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Lisitsa et al.(10) **Pub. No.: US 2012/0231810 A1**(43) **Pub. Date: Sep. 13, 2012**(54) **DECENTRALIZED DATA-
TELECOMMUNICATION NETWORK WITH
ELEMENT IDENTIFICATION BY THEIR
LOCATION, DIAL-UP CHANNEL AND
DEVICE FOR SUCH NETWORK**(86) PCT No.: **PCT/RU2009/000742**§ 371 (c)(1),
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H04W 64/00 (2009.01)(52) **U.S. Cl.** **455/456.1**(57) **ABSTRACT**

The invention concerns information-telecommunication systems. The mobile network consists of personal broadcasting mobile devices with self-assigned identifiers defining the location of the device at a given time. Commutation in a mobile network occurs by connection of two and more mobile devices located with overlapping of broadcasting coverage areas in a direction from one subscriber to another. The mobile device for operation in such a network supports the function of location definition. When the location of the connected devices is changed and the coverages are separated, and also for equal network workload and load balancing of the sources of power supply, the dial-up channel can be dynamically readjusted

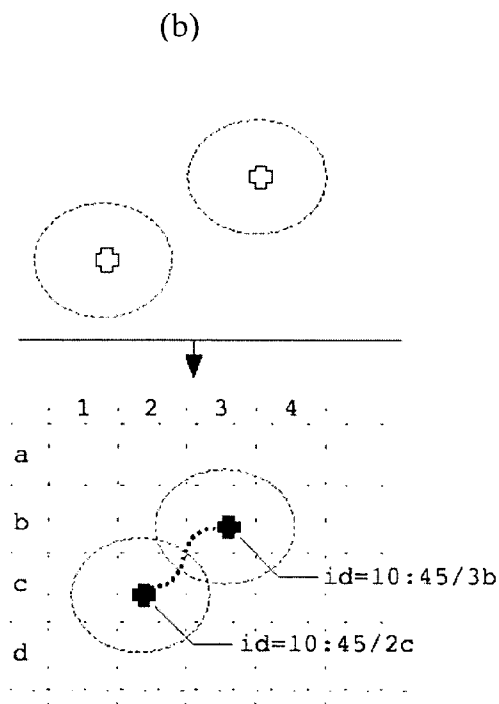
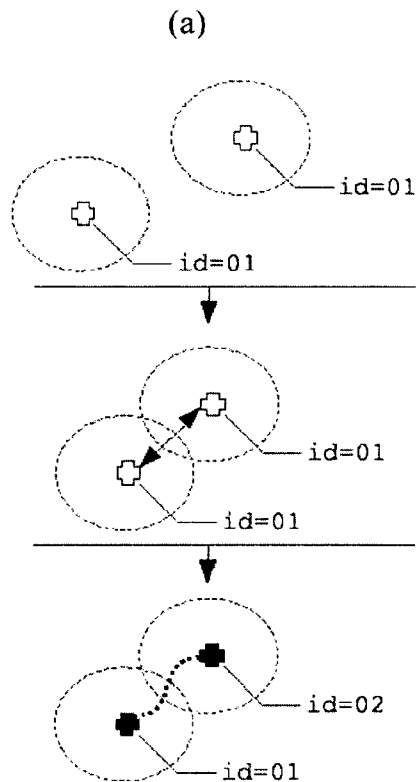
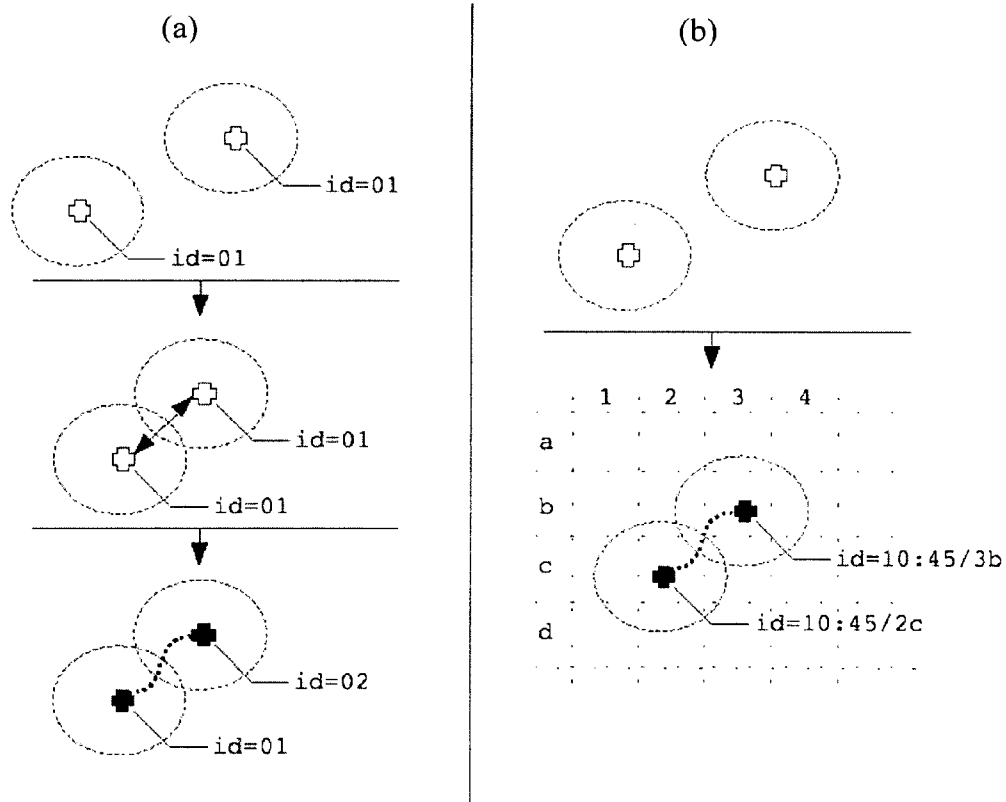
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FIG. 1



**DECENTRALIZED
DATA-TELECOMMUNICATION NETWORK
WITH ELEMENT IDENTIFICATION BY
THEIR LOCATION, DIAL-UP CHANNEL AND
DEVICE FOR SUCH NETWORK**

**CROSS-REFERENCE TO RELATED
APPLICATIONS**

[0001] This application is a U.S. national phase application of a PCT application PCT/RU2009/000742 filed on 29 Dec. 2009, published as WO2010/077184, whose disclosure is incorporated herein in its entirety by reference, which PCT application claims priority of a Russian Federation patent application RU 2008152272 filed on 30 Dec. 2008.

