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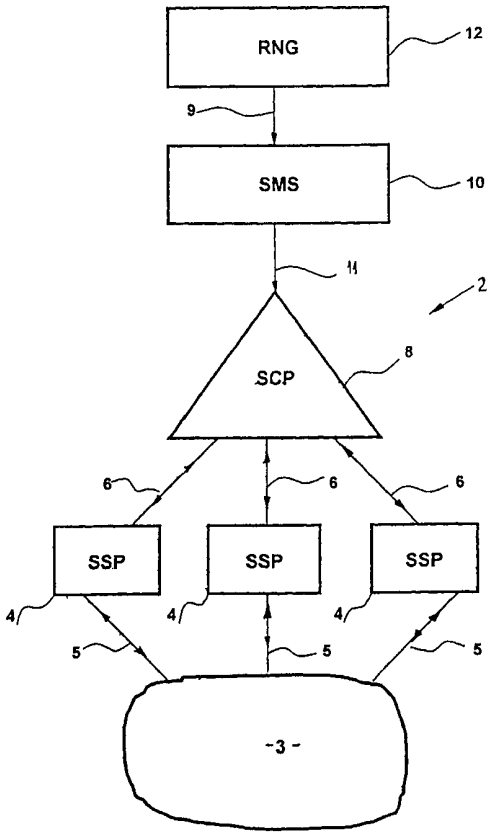
(54) Title: RANDOM SELECTION OF WINNERS IN A TELEVOTING EVENT

(57) Abstract

A system and method for selecting a winner or winners in a televoting event using an intelligent network, the system comprising means for generating at least one random number (12), first counter means (16) located in each SSP (4) of the network for counting telephone calls made to the televoting event such that when the count value of the first counter means (16) reaches a predetermined value the call associated with the count value is routed to an SCP (8) of the network. The system further comprises a second counter means (18), located in the SCP (8), for counting the calls routed to the SCP whereupon the winner or winners of the televoting event are selected on the basis of a match between the at least one random numbers generated and count value of the second counter means (18).



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RANDOM SELECTION OF WINNERS IN A TELEVOTING EVENT

This invention relates to a method and system of selecting winners in a televoting event, and more particularly to a method and system of selecting winners in a televoting event on a fair basis using an intelligent network.

An intelligent network consists of a number of switching entities that combine to offer subscribers a specialised service such as televoting. The switching entities contain processing software to process calls according to the required service or application. Typically, an intelligent network contains a number of Service Switching Points (SSP) each connected to a public telecommunications network such as a public switched telephone network (PSTN), integrated services digital network (ISDN), packet-switched public data network (PSPDN) or a mobile network. Each of the SSPs are connected to a Service Control Point (SCP) which contains service specific applications software and customer or subscriber records. The SSP reacts to specific service triggers and initiates queries to the SCP over a common channel signalling network, such as the Signalling System No 7 (SS7) network. The SCP acts upon the query from the SSP and returns a message containing the data and instructions required to complete the service. A Service Management System (SMS) is linked to the SCP and supports the administration of the customer records within the SCP.

Televoting is a particular service offered by an intelligent network in which callers may dial predetermined destination telephone numbers to register a vote or an answer in response to a choice or question initiated through a viewer or listener participation program conducted by a broadcaster, such as a television or radio network and the like. The owner or broadcaster of the program, hereinafter referred to as a subscriber, may provide an incentive to callers to call the predetermined telephone numbers by offering prizes to selected callers.

The televoting service is implemented in an intelligent network by having the subscriber load the SMS with parameters defining the televote such as start time, end time, the destination numbers for each choice offered, announcements, etc. These parameters are downloaded into the SCP, which are in turn delivered to each SSP connected to the SCP, so that each SSP is programmed with the

parameters. During an activated televoting service, incoming calls are received by the SSPs and handled in a sequential manner. The SSPs can then count the calls received and terminate a certain percentage of calls by filtering. The remaining calls are allowed to be transferred to the SCP where they are stored in timed sequence and remain eligible to win a prize in the contest.

A particular problem associated with known techniques for selecting the eventual winner or winners is that it is not performed in a fair and unbiased manner. The winners are selected on the basis of absolute values by a network operator or the subscriber and entered via the SMS through a VT 100 terminal. For example, a subscriber may choose a predetermined number, like the tenth caller through to the SCP, based on the ordered sequence in which the votes were registered, to be the winner. A second winner may be chosen as the fifteenth caller through. In other words, it is clearly known to the subscriber which caller is going to win the prize. This could also be chosen on the basis of the telephone number itself or the geographic location, which adds to the biased nature or control that the network operator/subscriber may have in determining the eventual winner.

