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D E C I S I O N
of 1 March 2005

Case Number: T 0268/04 - 3.5.3

Application Number: 88105289.8

Publication Number: 0285164

IPC: H04Q 7/04

Language of the proceedings: EN

Title of invention:

Communication control system capable of searching a called telephone set in a mobile radio telephone network

Patentee:

NEC CORPORATION, et al

Opponent:

ERICSSON BUSINESS MOBILE NETWORKS B.V.

Headword:

Communication control system/NEC

Relevant legal provisions:

EPC Art. 56

Keyword:

"Inventive step (no) "

Decisions cited:

T 0758/99

Catchword:

-



Case Number: T 0268/04 - 3.5.3

D E C I S I O N
of the Technical Board of Appeal 3.5.3
of 1 March 2005

Appellant:
(Opponent)

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Decision under appeal:

Decision of the opposition division of the
European Patent Office posted 5 December 2003
rejecting the opposition filed against European
patent No. 0285164 pursuant to Article 102(2)
EPC.

Composition of the Board:

Chairman: A. S. Clelland
Members: F. van der Voort
R. T. Menapace

Summary of Facts and Submissions

- I. This appeal is against the decision of the opposition division rejecting an opposition filed against European patent No. 0 285 164. The opposition division's decision was taken after Board of Appeal 3.5.1 (case number T 758/99) had set aside a previous decision of the opposition division rejecting the opposition and had decided to remit the case to the first instance for further prosecution. That board also decided that a request for apportionment of costs would be decided on at a later stage. In the second decision of the opposition division it was held that the subject-matter of the claims as granted involved an inventive step over the available prior art documents. The decision is silent on the issue of apportionment of costs.
- II. The appellant (opponent) lodged an appeal against the second decision of the opposition division and requested that it be set aside on the ground that the claimed subject-matter lacked an inventive step. In support of his arguments, the appellant referred, *inter alia*, to documents D1 and D2 (see point III). The appellant considered D1 to be the closest prior art and argued that the subject-matter of the claims as granted did not involve an inventive step having regard to a combination of D1 and D2. Oral proceedings were conditionally requested.
- III. The prior art documents relevant to the present appeal proceedings are the following:
- D1: GB 1 472 212 A; and
D2: WO 84/00868 A.

- IV. The respondent (proprietor) filed a reply to the statement of grounds of appeal and requested that the appeal be dismissed. He submitted arguments in support of his contention that the appellant's objections were incorrect. Oral proceedings were conditionally requested.
- V. The parties were summoned by the board to oral proceedings. In a communication accompanying the summons, the board gave a preliminary opinion.
- VI. In preparation for the oral proceedings, the respondent filed three auxiliary requests.
- VII. Oral proceedings were held on 1 March 2005. The appellant requested that the decision under appeal be set aside and the patent be revoked. The respondent requested that the appeal be dismissed or that the patent be maintained on the basis of one of the sets of claims of the three auxiliary requests. No further requests were made. At the end of the oral proceedings, the board's decision was announced.
- VIII. Claim 1 as granted reads as follows:

"A communication control system for use in a mobile radio telephone network comprising a telephone line (10), a plurality of radio telephone sets (11) movable in an area (14) divided into a predetermined number of zones (Z11, Z12, Z13, Z21, Z22, Z23, Z31), and a plurality of radio communication devices (15) assigned to the respective zones, said communication control system including:

a memory (27) for memorizing, in correspondence to said radio telephone sets, location information signals indicative of the radio communication devices assigned to the zones in which said radio telephone sets are present at a time;

selecting means (21, 25, 31) coupled to said telephone line and said memory for selecting, in response to an arrival signal arriving at said telephone line and specifying a specific telephone set among said radio telephone sets, one of said radio communication devices as a specific communication device that is indicated by one of said location information signals that, in turn, is in correspondence to said specific telephone set;

communicating means (22, 25, 32) coupled to said radio communication devices and said selecting means for sending said arrival signal as a call signal to said specific communication device for transmission to said specific telephone set, said specific telephone set transmitting a response signal to said specific communication device in response to said call signal for reception by communicating means when said specific telephone set is present in one of said zones that is assigned with said specific communication device; said call signal being transmitted to said specific telephone set in a predetermined radio frequency band; wherein:

said zones are classified into a plurality of groups, equal in number to a preselected number which is not less than two and not greater than said predetermined number less one, with said groups given individual numbers, so that at least one of said groups consists of at least two of said zones and that said call signal is never subjected to a radio interference, when transmitted from at least one of said radio

communication devices that is assigned to one of the zones of said at least one of the groups, with a radio signal transmitted from another of said radio communication devices that is assigned to another of the zones of said at least one of the groups; said communication control system comprising searching means (25, 33) coupled to said radio communication devices and said communicating means for searching a different one of said radio communication devices as a searched communication device if the communicating means does not receive said response signal, by transmitting said call signal at first simultaneously to the radio communication devices assigned to the zones of said at last [sic] one of the groups, and by transmitting said call signal subsequently to at least one remaining communication device of said radio communication devices until said communicating means receives said response signal through said searched communication device, said at least one remaining communication device being assigned to the zone of at least one remaining group of said groups with said groups selected in an order predetermined relative to said individual numbers."