PRIOR ART OF THE PRESENT INVENTION

[0002] Telecommunication technologies are intensively applied at personal telecommunication service, including such tools as SMS, MMS, vocal cellular communication and the Internet access. Rendering of communication services is made with the help of personal mobile devices (further—MD or the device) the mobility of which is provided by means of information transfer and reception in broadcast range of electromagnetic waves. The most widespread mobile devices are mobile phones and computers with wireless connection as well as Wifi access points.

[0003] Modern communication systems are centralized. For example, the urban telephone network is arranged this way, where subscribers are switched by automatic telephone exchange. The organizational chart of mobile communications includes basic stations receiving and transmitting signals to MD, and the switching center providing data transfer between basic stations (cells). Such network organization requires servicing of the centralized equipment which is carried out by service providers or the Internet access providers.

[0004] Now there is a certain tendency to take MD costs down, causing the expansion in the number of the subscribers. Practically all city population has mobile phones, therefore MD density i.e. their quantity per unit of city area is comparable with high density of mega cities' population.

[0005] The widely known way of the communications organization by means of peer networks is used as the key-stone of the invention. Peer networks are decentralized, that is they can be formed without basic stations, servers and so forth. Such networks are known in the field of telecommunications as P2P networks, from the English term peer—having the same rights.

[0006] P2P networks were suggested in many variants for the mobile communication. The closest to the suggested invention is TerraNet company development. According to TerraNet technology each handset can itself become a network node, expanding the signal coverage of the system.

[0007] It is necessary to note that the way of sound-program signal transmission from one mobile device to another is already implemented. For this purpose such technologies as Bluetooth, infrared port, WiFi and WiMAX wireless networks are applied in modern devices. However, mobile devices switching takes place as a part of the centralized network where the identifier is assigned to a device by the central server. An example of such server is the DHCP-server in the Internet.

[0008] As all units of a P2P network are equal there is a possibility of the conflict when two devices have assigned

themselves the identical identifier. Then the data transmission from one device to another is impossible, and it is also impossible to distinguish the subscribers having identical numbers of their devices. International patent publication WO2005/032058, disclosing the TerraNet technology, is describing the method of solution of such conflicts in a P2P network. When two and more devices are connected they share information about the identifiers, and if some identifiers are identical, certain devices replace them with others.

**BRIEF SUMMARY OF THE PRESENT
INVENTION**

[0009] The present invention provides the other method to assign identifiers for the P2P network devices the main difference of which is that this method cannot result in identification conflicts, and, accordingly, it is not required to make data interchange between network elements for the solution of such conflicts. According to the method the device identifier in a network is not formed by self assignment of a random number, but comprises the information on the device co-ordinates at a given time. Conflicts cannot arise as two devices cannot physically occupy one and the same position in one and the same moment.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] FIG. 1 Methods of devices' identification in the decentralized information-telecommunication networks intended for mobile communication.

[0011] (a) TerraNet Technology: according to the method disclosed by the international patent publication WO2005/032058 the devices share information to solve the conflicts consisting in assignment the same identifier 01 to two different devices.

[0012] (b) Technology according to the present invention: the identification system does not admit conflicts as each identifier contains data on time (10:45) and place of each device in co-ordinates (3b and 2c).

DESCRIPTION OF THE PRESENT INVENTION

[0013] FIG. 1 shows the disclosure of the invention in comparison with the nearest analog. Initially two devices are allocated out of the access area of each other's broadcasting signal. According to the method described in the international patent publication WO2005/032058, each of the devices independently assigns the identifier to itself, and, as it is shown in a FIGURE, it can be the identical identifier, for example, equal to 01. If the devices are in the access area of each other, they share information about the identifiers. If there is a conflict (as both devices have the identical identifier), one of the devices changes its identifier to 02 and now both devices can co-exist in one network.

[0014] The idea of the invention is that in advance or, as is shown in FIG. 1, at the moment of overlapping of their access areas (for example, at 10:45), the devices define their location. Time in all considered cases is the time of day and identification date, or coordinated universal network time. The first device fixes its co-ordinate 3b at 10:45, and the second one at the same time fixes its co-ordinate 2c. (Timing is used as an example, the same with planimetric coordinates whereas in a reality co-ordinates should be used in three dimensions). The identifier of each device includes time and place of the identification. As two (or more) devices cannot

obviously occupy one place at one and the same time, the identifiers by definition are different and the devices can carry out communication at once.

[0015] Being the essence of the invention, MD identification method has an advantage at channel switching in a mobile P2P network. Each of MD watches its moving and when the change in location is dramatic (more than the coverage) sends its new identifier to the network. Other devices in a network update the local databases containing the information on other devices' location. Then, when it is necessary to connect one subscriber with another, the devices located in a direction from one subscriber to another switch to the formed communication channel. So the quantity of the auxiliary packages transferred between devices in a P2P network is reduced.

[0016] The mobile device, capable to work as a P2P network unit, includes standard for digital communication system components (transmit/receive unit, decoder, router, processor, timer, etc.) and additional programs and (or) hardware for location referencing. The location referencing can be carried out in relative co-ordinates, by finding the bearing from two or more devices located in the access areas of the identified device. If the unit has navigation system, the location referencing is carried out autonomously.

[0017] It is possible to form independent mobile networks using MDs, the description of which is given above, provided that the density of such devices in a certain area exceeds the limit defined by the range of steady reception/transfer of a radio signal. Such networks are decentralized, that is they do not require a service provider because instead of stationary basic stations and their commutative system MDs are used as signal retranslators. The signal is transferred from one MD to another in a direction from the calling subscriber to the called one.

[0018] The direction is defined because the relative geographic location of the subscribers is known. By means of it when signaling the subscriber-repeater is chosen, who is in the broadcasting MD's access area and thus at rebroadcasting can expand this area towards the receiving MD.

[0019] The location of the subscriber can be defined by dynamic co-ordinates, the location referencing to which is carried out in short time periods with the help of global positioning systems like GLONASS or GPS, or by static co-ordinates where the location referencing has been already carried out. The dynamic location referencing, for example, can be used for MD type of mobile phones, a handheld computers and notebooks, and static location referencing—for WiFi/WiMAX points of access.