The present invention seeks to overcome the above-identified problem by providing a system for selecting winners in a televoting event on a fair basis, so that each caller has the same probability of being selected as a winner.

Accordingly, the present invention provides for a system for selecting a winner or winners in a televoting event using an intelligent network, said intelligent network having service switching points (SSPs), a service control point (SCP) and a service management system (SMS), said system comprising means for generating at least one random number, first counter means for counting telephone calls to the televoting event such that when the count value of said first counter means reaches a predetermined value, the call associated with said count value is routed to said SCP, the system further comprising a second counter means for counting the calls routed to said SCP, whereupon said winner or winners are selected on the basis of a match between said at least one random number and the count value of said second counter means.

The SSPs may contain said first counter means which increments by one for each call received. Calls associated with a count value less than said pre-determined value may be terminated with an announcement.

After calls having a count value that match said pre-determined value are routed to said SCP, the SSP that initially received that call may have its counter means reset following delivery of the previous count value to the SCP. Each previous count value may be stored in memory means of said SCP.

Calls received by said second counter means may be fed to comparator means to be compared with said random numbers so as to select a winner or winners. Calls that do not match the random numbers may be routed back to its associated SSP and terminated with an announcement.

The random numbers generated by the means for generating random numbers may be transmitted to the SCP and fed to comparator means in the SCP.

The generated random numbers may be transmitted to the SCP through the SMS using a remote procedure call (RPC).

A limit may be set on the means for generating random numbers on the maximum value of a generated number in accordance with the anticipated number of callers in the televoting contest.

The invention also provides a method of selecting a winner or winners in a televoting event using an intelligent network, said method comprising the steps of:

receiving telephone calls for said event at a plurality of service switching points (SSPs),

counting said telephone calls at each SSP,

routing a telephone call to a service control point (SCP) when said call has a counter value that matches a pre-determined value set by each SSP,

counting at said SCP each call routed to said SCP,

generating at least one random number,

and selecting said winner or winners on the basis of a match between said at least one random number and a count value associated with a call counted in the SCP.

The method may further include the step of incrementing the counter value at each SSP for calls respectively received at each said SSP until the counter value equals a pre-determined value set in each SSP, whereupon the call that has its counter value the same as the pre-determined value is routed through to the SCP. The calls having counter values less than the pre-determined value may be terminated with an announcement. After an SSP has routed a call through to the SCP, the counter value may be reset to initiate a further incrementing step for calls subsequently received at the SSP. Prior to resetting, the counter value may be transmitted to and stored in the SCP.

The generated numbers may be transmitted to the SCP directly or through a service management system (SMS).

The selecting step may be determined on a comparison, performed in the SCP, of the random numbers and the counter value in the SCP of calls routed to the SCP from an SSP such that when the random numbers and SCP counter value match, a winner or winners is selected from the call or calls associated with the counter value. The transmission of the random numbers to the SMS may be done via a remote procedure call (RPC).

The invention will now be described in a preferred embodiment with reference to the accompanying drawings wherein:

Figure 1 is a schematic diagram showing a system and its major components according to the present invention;

Figure 2 is a more detailed schematic diagram of the components of the system of Figure 1; and

Figure 3 is a flow diagram showing the processes involved in selecting winners in a televoting contest.

With reference to Figure 1, there is shown a system 2 used for selecting one or more winners in a televoting event. The system 2 uses an intelligent network including a plurality of SSPs 4 connected through links 6 to an SCP 8. A service management system or SMS 10 is connected to SCP 8 through link 11 and a means

for generating random numbers 12 interfaces to the SMS 10 through link 9. Each SSP 4 is linked to a public network 3 through links 5.

When a subscriber, such as a television network or radio network, wishes to conduct a televoting service or event in an intelligent network, parameters defining the televoting service are input to the SMS, for example through a Web interface. Such parameters would include the starting time and finishing time between which the televote will be active, the televoting destination telephone numbers, the contents of recorded messages to be delivered to callers at various stages throughout the event. The parameters are distributed to the SCP and once the televoting service is implemented, the parameters are in turn distributed from the SCP to each SSP so that each SSP will be programmed to handle incoming calls to the event or service according to the parameters. Services in intelligent networks are executable Service Logic Programs (SLPs) that are defined in terms of functional components which are network call processing actions that direct internal network resources to perform specific actions. A Service Logic Interpreter (SLI) executes SLPs and handles requests and responses exchanged between the various components of the intelligent network. A subscription to a televoting service by a television network or radio network is initiated by creating an instance of the SLP and connecting data to the service logic program instance (SLPI). The SLPI is implemented in the SCP and controls the SSPs and is deployed and managed through the SMS. Through this mechanism, calls routed from the public network to the SSPs can be controlled by the SCP.