IX. Claim 1 of the first auxiliary request adds the following wording at the end of claim 1 as granted:

", said location information being memorized in said memory (27) is updated as soon as said response signal is received."

Claim 1 of the second auxiliary request adds the following insert before the wording "said communication control system including" in claim 1 as granted:

"said radio communication devices and said radio telephone sets sharing a control channel and a prescribed number of communication channels".

Claim 1 of the third auxiliary request adds the same insert to claim 1 of the first auxiliary request.

Further, in claim 1 of each of the auxiliary requests, the wording "at last one of the groups" was corrected to read "at least one of the groups".

Reasons for the Decision

1. *Interpretation of claim 1 as granted (main request)*

- 1.1 Claim 1 is directed to a communication control system for use in a mobile radio telephone network. The board interprets the wording "for use in" such that the communication control system is suitable for use in a mobile radio telephone network. Consequently, since the telephone line and the radio communication devices are defined as part of the radio telephone network, the wording "coupled to" (see the patent as published: claim 1, col. 17, lines 47 and 57, and col. 18, line 29) is interpreted as "suitable for being coupled to". It also follows that features of the radio telephone network do not define features of the claimed communication control system, except for those, if any, implied by the network. The same applies to the zones and their classification in groups, the zones not being part of the control system, but forming an area within which the telephone sets are movable. The board further

notes that the claim does not require that the communicating and searching means of the communication control system are to be coupled to the radio communication devices by means of radio links.

- 1.2 The expression "remaining" in "at least one remaining communication device" (claim 1, col. 18, lines 39 and 44) is understood by the board as defining a communication device which was not involved in the first transmission of the call signal during the search as defined in claim 1, col. 18, lines 28 to 38. The "at least one remaining group" (claim 1, col. 18, line 45) is interpreted accordingly and, hence, the remaining communication device belongs to a group different from the one(s) involved in the first transmission. The expression "remaining" thus also implies that during the above-mentioned first transmission the call signal is not transmitted to all communication devices or in all groups. The example given in the patent specification (Figures 2 and 8 and col. 15, line 55, to col. 16, line 23) is in line with the above interpretation.
- 1.3 The wording "in an order" in "with said groups selected in an order predetermined relative to said individual numbers" in claim 1, col. 18, lines 46 to 48, implies a time sequence and is interpreted such that, in case the number of groups is more than two, the subsequent transmission is successively carried out for each of the remaining groups, until the response signal is received.
- 1.4 In claim 1, col. 18, line 37, "last" is read as "least".

1.5 The parties' understanding of the claim wording was in accordance with the above interpretation.

2. *Inventive step (main request)*

2.1 In the appellant's view, D1 represented the closest prior art. The respondent did not object to this view and neither does the board since D1, like the patent in suit, is concerned with a multiple zone mobile radio communications system.

2.2 More specifically, D1 (see Figure 1) discloses a mobile radio telephone system including a communication control system (central control terminal 50) coupled to a plurality of radio communication devices (base stations 54) assigned to respective zones 60 of a service area 56 within which radio telephone sets (mobile units 58) are movable. The zones 60 preferably overlap (page 4, lines 1 to 4).

As described with reference to Figures 2B, 2C(I) & 2C(II), a central processing unit at the central control terminal 50 (see Figure 10; CPU 108) responds to a call signal ("call-up signal") which is received via a trunk line 53 from a wire line telephone system 52 (Figure 1 and page 5, lines 61 to 64). If the called mobile unit is "in service", then on the basis of location information stored in a memory (page 5, lines 20 to 22 and 41 to 45) the CPU selects (implying selecting means) the base station assigned to the called mobile unit's **expected** zone and controls it (implying communicating means) to transmit the called mobile unit's address on a control signal channel (page 6, lines 16 to 20; Figure 2C(I)). Unless the CPU

receives an acknowledge signal from the mobile unit, the transmission of the call signal is repeated twice in the expected zone (referred to as "this area" in Figure 2C(II)). If the CPU still does not receive the acknowledge signal, it searches for the mobile unit (implying searching means) by controlling the base stations such as to subsequently transmit the call signal in "a next area" until "all areas" have been attempted (Figure 2C(II), page 6, lines 20 to 23 ("surrounding zones")). If an acknowledge signal is received, the search is stopped and the CPU attempts to assign the call to an available channel in the zone served by the corresponding base station (Figure 2C(II) and page 6, lines 26 to 28).