[0020] The defined communication channel between subscribers is dynamic. If the subscriber device participating in a communication channel changes its co-ordinates and comes to the boundary of steady reception, switching to the alternative retranslator which is in more appropriate place is done. Besides, for supporting the channel carrying capacity it is probable to use several retranslators either all over of the channel, or on the sites where data packages have problems in passing.

[0021] Switching between MD-retranslators within the limits of one communication channel is carried out also for power consumption balancing between the net subscribers. For example, after decreasing of the charging level of a personal MD's battery below a certain level the device locks calls on service of communication channels.

[0022] The invention is intended for the application sphere extension of mobile communication by creating P2P networks. Thus, mobile devices compatible to P2P networks can combine functions of an ordinary mobile phone and operate in the decentralized communication mode. When it is impossible to make a connection in a P2P network, the device makes it in a cellular communication network through the operator. Such combination allows to lower the load on cellular communication operators, and to provide local communication channels in crowded places, for example, in supermarkets, at stadiums, in traffic jams, during holiday congratulations when the increased load on communication channels of cellular operators results in a network failure, etc.

EXEMPLARY EMBODIMENTS OF THE PRESENT INVENTION

EXAMPLE 1

[0023] The mobile phone supporting GPS with the installed special software is used as MD. The calling subscriber makes SMS inquiry about the called phone through the cellular communication operator. The called phone makes the GPS location referencing, and the co-ordinates are transferred to the calling subscriber device. The calling subscriber device defines other MDs within access area, requests their co-ordinates and chooses the nearest one in the direction to the called subscriber. The defined MD switches to the retransmission mode and searches for the next MD in the direction to the called subscriber and so on until the called subscriber will be reached. When the subscriber is reached the data channel is organized through which the duplex transmission of GSM packages is carried out with the chain of MDs working as retranslators.

EXAMPLE 2

[0024] A notebook is used as MD with the possibility to connect to WiFi wireless networks. When a user needs to connect to Internet, MD defines its own co-ordinates, and loads the co-ordinates of the nearest point of access to the Internet from MD databases. Among other devices in the access areas the device allowing expanding the communication channel in the direction of the point of access is defined. The device found in the access area receives data on the co-ordinates of a point of access and connects with the next device located in the direction to this point and so on until the switching will be done. Bidirectional data transfer by IP protocol is carried out through the defined channel. When capacity growth is necessary the bypass channel is formed similarly.

EXAMPLE 3

[0025] P2P network unit is a mobile phone with the possibility to transfer SMS to other mobile phone directly, without an operator. MD scans the access area in time intervals set by the user (5-10 minutes) and at definition of another MD in the access area transfers the identification data to it. Receiving MD enters this information into the database and transfers it further—thus data on the all units' location is constantly updated in a network. When SMS is being sent it starts to be transferred from one device to another towards the target. If one of the devices does not see others located nearer towards the target in the access area (communication channel "cutoff failure") the data on it is transferred to other nearby devices,

or to the devices that during retranslation have dramatically changed their location towards the target (for example, devices in the moving car). When one of MD “carries” the message with “not delivered” status and reaches steady receiving point of some unit of the network located nearer to a target the relaying chain is resumed.

EXAMPLE 4

[0026] The given example describes the preliminary sample of the suggested way (complete preliminary sample text is given in Appendix 1) which is a cyclic procedure modeling a communication network with location identification of the units. The communication network consists from N_AB subscribers initially placed at random in a square of N by N size in standard units, and moving in some time periods, set by STEP_AB parameter. Each subscriber has the identifier formed from his two-dimensional co-ordinates, and also some power of the transmitter which is also set in standard units (the power of the transmitter describes the maximum range of a signal transmission by the given subscriber). The powers of transmitters correspond to the average power of the communication system as a whole. The average optimal power of the system expressed in standard units coincides with the average distance between subscribers. Thus, average real power of subscribers’ transmitters (as the sum of their random powers, divided by the number of subscribers) describes a power saturation of a communication system and the less its relative percent, the more it is power-saving and environmentally friendly.

[0027] At the preliminary sample start the turned out identifiers of subscribers (in square brackets) are fixed in a log.

[0028] Criterion of a connectivity of one subscriber with another is the fact that the power of its transmitter expressed in standard units is not less than the distance between sub-

scribers. Thus the subscriber can be connected to several subscribers. Distances between subscribers of a system are fixed in DIST table of N_AB by N_AB size. At each change of subscribers’ location the given table is recalculated. Moving of the subscriber is set in a random way by one step horizontally or vertically.

[0029] The connectivity of one subscriber with another is fixed in AVAL table of N_AB by N_AB size where N_AB is the number of subscribers and one is in AVAL position [i] [j] if the subscriber i can contact the subscriber j. Thus the possibility of peer-to-peer communication of the subscriber i with the subscriber j will be checked up (1 type of switching), communication through the transit subscriber (2 type of switching) and communication through two transit subscribers (3 type of switching).

[0030] Each step of operation of the preliminary sample is fixed in a log (netlog.txt) the example of which is given in Appendix 2.

[0031] Each moment of time the connectivity of one randomly selected subscriber with another randomly selected subscriber both directly and through other subscriber is checked in the system and the positive or negative result of this check is fixed.

[0032] At preliminary sample operating termination the final location of subscribers is fixed.

[0033] The preliminary sample can force events in the system by pressing “f” key and slow them down by “s” key. Thus single forcing of the events doubles the quantization time at events’ displaying, and single slowing down twice reduces it.

[0034] Appendix 1.