Referring to Figure 2 a detailed schematic diagram is shown of the major components making up the system 2. Each SSP 4 receives calls to the televoting numbers from the public network 3 over links 5. In the event that the contest is open to a large proportion of the population, the telephone network may become congested and eventually collapse due to the large number of calls being received simultaneously. To alleviate the possibility of collapse in this situation, each call received by SSP 4 is counted by first counter means 16, the counter means 16 being incremented by one for each call received. The counter means 16 is set with a pre-determined value n so that only the nth caller associated with the value n is

routed through to SCP 8 over link 6. All calls counted that have a counter value less than n are terminated with an announcement such as "Your vote has been registered. Unfortunately you have not been successful in reaching the next stage of the contest". After the call or calls are so routed to the SCP 8, the respective counter means 16 of SSP 4 may be reset, to zero, to initiate a new incrementation of subsequently received calls. If it is deemed that the anticipated calls received will not congest the telephone network, the counter means 16 of the SSPs can be set with n equal to (a small number, say 3, to let every third call be routed to SCP 8, or to zero to allow calls to be routed to SCP 8.

The counter value, prior to being reset, is transmitted to the SCP 8 and stored and updated in memory means 24, which may be any standard RAM, to allow a subscriber access to information on the number of calls registered for each choice or other information associated with the televoting event.

The calls routed to the SCP 8 from each of the SSPs 4 are received by second counter means 18 which increments by one for each call received. The calls so received have an announcement transmitted to them along the lines of "Your vote has been registered. Please wait as your call has been transferred to the next stage of processing in the contest". The counter means 18 is incremented until it reaches a counter value that matches one of the randomly generated numbers generated from device 12, to be described hereinafter. Thus, each call has a counter value associated with it and if a call's counter value does not match one of the random numbers, it is routed back to its respective SSP 4 and an announcement played to the caller of that call such as "Unfortunately you have not been successful in this televoting event. Thank you for your participation.".

The means for generating random numbers 12, in the form of a random number generator, generates random numbers at the output of delay means 26 on link 9. The device 12 includes a feedback register 28 which receives clock signals from timing means 30 which feedback register 28 in turn is connected to delay means 26 through logic gate 32. The output of the delay means 26 is also fed back to an input of the logic gate 32. The delay means 26 also receives clock signals from timing means 30 to output the random numbers to SMS 10 on link 9. An

example of such a random number generator is referred to in U.S. Patent No. 5,434,806 in the name of Telefonaktiebolaget LM Ericsson.

Alternatively, the random number generator may be implemented in a Unix machine and a microprocessor therein uses algorithms to determine the randomly generated numbers.

The random numbers are transmitted to the SMS 10 using a remote procedure call (RPC) which is a protocol used for the transmission of data between Unix machines such as device 12 and SMS 10. The random numbers are then transferred to SCP 8 and deployed in the service logic associated with the televoting service. There, they are fed to a first input 35 of a comparator 34 and the counter value of the calls received in second counter means 18 are fed to a second input 36 of comparator 34. A comparison between the random numbers and those counter values corresponding to the received calls is made by comparator 34 and when a match has occurred the call or calls are routed back to their corresponding SSP 4 from the output 37 of comparator 34. The caller or callers are declared the winner or winners of the event, and are either connected through to an Intelligent Peripheral 40 from the SSP 4, which Intelligent Peripheral 40 may be a voicemail facility, where they can leave their personal details. Alternatively, the winner or winners may be switched directly through to the subscriber where they can be announced as winners by the subscriber.

An upper limit may be placed on each random number generated so that the event is kept to a minimum time period. The maximum value that each available random number available can have is chosen on the basis of the anticipated number of calls for the televoting event. For example, if no more than 20,000 calls are expected then the random number may be limited to less than 20,000. The limit may be set either in the Random number generator means 12 or in the SCP 8.

During a televoting event, the pre-determined value set in each SSP 4 cannot be changed but the limit set for the maximum random number generated can be changed, as discussed in the preceding paragraph.

With reference to Figure 3, the process of selecting a winner or winners in a televoting event will now be described. At step 302 a caller dials the

predetermined numbers for the event to register their vote. At step 304 the SSP 4 designated to handle that call receives the call and at step 306 the call is counted in the SSP and registered for the choice/selection made by the caller. The counter value in the SSPs is incremented with each call received until the counter value equals the pre-determined value n set in each SSP at step 308. Each SSP may have a different pre-determined value set therein. If the counter value of the call does not equal the pre-determined value, that call is terminated with an announcement at step 310. If the counter value of the call equals the pre-determined value the call is routed through to the SCP 8 at step 312. The number of votes received in each SSP at step 308 is transmitted to and stored in the SCP 8 at step 314 and the counters in each SSP are reset at step 316. At step 318 the counters in the SCP is stepped or incremented with each call received.

