



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
16.03.2005 Bulletin 2005/11

(51) Int Cl.7: **G08B 25/14, G08B 26/00**

(21) Application number: **03020878.9**

(22) Date of filing: **15.09.2003**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IT LI LU MC NL PT RO SE SI SK TR
 Designated Extension States:
AL LT LV MK

• **Platz, Axel**
81479 München (DE)

(74) Representative: **Berg, Peter, Dipl.-Ing. et al**
European Patent Attorney,
Siemens AG,
Postfach 22 16 34
80506 München (DE)

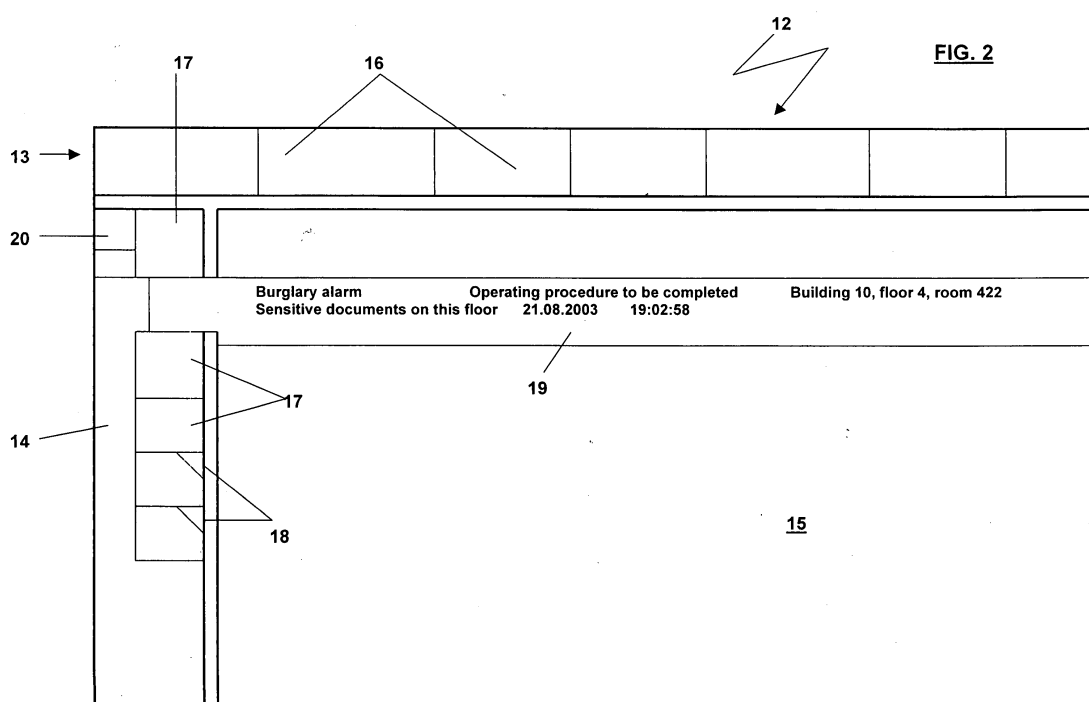
(71) Applicant: **Siemens Building Technologies AG**
8008 Zürich (CH)

(72) Inventors:
 • **Schneider, Klaus-Peter, Dr.**
81669 München (DE)

(54) **User interface for a control station**

(57) A user interface for a control station of a security system, in particular a danger management system, comprises a display screen (12) for the indication of an events in the system and means for the treatment of the indicated events by an operator. The display screen (12) is segmented into three areas, a first area (13) which represents the summary of the events in the system, a second area (14) representing an event list comprising

information about the displayed events in a symbolic form, and a third area (15) which can be used for any application useful for the operation of the control station. The first and the second area (13, 14) cannot be covered by other windows. The display screen (12) is dynamically segmented such that a permanent overview over events is preserved even when a detailed view of a single event is active.



Description

[0001] The present invention refers to a user interface for a control station of a security system, in particular a danger management system, the interface comprising a display screen for the indication of an alarm situation in the system and means for the treatment of the indicated alarm situations by an operator.

[0002] Known danger management systems present in their user interface schema an element that represents the alarm situation in the system in summary form. The most common realization of this element is a group of "lamps" of different colors, one per alarm category. Many interfaces display also a counter which informs of the number of alarms present in the respective category. It is also known to present a list of pending alarms in order to allow the operator to select the alarm to be treated. Such lists however do not allow efficiently checking the degree of completion of the alarm treatment.

[0003] MS-Windows based operating systems allow the quasi-parallel completion of several tasks in different windows. But as the arrangement of the windows and their operation are completely in the user's hands, it cannot be excluded that windows may overlap and hide each other on the screen. This is also the case in several danger management systems where event lists are available but may be hidden by windows related to other activities and/or by a large window opened by the operator for treatment of an event.