[0035] The preliminary sample of a communication network with identification of the units by their location.

```
#include <stdio.h>
#include <stdlib.h>
#include <io.h>
#include <string.h>
#include <time.h>
#include <conio.h>
#include <dos.h>
#include <dir.h>
#include <math.h>
#include "etalcry.c"
#include "dsch.c"
#define N_AB 9
#define POLE 30
#define STEP_AB 5
int aval[N_AB][N_AB];
int cur_p [N_AB];
int x_ab[N_AB];
int y_ab[N_AB];
int dist[N_AB][N_AB];
int tg_s;
int prc(int a,int max)
{
    return((100*(unsigned int)a)/(unsigned int)max);
}
void AppLogA(char *LogName,int a1,int a2,int all,int good,int prc_good_all,int bad,int prc_bad_all,int tc)
{
    FILE *out;
    char ss[3]={0xD,0xA,0};
    out=fopen(LogName,"r+b");
    if(out==NULL) out=fopen(LogName,"wb");
    if(out==NULL) return;
```

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```

    fseek(out,0,SEEK_END);
    if(tg_s==1)
        fprintf(out,"%04d %01d->%01d Connect! Good:%04d[%02d] Bad:%04d[%02d] Type
connect=%01d",all,a1,a2,good,prc_good_all,bad,prc_bad_all,tc);
    else
        fprintf(out,"%04d %01d->%01d Not connect Good:%04d[%02d]
Bad:%04d[%02d]",all,a1,a2,good,prc_good_all,bad,prc_bad_all);
    fwrite(ss,sizeof(char),2,out);
    fclose(out);
    return;
}
void AppLogX(char *LogName)
{
    FILE *out;
    int i;
    char ss[3]={0xD,0xA,0};
    out=fopen(LogName,"r+b");
    if(out==NULL) out=fopen(LogName,"wb");
    if(out==NULL) return;
    fseek(out,0,SEEK_END);
    fprintf(out,"Abonents current coordinates:");
    fwrite(ss,sizeof(char),2,out);
    for(i=0;i<N_AB;i++)
    {
        fprintf(out,"Abonent N %02d [%02d%03d%03d] X=%03d Y=%03d Power =
%03d",i,x_ab[i],y_ab[i],x_ab[i],y_ab[i],cur_p[i]);
        fwrite(ss,sizeof(char),2,out);
    }
    fclose(out);
    return;
}
void AppLogP(char *LogName,int p,int m)
{
    FILE *out;
    int i;
    char ss[3]={0xD,0xA,0};
    out=fopen(LogName,"r+b");
    if(out==NULL) out=fopen(LogName,"wb");
    if(out==NULL) return;
    fseek(out,0,SEEK_END);
    fprintf(out,"Abonents real middle power: %03d [%02d]",p,prc(p,m));
    fwrite(ss,sizeof(char),2,out);
    fclose(out);
    return;
}
step_ab( )
{
    int a,b;
    a=rand_int(N_AB);
    b=rand_int(4);
    if(b==0) x_ab[a]++;
    if(b==1) x_ab[a]--;
    if(b==2) y_ab[a]++;
    if(b==3) y_ab[a]--;
    if(x_ab[a]<0) x_ab[a]=0;
    if(y_ab[a]<0) y_ab[a]=0;
    if(x_ab[a]==POLE) x_ab[a]=POLE-1;
    if(y_ab[a]==POLE) y_ab[a]=POLE-1;
}
int check_connect(int ab_num1,int ab_num2,int *x)
{
    int sum,i,j;
    sum=0;
    for(i=0;i<N_AB;i++) x[i]=0;
    if(aval[ab_num1][ab_num2]==1) return(1);
    for(i=0;i<N_AB;i++)
        if( (aval[ab_num1][i]==1)&&(aval[i][ab_num2]==1) ){x[sum]=i+1;sum++;}
    if(sum!=0) return(2);
    sum=0;
    for(i=0;i<N_AB;i++)
    {
        if(aval[ab_num1][i]==1)
        {
            for(j=0;j<N_AB;j++)
                if( (aval[i][j]==1)&&(aval[j][ab_num2]==1) ){x[sum]=i+1;sum++;}
        }
    }
}

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    }
    if(sum!=0) return(3);
    return(-1);
}
void calc_aval( )
{
    int i,j;
// ... Set available abonents ...
    for(i=0;i<N_AB;i++)
    {
        for(j=0;j<N_AB;j++)
            if( dist[i][j]<=cur_p[i] ) aval[i][j]=1;
    }
}
main( )
{
    int r;
    int p[20];
    int i,j,sum;
    int start_p [N_AB];
    int ab_aval [N_AB];
    char cmd;
    int ab1,ab2,rez,all,bad,good;
    int middle_p,real_p;
    int step,cc,step_mov,global_p;
    global_p=0;
    all=1;good=0;bad=0;
    step=1;cc=0;
    init_dschr( );
// ... Set abonents random coordinates
    for(i=0;i<N_AB;i++)
    {
        x_ab[i]=rand_int(POLE);
        y_ab[i]=rand_int(POLE);
    }
// ... Set abonents random power ...
    for(i=0;i<N_AB;i++)
    {
        start_p[i]=POLE/4+rand_int(POLE/4);
        cur_p[i]=start_p[i];
    }
    AppLogX("netlog.txt");
    step_mov=STEP_AB;
    cmd=0;
// ... Main cicle...
    while(cmd!=27){
        clrscr( );
        gotoxy(1,1);
        cprintf("Piring Netwokt Model.Press any key for continue,press Esc for stop,f-fast,s-slow");
        gotoxy(1,2);
        for(i=0;i<N_AB;i++)
        {
            gotoxy(1,2+i);
            cprintf("[%02d %02d]",x_ab[i],y_ab[i]);
        }
// ... Init abonents available matrix ...
        for(i=0;i<N_AB;i++)
            for(j=0;j<N_AB;j++) aval[i][j]=0;
// ... Calc abonents distance matrix ...
        for(i=0;i<N_AB;i++)
            for(j=0;j<N_AB;j++)
                dist[i][j]=sqrt( (x_ab[i]-x_ab[j])*(x_ab[i]-x_ab[j])+(y_ab[i]-y_ab[j])*(y_ab[i]-y_ab[j]) );
        middle_p=0;
        for(i=0;i<N_AB;i++)
            for(j=0;j<N_AB;j++) middle_p=middle_p+dist[i][j];
        middle_p=middle_p/(N_AB*(N_AB-1));
        gotoxy(20,2);
        for(i=0;i<N_AB;i++)
        {
            gotoxy(20,2+i);
            for(j=0;j<N_AB;j++) cprintf("[%02d",dist[i][j]);
        }
        real_p=0;
        for(i=0;i<N_AB;i++) real_p=real_p+cur_p[i];
        real_p=real_p/N_AB;
        global_p=global_p+real_p;

```

-continued