Meanwhile at step 324 random numbers are generated within the maximum number limit and this could occur at any stage the televote is active. At step 326 the random numbers are transmitted to the SMS 10 from where they are subsequently transmitted to the SCP 8 at step 328. At step 330 a comparison is made between the random numbers and the counter value of the counter in the SCP. When a match occurs between the numbers, the caller or callers representing the counter value of the counter in the SCP are declared the winner(s) of the contest are forwarded to a voice mail service of an Intelligent Peripheral at step 332 or to the subscriber directly at step 334. If a match does not occur that call is terminated with an announcement at step 336.

It will also be appreciated that various modifications and alterations may be made to the preferred embodiment above, without departing from the scope and spirit of the present invention.

CLAIMS

1. A system for selecting a winner or winners in a televoting event using an intelligent network, said intelligent network having service switching points (SSPs), a service control point (SCP) and a service management system (SMS), said system comprising means for generating at least one random number, first counter means for counting telephone calls to the televoting event such that when the count value of said first counter means reaches a predetermined value, the call associated with said count value is routed to said SCP, the system further comprising a second counter means for counting the calls routed to said SCP, whereupon said winner or winners are selected on the basis of a match between said at least one random number and the count value of said second counter means.

2. A system according to claim 1 wherein said first counter means comprises a counter associated with each SSP such that the telephone calls to the televoting event are directed to respective SSPs and are counted by the counter associated with the SSP receiving some or all of the telephone calls.

3. A system according to claim 2 wherein said first counter means is incremented by one value for each call received by a respective SSP.

4. A system according to any one of the previous claims wherein said second counter means is associated with said SCP and increments by one value for each call received by said SCP from said SSPs, wherein each such call received has an associated count value.

5. A system according to any one of the previous claims wherein said SCP has comparator means for comparing said at least one random number generated by said means for generating at least one random number with the count value of said second counter means.

6. A system according to claim 5 wherein said at least one random number is received at a first input of said comparator means and said count value of said second counter means is received at a second input of said comparator means.

7. A system according to claim 6 wherein when said at least one random number is equivalent to respective count values of said second counter means, the call or calls representing the matched count value of the second counter means are routed to the SSP from which the call or calls respectively originated whereby the corresponding caller or callers are declared the winner or winners of the televoting event.

8. A system according to claim 7 wherein said winner or winners are notified by a subscriber controlling the televoting event.

9. A system according to any previous claim wherein calls received by respective SSPs having a count value less than said predetermined value are terminated with an announcement.

10. A system according to any one of the previous claims wherein after said calls are routed to said SCP from a respective SSP, said first counter means is reset to count subsequently received calls during the televoting event.

11. A system according to any one of the previous claims, wherein those calls received in said SCP having a counter value that does not match said at least one random number are routed back to their respective SSP and terminated with an announcement.

12. A system according to any one of the previous claims wherein the counter value of each SSP is transmitted to and stored in a memory means of said SCP prior to the first counter means being reset so as to allow a subscriber access to information on the number of calls received for the televoting event.

13. A system according to any one of the previous claims wherein the at least one random number is transmitted to said SCP through the SMS using a Remote Procedure Call.

14. A system according to any one of the previous claims wherein a limit is set on the value of the maximum random number generated by said means for generating said at least one random number in accordance with the anticipated number of callers directing calls to said televoting event.

15. A system according to any one of the previous claims wherein each SSP is linked to an intelligent peripheral device such that the declared winner or winners submit their personal details to said device.

16. A system according to any one of the previous claims wherein the means for generating said at least one random number is linked to said SMS.

17. A method of selecting a winner or winners in a televoting event using an intelligent network, said method comprising the steps of:

receiving telephone calls for said event at a plurality of service switching points (SSPs),

counting said telephone calls at each SSP,

routing a telephone call to a service control point (SCP) when said call has a counter value that matches a predetermined value set by each SSP,

counting at said SCP each call routed to the SCP,

generating at least one random number,

and selecting said winner or winners on the basis of a match between said at least one random number and a count value associated with a call counted in the SCP.

18. A method according to claim 17 wherein the step of counting each routed call in the SCP includes designating a count value to each routed call.

19. A method according to claim 18 wherein said selecting step is made on the basis of an exact number match between said at least one random number and said count value designated to each routed call to the SCP.

20. A method according to any one of claims 17 to 19 further comprising incrementing the counter value in each SSP by one value for each call received by the respective SSP.