Page 15, lines 7 to 12, of D1 states that if the zone location of the mobile unit is **unknown**, a locating signal is broadcast on all control signal channels in all zones. Similarly, page 22, lines 44 to 61, describes with reference to Figure 10C how if the current zone location of a mobile unit is **not known** a "mobile unit call-up" message is transmitted to all of the non-busy base stations and an "acknowledge" message over one of the control channels is awaited. If necessary, the transmission of the call-up message is repeated.

D1 further discloses that reuse of assigned channels in separated zones 60 of the service area is permissible provided that sufficient separation exists between these zones in order to avoid undesirable interferences (page 4, lines 43 to 46). These channels may also include the control signal channel (page 4, lines 1 to 3, 10 and 11). For channel reuse, the service area

56 may be divided into a repeating pattern of zones, in which the zones are classified in groups Z1 to Z7 (Figure 3 and page 8, line 64 to page 9, line 6). Since the separation between the zones belonging to one and the same group is sufficient to ensure that there is no interference, these zones may use the same frequency channel for the control signal channel. Adjacent zones however, which belong to different groups, have different frequencies for their control signal channels in order to avoid interference (page 9, line 59 to page 10, line 11).

2.3 The communication control system as defined in claim 1 of the patent in suit therefore differs from the central control terminal disclosed in D1 in that, if the telephone set is not in the **expected** zone, *i.e.* no response signal is received from the specific communication device, the searching means is capable of transmitting the call signal:

- at first **simultaneously** to the radio communication devices assigned to the zones of at least one group; and
- subsequently to at least one radio communication device serving a zone of a group **other than** the above-mentioned at least one group and, if the number of groups is more than two, to each of the remaining groups in a predetermined order, until the response signal is received.

2.4 According to D1, if the mobile unit is not in the expected zone, other areas are successively tried (see Figures 2C(I) & 2C(II)), whereas claim 1 requires that the searching means of the control system is adapted to transmit the call signal simultaneously in several

zones of a group and to subsequently transmit it, if necessary, in other groups in a predetermined order. Thus, the number of steps for searching the called telephone set and, hence, the search time are reduced. Because the zones are classified in groups, interference between the simultaneously transmitted call signals is avoided (see also the patent, col. 15, lines 33 to 54).

2.5 The problem underlying the claimed subject-matter may therefore be seen in improving the search procedure of the central control terminal of D1 such as to reduce the time needed to search for and locate the called mobile unit. The formulation of this problem does not contribute to an inventive step, since aiming at a simpler or faster operation of a system is a matter of ordinary practice for a person skilled in the art.

2.6 In the board's view, a person skilled in the art, starting from D1 and faced with the above technical problem, would consider D2, since D2 is specifically concerned with an electronic locating system for persons receiving telephone calls (see the title), describes a search operation for locating a unit within a large population of individual units, e.g. transmitter-receiver badges carried by people or located in automobiles (page 2, penultimate para.), and recognises the importance of a fast operation of the system (page 2, lines 14 and 15 ("*speed is important in a large system which must handle the placing of many calls in a short time span*"); page 5, lines 10 and 11 ("*to complete the call in the minimum time*"); and page 5, lines 13 to 16 ("*... much quicker ...*").

2.7 D2 discloses a paging system including a central station and a plurality of relay stations, which communicate with a plurality of badges (page 3, lines 15 to 19). The relay stations are each assigned to one of a plurality of groups A, B, C and D. Relay stations with overlapping coverage belong to different groups so that they will communicate with the central station at different times thereby avoiding interference (page 5, penultimate line, to page 6, line 1).

When a call arrives, a microprocessor at the central station addresses a relay station in the most likely area (as previously stored) and requests the relay station to broadcast an inquiry signal containing the badge ID number of the person to be located. If the call recipient can not be found, *i.e.* no answer is received (Figure 12), an "all-points search" is carried out (page 4, lines 6 to 15). For that purpose, the central station sequentially requests each of the groups A, B, C and D of relay stations to transmit the badge ID number (Figs 12 and Fig. 12 cont., page 10, lines 28 to 31 and page 28, lines 9 to 20). D2 explicitly states that since the groups are defined such that each of the relay stations of a particular group covers an area which is distinct from the areas covered by the other relay stations within the same group, the possibility of interference from two or more relay stations transmitting at the same time is eliminated (page 9, lines 23 to 28).

2.8 D2 therefore teaches the skilled person that the inquiry signal may be simultaneously transmitted to a plurality of relay stations, provided that they all

belong to one specific group, *i.e.* have distinct areas to ensure that there is no interference. By interrogating all relay stations of one group simultaneously, the time for carrying out the all-points search for locating a badge is determined by the number of groups rather than the (higher) number of relay stations.