```

// ... Put abonents power ...
gotoxy(1,2+N_AB);
for(i=0;i<N_AB;i++)
{
    gotoxy(1,3+N_AB+i);
    cprintf("%02d:",i);
    cprintf("%02d ",cur_p[i]);
    cprintf("[%03d%03d]",prc(cur_p[i],middle_p));
}
calc_aval( );
for(i=0;i<N_AB;i++)
{
    gotoxy(20,3+N_AB+i);
    for(j=0;j<N_AB;j++) cprintf("%01d",aval[i][j]);
}
ab1=rand_int(N_AB);
ab2=rand_int(N_AB);
if(ab1==ab2) ab2=rand_int(N_AB);
gotoxy(21,3+N_AB+N_AB+1);
cprintf("%02d ---> %02d",ab1,ab2);
rez=check_connect(ab1,ab2,ab_aval);
gotoxy(21,3+N_AB+N_AB+2);
if(rez==1) tg_s=0;
else tg_s=1;
if(rez==1) cprintf("Not connect");
if(rez==2) cprintf("Immediately connect!");
if(rez==3) cprintf("Connect from:");
if(rez==4) cprintf("Connect from(2):");
if(rez==5) bad++;
else good++;
for(i=0;i<N_AB;i++)
{
    if(ab_aval[i]!=0) cprintf("%02d",ab_aval[i]-1);
    else break;
}
gotoxy(21,3+N_AB+N_AB+3);
cprintf("%04d, Good:%04d[%02d]
Bad:%04d[%02d]",all,good,prc(good,all),bad,prc(bad,all));
AppLogA("netlog.txt",ab1,ab2,all,good,prc(good,all),bad,prc(bad,all),rez);
gotoxy(21,3+N_AB+N_AB+4);
cprintf("Middle = %03d Step = %02d RealPower = %02d
[%02d]",middle_p,step,real_p,prc(real_p,middle_p));
// ...End main circle
if(cc%step==0) cmd=getch( );
if(cc%step_mov==0)
{
    step_ab( );
}
cc++;
if(cmd=='f') step=step*2;
if(cmd=='s') {step=step/2;if(step==0) step=1;}
if(cmd==27) break;
cmd=0;
all++;
}
AppLogX("netlog.txt");
global_p=global_p/all;
AppLogP("netlog.txt",global_p,middle_p);
return(0);
}

```

[0036] Appendix 2.

[0037] The result of preliminary sample operation at 8 subscribers placed at random in a field of the size 30 by 30 with subscriber moving in each 5 quanta of the system time (5 steps of an internal cycle).

[0038] It is easy to verify that the identifiers of subscribers given in square brackets do not coincide with each other and at average real power of 75% from optimal power of a communication system the connectivity is reached on the average in 70% of cases which means rather high availability for net subscribers.

Abonents current coordinates:

```

Abonent N 00 [00016008] X=016 Y=008 Power = 011
Abonent N 01 [01021004] X=021 Y=004 Power = 007
Abonent N 02 [02010006] X=010 Y=006 Power = 012
Abonent N 03 [03027018] X=027 Y=018 Power = 009
Abonent N 04 [04016006] X=016 Y=006 Power = 012
Abonent N 05 [05009027] X=009 Y=027 Power = 009
Abonent N 06 [06013017] X=013 Y=017 Power = 012

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-continued

Abonent N 07 [07014013] X=014 Y=013 Power = 010
 Abonent N 08 [08006006] X=006 Y=006 Power = 007
 0001 5->2 Not connect Good:0000[00] Bad:0001[100]
 0002 2->3 Not connect Good:0000[00] Bad:0002[100]
 0003 1->0 Connect! Good:0001[33] Bad:0002[66] Type connect=1
 0004 0->8 Connect! Good:0002[50] Bad:0002[50] Type connect=1
 0005 4->0 Connect! Good:0003[60] Bad:0002[40] Type connect=1
 0006 7->8 Connect! Good:0004[66] Bad:0002[33] Type connect=1
 0007 2->8 Connect! Good:0005[71] Bad:0002[28] Type connect=1
 0008 7->4 Connect! Good:0006[75] Bad:0002[25] Type connect=1
 0009 6->5 Connect! Good:0007[77] Bad:0002[22] Type connect=1
 0010 4->0 Connect! Good:0008[80] Bad:0002[20] Type connect=1
 0011 8->6 Connect! Good:0009[81] Bad:0002[18] Type connect=2
 0012 4->7 Connect! Good:0010[83] Bad:0002[16] Type connect=1
 0013 0->4 Connect! Good:0011[84] Bad:0002[15] Type connect=1
 0014 8->4 Connect! Good:0012[85] Bad:0002[14] Type connect=2
 0015 3->6 Not connect Good:0012[80] Bad:0003[20]
 0016 4->5 Connect! Good:0013[81] Bad:0003[18] Type connect=2
 0017 5->8 Not connect Good:0013[76] Bad:0004[23]
 0018 2->0 Connect! Good:0014[77] Bad:0004[22] Type connect=1
 0019 7->5 Connect! Good:0015[78] Bad:0004[21] Type connect=2
 0020 8->3 Not connect Good:0015[75] Bad:0005[25]
 0021 2->5 Connect! Good:0016[76] Bad:0005[23] Type connect=2
 0022 0->5 Connect! Good:0017[77] Bad:0005[22] Type connect=2
 0023 2->1 Connect! Good:0018[78] Bad:0005[21] Type connect=1
 0024 5->2 Not connect Good:0018[75] Bad:0006[25]
 0025 4->2 Connect! Good:0019[76] Bad:0006[24] Type connect=1
 0026 7->6 Connect! Good:0020[76] Bad:0006[23] Type connect=1
 0027 6->2 Connect! Good:0021[77] Bad:0006[22] Type connect=1
 0028 8->3 Not connect Good:0021[75] Bad:0007[25]
 0029 0->1 Connect! Good:0022[75] Bad:0007[24] Type connect=1
 0030 6->2 Connect! Good:0023[76] Bad:0007[23] Type connect=1
 0031 1->0 Connect! Good:0024[77] Bad:0007[22] Type connect=1
 0032 0->6 Connect! Good:0025[78] Bad:0007[21] Type connect=1
 0033 6->8 Connect! Good:0026[78] Bad:0007[21] Type connect=1
 0034 8->0 Connect! Good:0027[79] Bad:0007[20] Type connect=2
 0035 6->2 Connect! Good:0028[80] Bad:0007[20] Type connect=1
 0036 3->6 Not connect Good:0028[77] Bad:0008[22]
 0037 7->4 Connect! Good:0029[78] Bad:0008[21] Type connect=1
 0038 6->3 Not connect Good:0029[76] Bad:0009[23]
 0039 2->7 Connect! Good:0030[76] Bad:0009[23] Type connect=1
 0040 4->1 Connect! Good:0031[77] Bad:0009[22] Type connect=1
 0041 2->3 Not connect Good:0031[75] Bad:0010[24]
 0042 5->6 Not connect Good:0031[73] Bad:0011[26]
 0043 4->3 Not connect Good:0031[72] Bad:0012[27]
 0044 4->8 Connect! Good:0032[72] Bad:0012[27] Type connect=1
 0045 1->6 Connect! Good:0033[73] Bad:0012[26] Type connect=2
 0046 1->6 Connect! Good:0034[73] Bad:0012[26] Type connect=2
 0047 4->5 Connect! Good:0035[74] Bad:0012[25] Type connect=2
 0048 8->6 Connect! Good:0036[75] Bad:0012[25] Type connect=2
 0049 8->6 Connect! Good:0037[75] Bad:0012[24] Type connect=2
 0050 8->6 Connect! Good:0038[76] Bad:0012[24] Type connect=2
 0051 6->8 Connect! Good:0039[76] Bad:0012[23] Type connect=2
 0052 7->6 Connect! Good:0040[76] Bad:0012[23] Type connect=1
 0053 1->2 Connect! Good:0041[77] Bad:0012[22] Type connect=2
 0054 2->5 Connect! Good:0042[77] Bad:0012[22] Type connect=2
 0055 0->8 Connect! Good:0043[78] Bad:0012[21] Type connect=1
 0056 8->7 Connect! Good:0044[78] Bad:0012[21] Type connect=2
 0057 0->3 Not connect Good:0044[77] Bad:0013[22]
 0058 6->8 Connect! Good:0045[77] Bad:0013[22] Type connect=2
 0059 2->0 Connect! Good:0046[77] Bad:0013[22] Type connect=1
 0060 4->6 Connect! Good:0047[78] Bad:0013[21] Type connect=1
 0061 0->6 Connect! Good:0048[78] Bad:0013[21] Type connect=1
 0062 1->0 Connect! Good:0049[79] Bad:0013[20] Type connect=1
 0063 4->6 Connect! Good:0050[79] Bad:0013[20] Type connect=1
 0064 0->4 Connect! Good:0051[79] Bad:0013[20] Type connect=1
 0065 4->7 Connect! Good:0052[80] Bad:0013[20] Type connect=1
 0066 6->2 Connect! Good:0053[80] Bad:0013[19] Type connect=1
 0067 8->1 Connect! Good:0054[80] Bad:0013[19] Type connect=2
 0068 1->7 Connect! Good:0055[80] Bad:0013[19] Type connect=2
 0069 1->0 Connect! Good:0056[81] Bad:0013[18] Type connect=1
 0070 2->8 Connect! Good:0057[81] Bad:0013[18] Type connect=1
 0071 7->8 Connect! Good:0058[81] Bad:0013[18] Type connect=2
 0072 5->8 Not connect Good:0058[80] Bad:0014[19]
 0073 0->8 Connect! Good:0059[80] Bad:0014[19] Type connect=1
 0074 6->7 Connect! Good:0060[81] Bad:0014[18] Type connect=1