21. A method according to any one of claims 17 to 20 further comprising incrementing the count value in said SCP by one value for each call routed to and received by said SCP.

22. A method according to any one of claims 17 to 21 wherein said match is performed by comparator means in said SCP, said comparator means comparing said at least one random number with the count value associated with the routed calls to the SCP.

23. A method according to claim 22 further comprising receiving the at least one random number at a first input of said comparator means, receiving said count value associated with the routed calls at a second input of said comparator means.

24. A method according to claim 23 wherein when said at least one random number is equivalent to respective count values associated with the routed calls, the method further comprises redirecting the call or calls representing the matched count value to the SSP from which the routed calls originated and declaring the associated caller or callers as a winner or winners of the televoting event.

25. A method according to any one of claims 17 to 24 further comprising a subscriber controlling the televoting event notifying the winner or winners.

26. A method according to any one of claims 17 to 25 further comprising terminating with an announcement calls received by respective SSPs that have a counter value less than said predetermined value.

27. A method according to any one of claims 17 to 26 further comprising redirecting those calls routed to said SCP having a count value not matching said at least one random number to their originating SSP and terminating those calls with an announcement.

28. A method according to any one of claims 17 to 27 further comprising setting a limit on the value of the maximum random number generated in accordance with the anticipated number of callers participating in said televoting event.

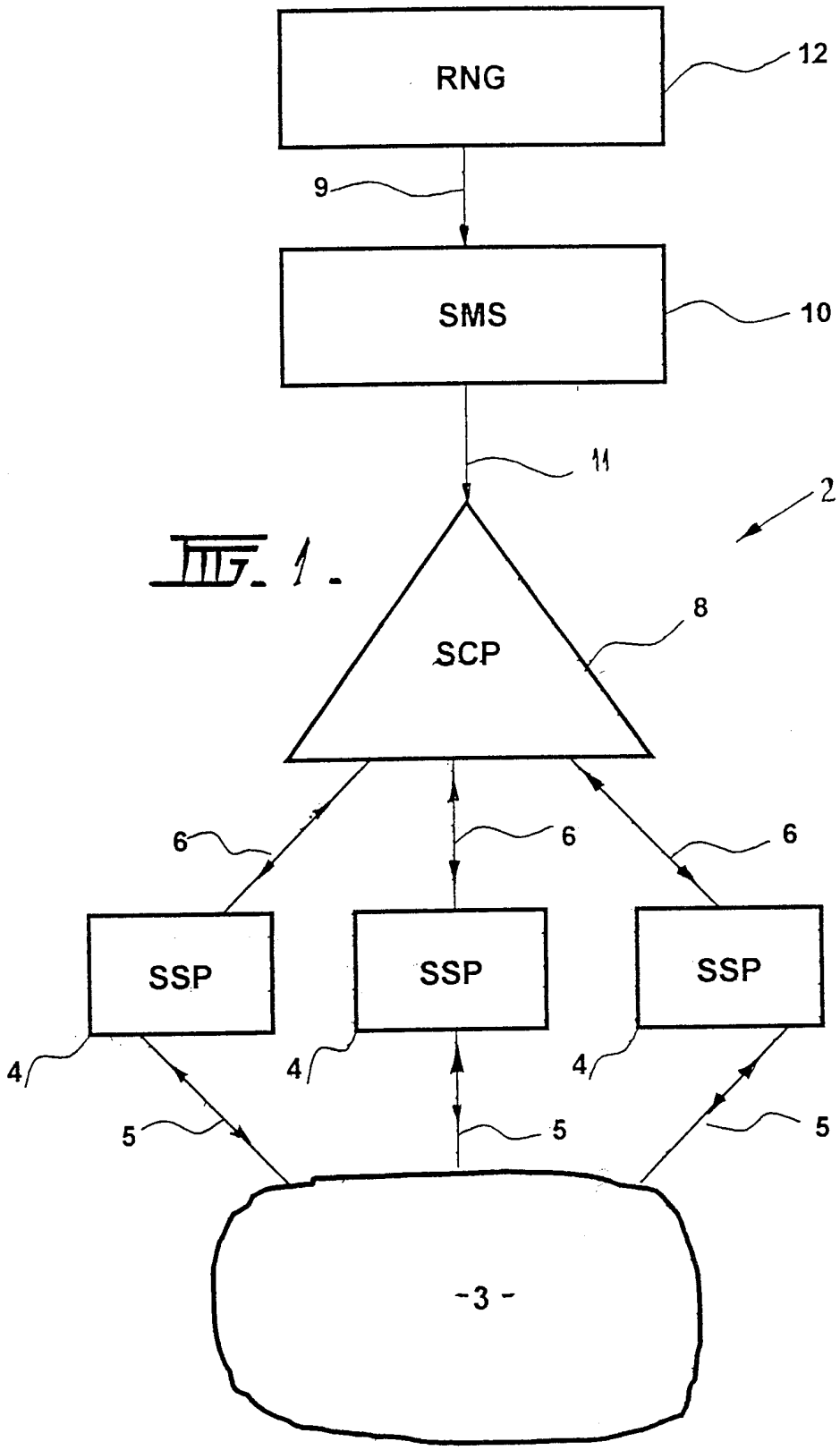

FIG. 1.