[0004] The invention is now intended to provide a user interface which enables efficient and secure alarm treatment, in particular correct interpretation of the displayed information and execution of the adequate responses. In particular, the invention should provide an approach to multiple alarm handling and should make certain that security relevant information displayed on the screen cannot be hidden by other windows.

[0005] This object is achieved by a user interface of the type mentioned at the beginning, characterized in that the display screen is segmented into three areas, a first area which represents the summary of the events in the system, a second area representing an event list comprising information about the displayed in events in a symbolic form, and a third area which can be used for any application useful for the operation of the control station, whereby the first and the second area cannot be covered by other windows.

[0006] A first preferred embodiment of the user interface according to the invention is characterized in that the displayscreen is dynamically segmented such that a permanent overview over events is preserved even when a detailed view of a single event is active.

[0007] The user interface according to the invention has the advantage that the summary of the events in the system and the event list are always brought to the operator's attention and cannot be hidden by other windows.

[0008] A second preferred embodiment of the user in-

terface is characterized in that the first area has the form of a column or row and is provided at a first edge of the display screen, in that the second area has the form of a column or row and is provided perpendicular to the first area at a second edge of the display screen, and in that the third area covers the remaining surface of the display screen. Preferably, the first area is provided at the upper edge and the second area is provided at the left edge of the display screen.

[0009] A third preferred embodiment of the user interface according to the invention is characterized in that the second area comprises a number of display fields which are hereinafter called event tags and comprise an icon that represents the cause of the alarm and furnish the operator with information about the urgency of the action to be taken. Each event tag represents one type of alarm.

[0010] A fourth preferred embodiment of the use interface is characterized in that by the clicking of an event tag the third area is covered by a semi-transparent screen.

[0011] A fifth preferred embodiment of the user interface is characterized in that by clicking of an event tag the respective event tag is expanded to an event object in the form of a row which provides a larger screen extension and allows to display a detailed description of the respective alarm in detailed form.

[0012] Further advantageous and preferred embodiments and developments of the invention are specified in claims 9 to 14.

[0013] The invention is described in greater detail below using an exemplary embodiment and the drawings; in the drawings:

Fig. 1 shows a flow chart of the work sequence of an operator of the control station of a danger management system; and

Fig. 2 shows a diagrammatic view of the display of a user interface according to the invention.

[0014] The control station of a security system, for example a fire detection, a gas detection or an intrusion detection system and also of a danger management system which is placed over the said systems offers a user interface supporting the user, commonly an operator, in managing the system. The description of the user interface in connection with the control station of a danger management system, which control station is hereinafter referred to as danger management station, should not mean any limitation of the user interface to danger management stations. It is herewith expressly pointed out that the user interface shown in Figure 2 can be used for the control station of any suitable security system.

[0015] The most important function of a danger management station is the alarm management, whereby alarms represent conditions the operator must be alerted of and should react on. Alarms are the result of ab-

normal events which are typically detected automatically by event detectors of the fire and security subsystems connected to the danger management station, and range from various kinds of anomalies and faults to severe alarms related to life-safety threats or attacks to property. In the following description both terms alarm and event are used. Other typical functions of a danger management station are the supervision and control of connected subsystems, visual supervision via CCTV systems, visitor's management and others.

[0016] The flow chart of Fig. 1 shows the work sequence of an operator of a danger management system. The operator of a danger management station is engaged in alarm management for a fraction of his time only. Alarms happen asynchronously with the other activities of the operator, but, depending on their type, may have priority over all those activities. Efficient and secure alarm treatment is essential for the prevention of severe consequences. It requires the correct interpretation of the information available and the execution of adequate actions, as for example acknowledging and quitting alarms or calling the police or the fire brigade.

[0017] The cycle of an alarm is as follows:

- The alarm is generated and as long as not selected for treatment by an operator, it is set in "unprocessed" status, requiring action by the operator.
- When selected by the operator, the alarm is in "in-process" status and requires no action by any other operator than the one who has selected it.
- The operator can completely terminate all operations required and can then close the alarm or he can interrupt treatment of an alarm in some cases.

[0018] Normally the operator is engaged in the loop of activities 1 to 3. During execution of any other activity (step 1), he/she shall continuously monitor the system and assess the alarm situation in order to decide whether he/she has to react or not. When the operator becomes aware that one or more alarms require an action (step 2), he decides whether the new alarm(s) have priority on her/his current activity (step 3). When the decision is NO, the operator returns to her/his stand by status (step 1).

[0019] When the decision is YES, the operator has to select which of the pending alarms is the most important one and needs an urgent action (step 4). After this selection, the operator enters in the alarm treatment phase (step 5) in which he performs a number of specific actions. During the alarm treatment phase however he shall continuously monitor the overall situation of the system. When he becomes aware of a new alarm (step 6), he/she has to decide whether this new alarm has priority over the alarm he/she (step 7) is currently treating. When the decision is NO, the operator returns to the treatment of the previous alarm (step 8). When the decision is YES, the operator performs treatment of the most important new alarm (step 9).