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0075 5->3 Not connect Good:0060[80] Bad:0015[20]
 0076 6->7 Connect! Good:0061[80] Bad:0015[19] Type connect=1
 0077 0->5 Connect! Good:0062[80] Bad:0015[19] Type connect=2
 0078 8->2 Connect! Good:0063[80] Bad:0015[19] Type connect=1
 0079 7->4 Connect! Good:0064[81] Bad:0015[18] Type connect=1
 0080 3->6 Not connect Good:0064[80] Bad:0016[20]
 0081 1->8 Connect! Good:0065[80] Bad:0016[19] Type connect=2
 0082 2->5 Connect! Good:0066[80] Bad:0016[19] Type connect=2
 0083 7->2 Connect! Good:0067[80] Bad:0016[19] Type connect=1
 0084 3->2 Not connect Good:0067[79] Bad:0017[20]
 0085 7->5 Connect! Good:0068[80] Bad:0017[20] Type connect=2
 0086 8->7 Connect! Good:0069[80] Bad:0017[19] Type connect=2
 0087 7->0 Connect! Good:0070[80] Bad:0017[19] Type connect=1
 0088 0->5 Connect! Good:0071[80] Bad:0017[19] Type connect=2
 0089 4->0 Connect! Good:0072[80] Bad:0017[19] Type connect=1
 0090 3->7 Not connect Good:0072[80] Bad:0018[20]
 0091 0->2 Connect! Good:0073[80] Bad:0018[19] Type connect=1
 0092 5->2 Not connect Good:0073[79] Bad:0019[20]
 0093 5->7 Not connect Good:0073[78] Bad:0020[21]
 0094 4->5 Connect! Good:0074[78] Bad:0020[21] Type connect=2
 0095 7->6 Connect! Good:0075[78] Bad:0020[21] Type connect=2
 0096 6->1 Connect! Good:0076[79] Bad:0020[20] Type connect=2
 0097 0->6 Connect! Good:0077[79] Bad:0020[20] Type connect=1
 0098 7->4 Connect! Good:0078[79] Bad:0020[20] Type connect=1
 0099 5->7 Not connect Good:0078[78] Bad:0021[21]
 0100 5->6 Not connect Good:0078[78] Bad:0022[22]
 0101 1->0 Connect! Good:0079[78] Bad:0022[21] Type connect=1
 0102 4->0 Connect! Good:0080[78] Bad:0022[21] Type connect=1
 0103 1->7 Connect! Good:0081[78] Bad:0022[21] Type connect=2
 0104 3->6 Not connect Good:0081[77] Bad:0023[22]
 0105 3->7 Not connect Good:0081[77] Bad:0024[22]
 0106 6->1 Connect! Good:0082[77] Bad:0024[22] Type connect=2
 0107 4->2 Connect! Good:0083[77] Bad:0024[22] Type connect=1
 0108 1->7 Connect! Good:0084[77] Bad:0024[22] Type connect=2
 0109 3->8 Not connect Good:0084[77] Bad:0025[22]
 0110 4->3 Not connect Good:0084[76] Bad:0026[23]
 0111 4->2 Connect! Good:0085[76] Bad:0026[23] Type connect=1
 0112 5->1 Not connect Good:0085[75] Bad:0027[24]
 0113 4->0 Connect! Good:0086[76] Bad:0027[23] Type connect=1
 0114 6->5 Connect! Good:0087[76] Bad:0027[23] Type connect=1
 0115 7->5 Connect! Good:0088[76] Bad:0027[23] Type connect=2
 0116 5->8 Not connect Good:0088[75] Bad:0028[24]
 0117 2->3 Connect! Good:0089[76] Bad:0028[23] Type connect=2
 0118 4->2 Connect! Good:0090[76] Bad:0028[23] Type connect=1
 0119 7->3 Connect! Good:0091[76] Bad:0028[23] Type connect=1
 0120 2->1 Connect! Good:0092[76] Bad:0028[23] Type connect=1
 0121 5->7 Not connect Good:0092[76] Bad:0029[23]
 0122 2->7 Connect! Good:0093[76] Bad:0029[23] Type connect=1
 0123 2->3 Connect! Good:0094[76] Bad:0029[23] Type connect=2
 0124 7->2 Connect! Good:0095[76] Bad:0029[23] Type connect=1
 0125 2->1 Connect! Good:0096[76] Bad:0029[23] Type connect=1
 0126 4->5 Connect! Good:0097[76] Bad:0029[23] Type connect=2
 0127 8->7 Connect! Good:0098[77] Bad:0029[22] Type connect=2
 0128 0->2 Connect! Good:0099[77] Bad:0029[22] Type connect=1
 0129 5->0 Not connect Good:0099[76] Bad:0030[23]
 0130 8->1 Connect! Good:0100[76] Bad:0030[23] Type connect=2
 0131 5->2 Not connect Good:0100[76] Bad:0031[23]
 0132 6->5 Connect! Good:0101[76] Bad:0031[23] Type connect=1
 0133 2->8 Connect! Good:0102[76] Bad:0031[23] Type connect=1
 0134 4->2 Connect! Good:0103[76] Bad:0031[23] Type connect=1
 0135 6->2 Connect! Good:0104[77] Bad:0031[22] Type connect=1
 0136 6->0 Connect! Good:0105[77] Bad:0031[22] Type connect=1
 0137 8->4 Connect! Good:0106[77] Bad:0031[22] Type connect=2
 0138 2->7 Connect! Good:0107[77] Bad:0031[22] Type connect=1
 0139 3->1 Not connect Good:0107[76] Bad:0032[23]
 0140 4->8 Connect! Good:0108[77] Bad:0032[22] Type connect=1
 0141 6->3 Not connect Good:0108[76] Bad:0033[23]
 0142 3->0 Not connect Good:0108[76] Bad:0034[23]
 0143 6->0 Connect! Good:0109[76] Bad:0034[23] Type connect=1
 0144 8->3 Not connect Good:0109[75] Bad:0035[24]
 0145 6->3 Not connect Good:0109[75] Bad:0036[24]
 0146 2->6 Connect! Good:0110[75] Bad:0036[24] Type connect=1
 0147 2->7 Connect! Good:0111[75] Bad:0036[24] Type connect=1
 0148 8->6 Connect! Good:0112[75] Bad:0036[24] Type connect=2
 0149 5->0 Not connect Good:0112[75] Bad:0037[24]
 0150 2->1 Connect! Good:0113[75] Bad:0037[24] Type connect=1