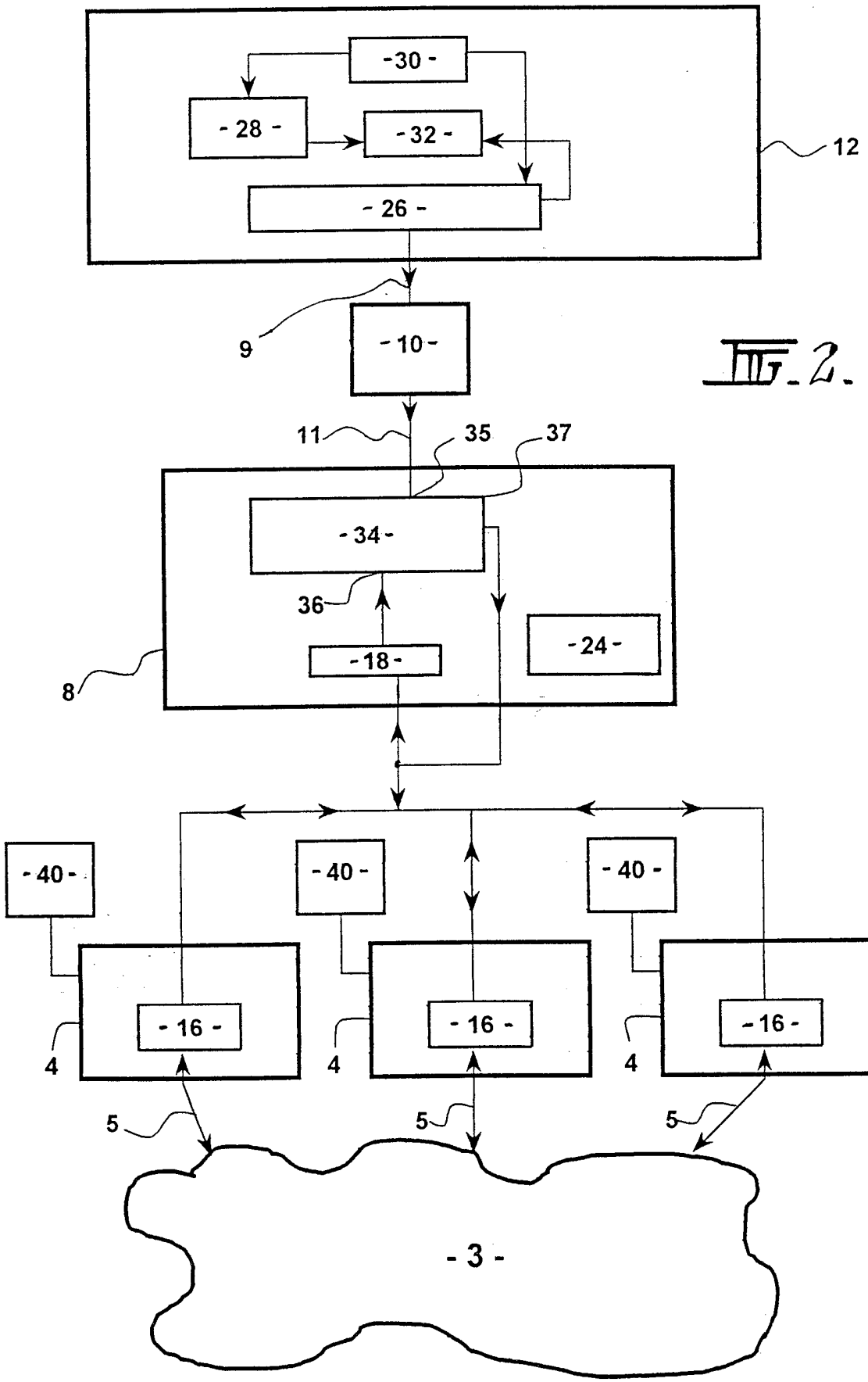

FIG. 2.