2.9 A person skilled in the art, faced with the problem of improving the searching means of the central control terminal of D1 such as to reduce the length of time required for searching the called mobile unit, would be taught by D2 to adapt the searching means of the central control terminal of D1 such that the call signal is simultaneously transmitted to the radio communication devices assigned to the zones of a first group and, if necessary, to subsequently repeat the transmission for each of the other groups. The skilled person would thereby arrive at a system including all the features of claim 1 without the exercise of any inventive skill.

2.10 The appellant argued that a person skilled in the art, starting from D1, would not combine the teaching of D2 with D1, since D2 describes a different system, namely a paging system using infrared links, and, moreover, solves a different problem than the one described in D1.

The board notes however that the claims of the patent in suit are not limited to a cellular telephone service and do not exclude the use of the claimed communication control system with pager receivers instead of radio telephone sets. This is moreover explicitly envisaged in the description, see col. 17, lines 10 to 11.

Further, the board notes that both D1 and D2 are in the same technical field and, indeed, have the same IPC classification H04Q7/00 ("*Selecting arrangements to which subscribers are connected via radio links or inductive links*"). It is also noted that D2 describes the use of infrared links merely as a preferred embodiment (page 9, lines 12 to 13) and that the central control terminal of D1 is not restricted to use in a telephone system only, but may also be used for, e.g., a dispatch service (see D1, page 12, line 62).

Following the well-established problem-and-solution approach in the examination of inventive step, whether or not D1 and D2 solve the same or a different problem is not relevant; in the present case, starting from D1, the questions to be answered are whether or not a skilled person, faced with the objective technical problem (see point 2.5) would consider D2 and would apply its teaching to the central control terminal of D1. For the reasons given at points 2.6 and 2.8, the board judges that both questions are to be answered positively.

- 2.11 The appellant further argued that because D2 discloses that a simultaneous transmission from relay stations belonging to different groups is to be avoided, it cannot be concluded that relay stations assigned to the same group transmit the inquiry signal simultaneously.

The board notes however that D2 explicitly states that relay stations with overlapping coverage belong to different groups so as to avoid interference (see above, point 2.7); it follows that each relay station of a group must cover an area which is distinct from

that of the other relay stations within the same group since, if the areas were not distinct, interference might occur. However, for interference to occur in the first place the inquiry signals have to be transmitted simultaneously.

2.12 The appellant further argued that D2 is silent about the feature that the search is carried out until a response signal is received. The board notes however that this feature, which improves speed of search, is already known from D1 (see point 2.2 above) and is independent of whether or not the zones are searched zone-by-zone or on a group-by-group basis.

2.13 The board therefore concludes that the subject-matter of claim 1 lacks an inventive step in view of the combined teaching of D1 and D2 (Article 56 EPC).

3. *Admissibility (auxiliary requests)*

3.1 During the discussion of each of the auxiliary requests in the course of the oral proceedings it became apparent that *prima facie* there was no basis in the originally filed application for the added feature in claim 1 of the first and third auxiliary requests, according to which the location information is updated **as soon as** the response signal is received. The respondent argued that the description at col. 10, lines 35 to 56, and col. 14, lines 45 to 49, and claim 2 of the patent as published (corresponding respectively to col. 10, line 55 to col. 11, line 18, and col. 15, lines 6 to 10, and claim 2 of the application as published) provided a basis. However, these passages merely disclose that the combination of

the third area 33 of the ROM 26 and the CPU 25, *i.e.* the searching means, is suitable for updating the location information in RAM 27, *i.e.* the memory, and that the updating is carried out after, but not necessarily as soon as, the response signal is received.

3.2 As regards the second auxiliary request (see point IX above), at the oral proceedings the board concluded that *prima facie* there was no basis in the application as filed for the inserted feature. The board noted that the passage at col. 6, lines 35 to 39 of the patent as published (col. 6, line 55 to col. 7, line 1, of the application as published) additionally required that the control and the communication channels were of a different radio frequency, whereas the claim did not include this feature. Further, it was not clear to what extent the inserted feature actually further limited the subject-matter of claim 1 as granted, since the claim was directed to a communication control system only, *i.e.* not the radio communication devices (RCD 15) and radio telephone sets (RTEL 11). Further, the expression "sharing" was considered not to have a clear meaning. It could mean, *e.g.*, "communicating by using" or "being assigned" or that the communication devices made use of a common control channel.

3.3 In view of these potential objections to claim 1 of each of the auxiliary requests, the board concluded that these requests were not clearly allowable and therefore, in line with the consistent jurisprudence of the boards, not admissible.

4. The apportionment of costs as requested by the respondent in the course of the first appeal

proceedings was not (and could not have been made - Article 106(4) EPC) a subject of the present appeal proceedings.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:

D. Magliano

A. S. Clelland