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0151 1->6 Connect!	Good:0114[75] Bad:0037[24] Type connect=2
0152 1->7 Connect!	Good:0115[75] Bad:0037[24] Type connect=2
0153 6->7 Connect!	Good:0116[75] Bad:0037[24] Type connect=1
0154 0->3 Not connect	Good:0116[75] Bad:0038[24]
0155 1->8 Connect!	Good:0117[75] Bad:0038[24] Type connect=2
0156 1->0 Connect!	Good:0118[75] Bad:0038[24] Type connect=1
0157 2->4 Connect!	Good:0119[75] Bad:0038[24] Type connect=1
0158 8->3 Not connect	Good:0119[75] Bad:0039[24]
0159 0->2 Connect!	Good:0120[75] Bad:0039[24] Type connect=1
0160 0->2 Connect!	Good:0121[75] Bad:0039[24] Type connect=1
0161 3->8 Not connect	Good:0121[75] Bad:0040[24]
0162 2->0 Connect!	Good:0122[75] Bad:0040[24] Type connect=1
0163 6->7 Connect!	Good:0123[75] Bad:0040[24] Type connect=1
0164 4->7 Connect!	Good:0124[75] Bad:0040[24] Type connect=1
0165 0->3 Not connect	Good:0124[75] Bad:0041[24]
0166 2->3 Not connect	Good:0124[74] Bad:0042[25]
0167 8->0 Connect!	Good:0125[74] Bad:0042[25] Type connect=2
0168 7->8 Connect!	Good:0126[75] Bad:0042[25] Type connect=2
0169 2->3 Not connect	Good:0126[74] Bad:0043[25]
0170 7->3 Not connect	Good:0126[74] Bad:0044[25]
0171 7->4 Connect!	Good:0127[74] Bad:0044[25] Type connect=1
0172 5->4 Not connect	Good:0127[73] Bad:0045[26]
0173 5->3 Not connect	Good:0127[73] Bad:0046[26]
0174 3->6 Not connect	Good:0127[72] Bad:0047[27]
0175 2->1 Connect!	Good:0128[73] Bad:0047[26] Type connect=1
0176 7->3 Not connect	Good:0128[72] Bad:0048[27]
0177 5->3 Not connect	Good:0128[72] Bad:0049[27]
0178 1->3 Connect!	Good:0129[72] Bad:0049[27] Type connect=3
0179 8->0 Connect!	Good:0130[72] Bad:0049[27] Type connect=2
0180 3->8 Not connect	Good:0130[72] Bad:0050[27]
0181 7->1 Connect!	Good:0131[72] Bad:0050[27] Type connect=1
0182 1->6 Connect!	Good:0132[72] Bad:0050[27] Type connect=2
0183 1->3 Connect!	Good:0133[72] Bad:0050[27] Type connect=3
0184 2->5 Connect!	Good:0134[72] Bad:0050[27] Type connect=2
0185 4->3 Connect!	Good:0135[72] Bad:0050[27] Type connect=2
0186 1->3 Connect!	Good:0136[73] Bad:0050[26] Type connect=3
0187 3->8 Not connect	Good:0136[72] Bad:0051[27]
0188 1->5 Connect!	Good:0137[72] Bad:0051[27] Type connect=3
0189 8->1 Connect!	Good:0138[73] Bad:0051[26] Type connect=2
0190 2->3 Not connect	Good:0138[72] Bad:0052[27]
0191 5->3 Not connect	Good:0138[72] Bad:0053[27]
0192 3->6 Not connect	Good:0138[71] Bad:0054[28]
0193 0->0 Connect!	Good:0139[72] Bad:0054[27] Type connect=1
0194 8->1 Connect!	Good:0140[72] Bad:0054[27] Type connect=2
0195 2->0 Connect!	Good:0141[72] Bad:0054[27] Type connect=1
0196 5->4 Not connect	Good:0141[71] Bad:0055[28]
0197 8->0 Connect!	Good:0142[72] Bad:0055[27] Type connect=2
0198 5->4 Not connect	Good:0142[71] Bad:0056[28]
0199 2->0 Connect!	Good:0143[71] Bad:0056[28] Type connect=1
0200 8->1 Connect!	Good:0144[72] Bad:0056[28] Type connect=2
0201 0->5 Connect!	Good:0145[72] Bad:0056[27] Type connect=2
0202 8->4 Connect!	Good:0146[72] Bad:0056[27] Type connect=2
0203 5->2 Not connect	Good:0146[71] Bad:0057[28]
0204 0->3 Not connect	Good:0146[71] Bad:0058[28]
0205 0->4 Connect!	Good:0147[71] Bad:0058[28] Type connect=1
0206 5->7 Not connect	Good:0147[71] Bad:0059[28]
0207 3->0 Not connect	Good:0147[71] Bad:0060[28]
0208 7->5 Connect!	Good:0148[71] Bad:0060[28] Type connect=2
0209 5->0 Not connect	Good:0148[70] Bad:0061[29]
0210 0->2 Connect!	Good:0149[70] Bad:0061[29] Type connect=1
0211 3->6 Not connect	Good:0149[70] Bad:0062[29]
0212 2->8 Connect!	Good:0150[70] Bad:0062[29] Type connect=1
0213 0->5 Connect!	Good:0151[70] Bad:0062[29] Type connect=2
0214 7->1 Connect!	Good:0152[71] Bad:0062[28] Type connect=1
0215 1->7 Connect!	Good:0153[71] Bad:0062[28] Type connect=2
0216 5->1 Not connect	Good:0153[70] Bad:0063[29]
0217 7->8 Connect!	Good:0154[70] Bad:0063[29] Type connect=2
0218 0->6 Connect!	Good:0155[71] Bad:0063[28] Type connect=1
0219 2->1 Connect!	Good:0156[71] Bad:0063[28] Type connect=1
0220 0->5 Connect!	Good:0157[71] Bad:0063[28] Type connect=2
0221 7->2 Connect!	Good:0158[71] Bad:0063[28] Type connect=1
0222 8->3 Not connect	Good:0158[71] Bad:0064[28]
0223 7->6 Connect!	Good:0159[71] Bad:0064[28] Type connect=1
0224 8->2 Connect!	Good:0160[71] Bad:0064[28] Type connect=1
0225 7->6 Connect!	Good:0161[71] Bad:0064[28] Type connect=1