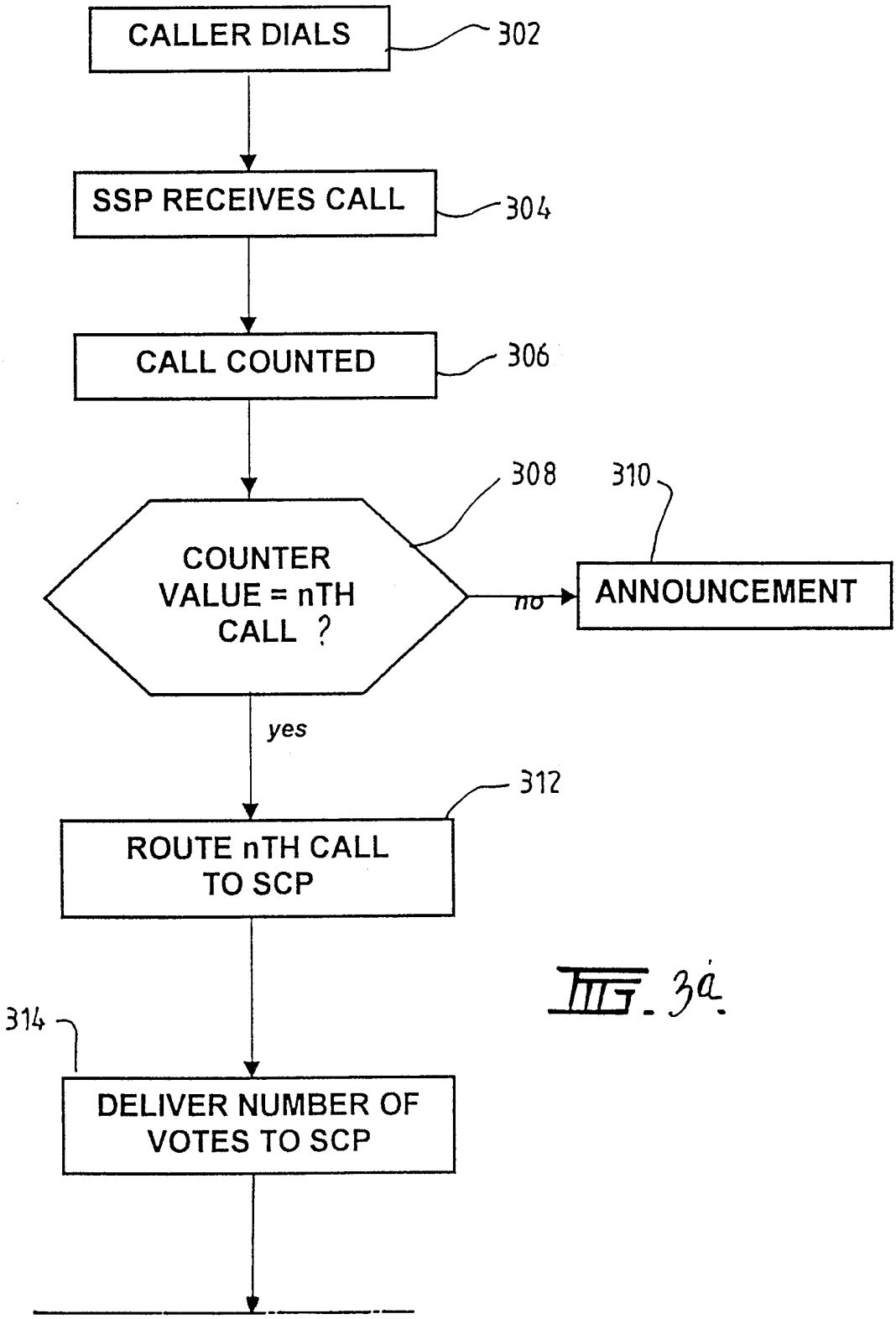
CALLER DIALS
302
SSP RECEIVES CALL
304
CALL COUNTED
306
308
310
COUNTER VALUE = nTH CALL ?
no
ANNOUNCEMENT
yes
312
ROUTE nTH CALL TO SCP
314
DELIVER NUMBER OF VOTES TO SCP

