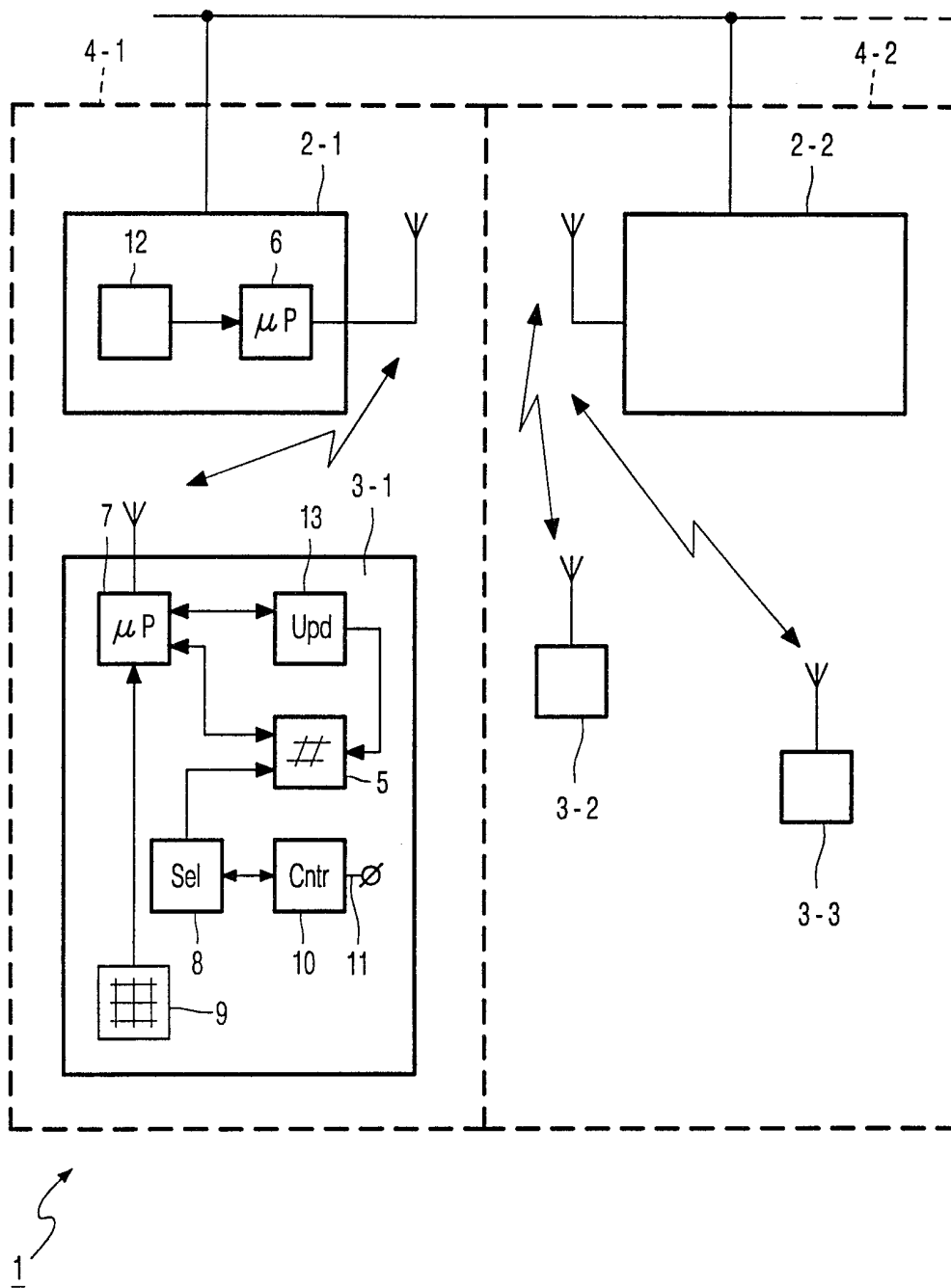


FIG. 1

Monday → Friday	0h	8h	12h	19h	24h
Local	Operator 1	Operator 1	Operator 2	Operator 1	
National	Operator 2	Operator 2	Operator 2	Operator 3	
International	Operator 4	Operator 4	Operator 4	Operator 5	
Saturday	0h	7h	13h		24h
Local	Operator 1	Operator 1		Operator 1	
National	Operator 1	Operator 1		Operator 2	
International	Operator 4	Operator 4		Operator 4	
Sunday & Holidays	0h				24h
Local				Operator 1	
National				Operator 2	
International				Operator 5	

FIG. 2