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Abonents current coordinates:

Abonent N 00	[00016009] X=016 Y=009 Power = 011
Abonent N 01	[01020004] X=020 Y=004 Power = 007
Abonent N 02	[02009006] X=009 Y=006 Power = 012
Abonent N 03	[03025018] X=025 Y=018 Power = 009
Abonent N 04	[04016005] X=016 Y=005 Power = 012
Abonent N 05	[05009029] X=009 Y=029 Power = 009
Abonent N 06	[06012018] X=012 Y=018 Power = 012
Abonent N 07	[07015012] X=015 Y=012 Power = 010
Abonent N 08	[08006005] X=006 Y=005 Power = 007
Abonents real middle power:	009 [75]

1. A peer-to-peer mobile information-telecommunication network, identification of units in which is made by means of definition of their location at the moment of identification.

2. The network according to claim 1, the units of which are mobile devices working in a mode of the telecommunication terminal or the retranslator as a part of a communication channel.

3. The network according to claim 1, wherein the location has the unit's co-ordinate in a three-dimensional co-ordinate system and the time of definition of this co-ordinate according to time measuring system, coordinated in a network, as well as from the external source.

4. The network according to claim 1, wherein time synchronization is made according to universal time coordinated (UTC).

5. The network according to claim 1, wherein the unit location is defined with the navigation system.

6. The network according to claim 1, wherein the unit location is defined by finding a bearing from other units of a network or from stationary radio emission sources.

7. The network according to claim 1, wherein the unit location is stored in the operating storage device of the mobile device.

8. The network according to claim 1, wherein the data packages are transferred containing data on the location of units at a given time or about the change of their location.

9. The network according to claim 1, wherein the data on the location of the units at a given time is in databases of the network units.

10. The network according to claim 1, wherein one mobile device services several communication channels in a mode of commutation or relaying.

11. A communication channel, the commutation of which goes towards the location of one subscriber to another on the basis of the identification data of the network units containing data on their location at a given time.

12. The communication channel according to claim 11, communication and maintenance of which is carried out by means of overlapping of the steady reception areas/signaling which is a part of the channel of units.

13. The communication channel according to claim 11, transferring the multimedia information, including text messages, audio and video signals.

14. The communication channel according to claim 11, where data reports ciphered by the individual cipher known only to commuted subscribers are transferred.

15. The communication channel according to claim 11, during the maintenance of which the dynamic routing of data packages is carried out with switching from one unit of a network to another.

16. The communication channel according to claim **11**, on the separate sites of which or on all its extent the duplicating connections between network units are installed.

17. The communication channel according to claim **11**, in commutating and supporting of which various types of devices being the units of a network take part.

18. A device being a unit of a network according to claim **1** and characterized by a function of self-identification by location definition at a given time.

19. The device according to claim **18**, being a mobile phone.

20. The device according to claim **18**, being a wireless communication device or a mobile computerized system equipped with such a device.

21. The device according to claim **18**, being a personal device equipped with an extra gadget for broadcasting signal strengthening, sensitivity reception/transfer enhancement and the coverage extension.

22. The device according to claim **18**, supporting hybrid communication channels as a part of a peer network according to claim **1**.

23. The device according to claim **18**, supporting possibility of operation in other networks, including centralized networks of cellular type.

* * * * *