FIG. 3a

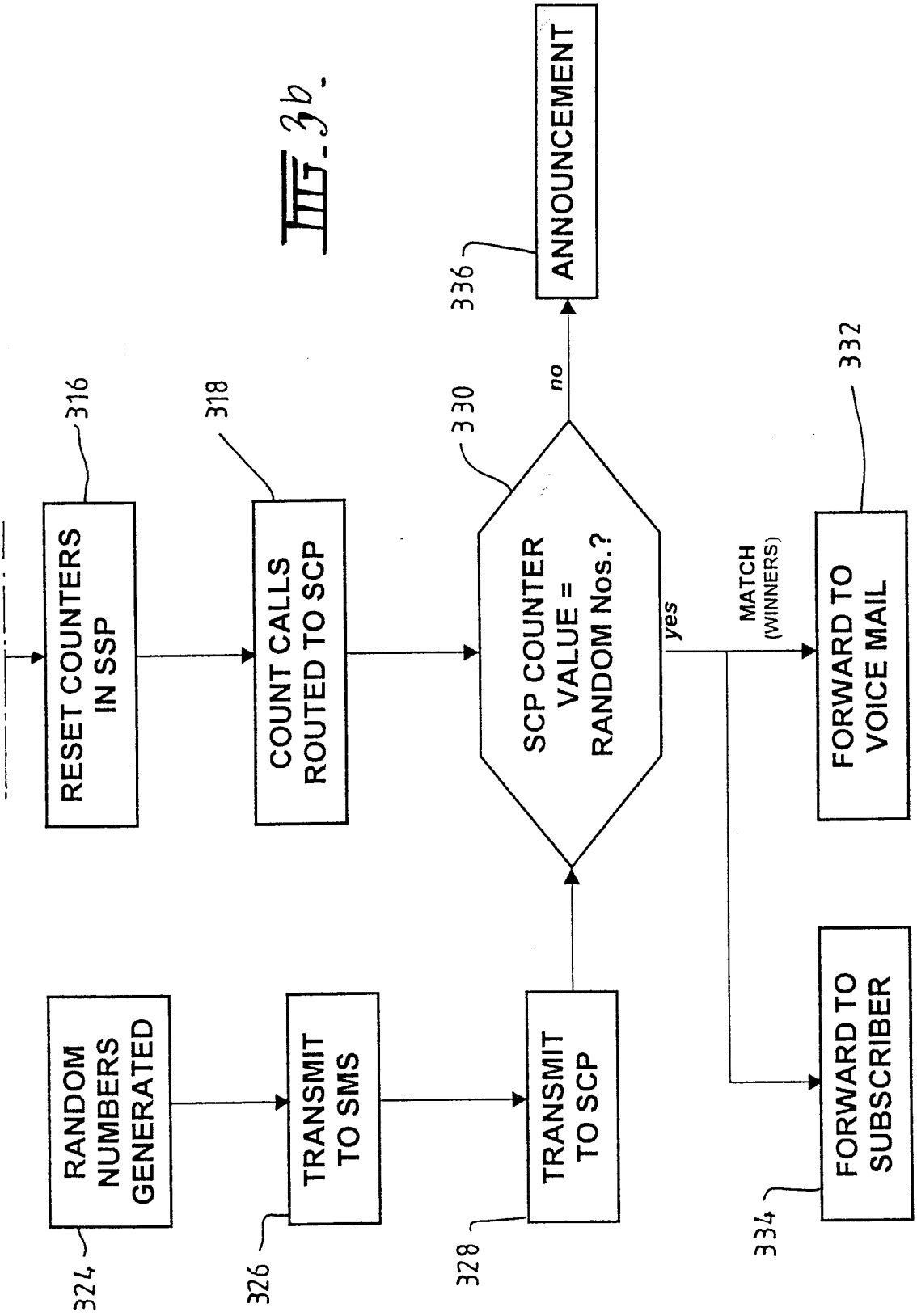
RESET COUNTERS IN SSP
316
COUNT CALLS ROUTED TO SCP
318
SCP COUNTER VALUE = RANDOM Nos.?
330
no
ANNOUNCEMENT
336
yes
MATCH (WINNERS)
FORWARD TO VOICE MAIL
332
RANDOM NUMBERS GENERATED
324
TRANSMIT TO SMS
326
TRANSMIT TO SCP
328
FORWARD TO SUBSCRIBER
334

FIG. 3b

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU 99/00168

A. CLASSIFICATION OF SUBJECT MATTER

Int Cl[6]: H04M 3/42; 11/06; 11/08; H04Q 3/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
AU : AS ABOVE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
WPAT : TELEVOT: TELEPHONE: VOT

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 96/32819 A (NOKIA TELECOMMUNICATIONS OY) 17 October 1996 whole document	1-28
A	EP 0600567 A (KONINKLIJKE PTT NEDERLAND N.V.) 8 June 1994 whole document	1-28

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Date of the actual completion of the international search	Date of mailing of the international search report
29 March 1999	- 7 APR 1999
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200 WODEN ACT 2606 AUSTRALIA Facsimile No.: (02) 6285 3929	Authorized officer **MR ATA MAQBOOL** Telephone No.: (02) 6283 2183

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/AU 99/00168

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member					
WO	96/32819	AU	53370/96	BR	9604925	CA	2217495
		CN	1181863	EP	820681	FI	951802
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END OF ANNEX