[0020] The operator has three possible ways to terminate the treatment of an alarm:

- All necessary actions have been executed and the alarm is closed (step 10). The operator returns to step 1.
- The operator cannot further proceed in the alarm treatment due to external conditions. In this case the operator has to suspend treatment of the respective alarm (step 11) and waits for the necessary external actions (that is e.g. the case when a subsystem has detected a fault, after calling for the intervention of a maintenance team the operator can do nothing but wait for the maintenance team to repair the fault).
- An alarm with higher priority requires treatment. The operator suspends treatment of the current alarm and selects the new one (step 9).

[0021] The description of Fig. 1 should have made evident that the user interface of the danger management station should provide means to guarantee that the operator can get awareness of an incoming alarm, independently of other actions he might be performing, and that he/she will not lose her/his awareness of other possibly more severe alarms when he/she is treating an alarm. It is also necessary to provide efficient means to evaluate the importance of the actions required, so that the decisions in steps 3 and 7 can be made in a secure and reliable way.

[0022] Fig. 2 shows a diagrammatic view of the display 12 of the user interface of a danger management station. The display 12 is divided into three marked off areas, a first area 13, the so-called global scheme, a second area 14, the so-called event bar, and a third area 15, the so-called work area. The global schema 13 which is arranged at the top of the display and has the form of a horizontal strip contains a number of display fields 16 of the "lamp" type representing the summary of all alarms that are present in the system. The alarms are grouped by various criteria among which the most common is the severity of the alarm. There are different severity degrees each of them associated to a different color. Every display field 16 shows also the number of the respective alarms. For instance the display field 16 on the left end of the global schema is provided for severe alarms, the next display field 16 is provided for alarms, the next is provided for exclusions. Other display fields are provided for faults, anomalies, etc. The global scheme 13 is permanent and cannot be covered by other areas or windows.

[0023] The event bar 14 which is arranged on the left side of the display 12 and has the form of a column comprises a number of display fields in the form of event tags 17. The event tags 17 display the most important information about the alarms in a symbolic form; they are formed by a square comprising an icon that represents the cause of the alarm and they have a simple

visual code that immediately furnish the operator with information about the urgency of the actions to be taken. Each event tag 17 represents one type of alarm (e.g. fire, intrusion, gas, etc.) and displays all important features which are necessary to make the initial decisions in steps 3 and 7 of Fig. 1. The event bar 14 is coordinate with the global scheme 13 and provides the operator with an additional level of information. Alarms are not also distinguished according to types but also according to categories in order to have a first indication of their severity. Typical categories are "severe alarm", "fault" and "exclusion".

[0024] Each alarm category has assigned a specific color which is constant in the system. The square of an alarm tag 17 in full color and blinking indicates that an alarm of the type indicated by the icon and of the category indicated by the color is present and is in an unprocessed state. The square in pale color and lightening steady indicates that the respective alarm is currently under treatment by another operator, so that no further action of the operator concerned is required. The square in grey indicates that the alarm has been already seen and is suspended. Each square comprises in one of its corners a triangle 18 to indicate the category of a suspended alarm. The triangle in full color indicates the category and a blinking triangle indicates that the alarm requires action, otherwise the triangle is in a steady state. In summary, a blinking object (square or triangle) indicates that an action is necessary, an object in a steady state indicates that no action is necessary. A larger blinking object (square) indicates a more urgent necessary action than a smaller blinking object (triangle). The event bar 14 is a permanent column and cannot be covered by other areas or windows. If the length of the alarm list on the event bar 14 exceeds the display 12, scrolling can be invoked.

[0025] When the operator selects an alarm by clicking the respective event tag 17, any contents of the work area 15 is covered with a semi-transparent screen and the selected event tag 17 moves a short distance to the right and expands to an event object 19 in the form of a row. The event object provides a larger screen extension and allows to display a detailed description of the alarm in an explicit (verbal) form. The expanded event object 19 contains in verbal form all the information needed by the operator to make his complete selection choice: the cause of the event and its source, date and time of its occurrence, some operating instructions in short form, the action the operator has to perform and the commands to perform the most urgent actions (e.g. silencing the alarm sirens).

[0026] The covering of the contents of the work area 15 with a semi-transparent screen in the moment when an event tag 17 is clicked has the advantage that the operator has the comfort of persistence of his/her previous screen while his/her attention is attracted at the same time to the highlighted expanded event object. The expanded event object confirms the operator of the

selection he has made while keeping and highlighting the relationship of this event with the others present in the event bar 14.

[0027] When the operator needs to assess the complete alarm condition of the danger management system globally and more extensively, he can expand the event bar 14 to a full featured alarm list by selecting a command 20 located top left near to the event tags. 17. The selection of command 20 will produce expansion of all event tags 17 from left to right up to the coverage of the full work area 15 and will provide the display of all expanded event objects. In this configuration the operator has a complete overview of the alarm condition in the danger management system and is in the best position to make the selection decision.

[0028] When the operator wants to go back to his previous activities, he has to select command 20 which selection will force the expanded alarm list to roll back from right to left, discovering the work area 15 which will display its previous contents. In order to select the event treatment for the selected event, it is sufficient to double click the chosen event tag 17. This double click corresponds to the transition from step 4 to step 5 in Figure 2.

[0029] The described means and measures maintain the operator's awareness and allow easy event selection even when the operator is engaged in the loop between steps 5 and 7 in Figure 2.

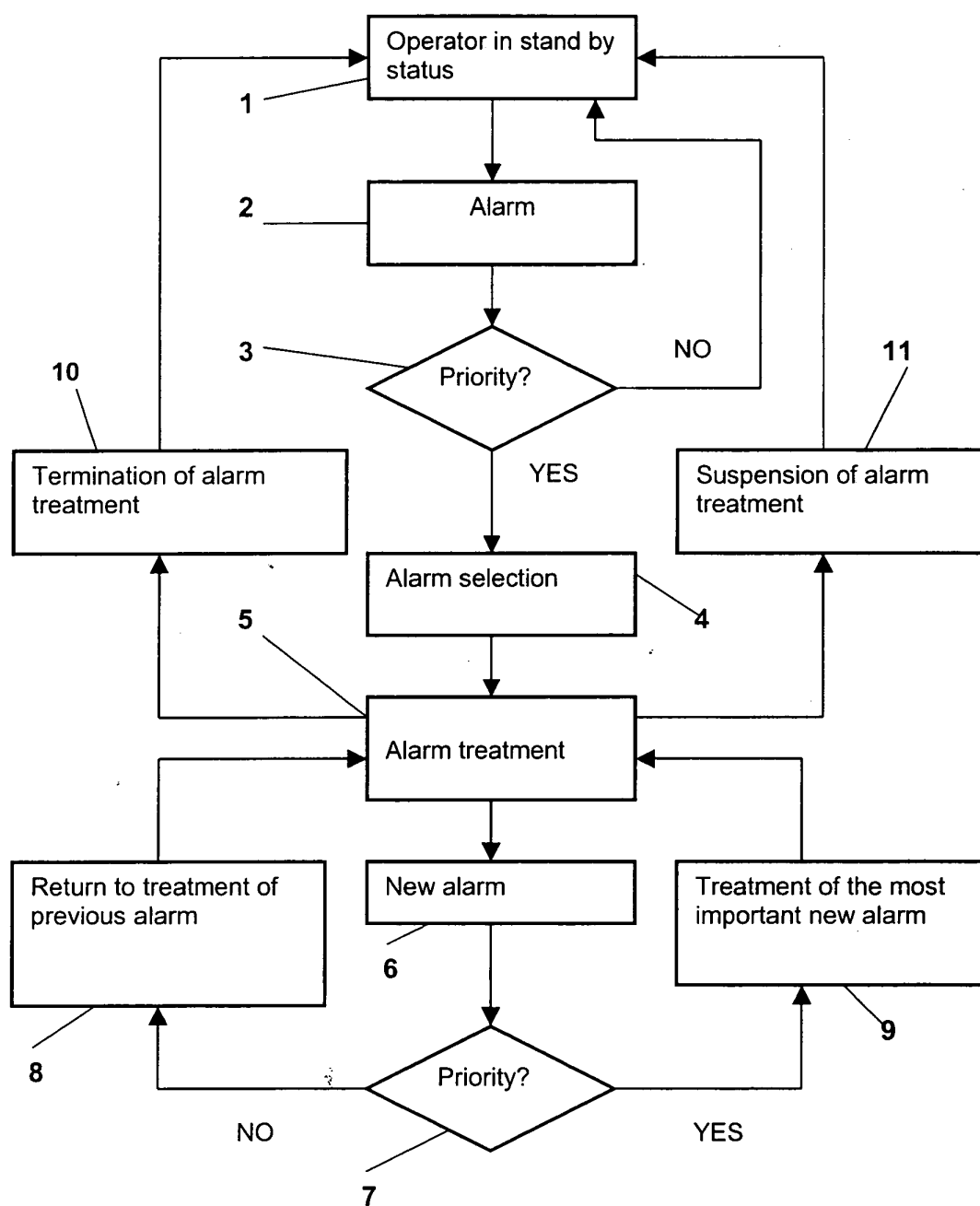
Claims

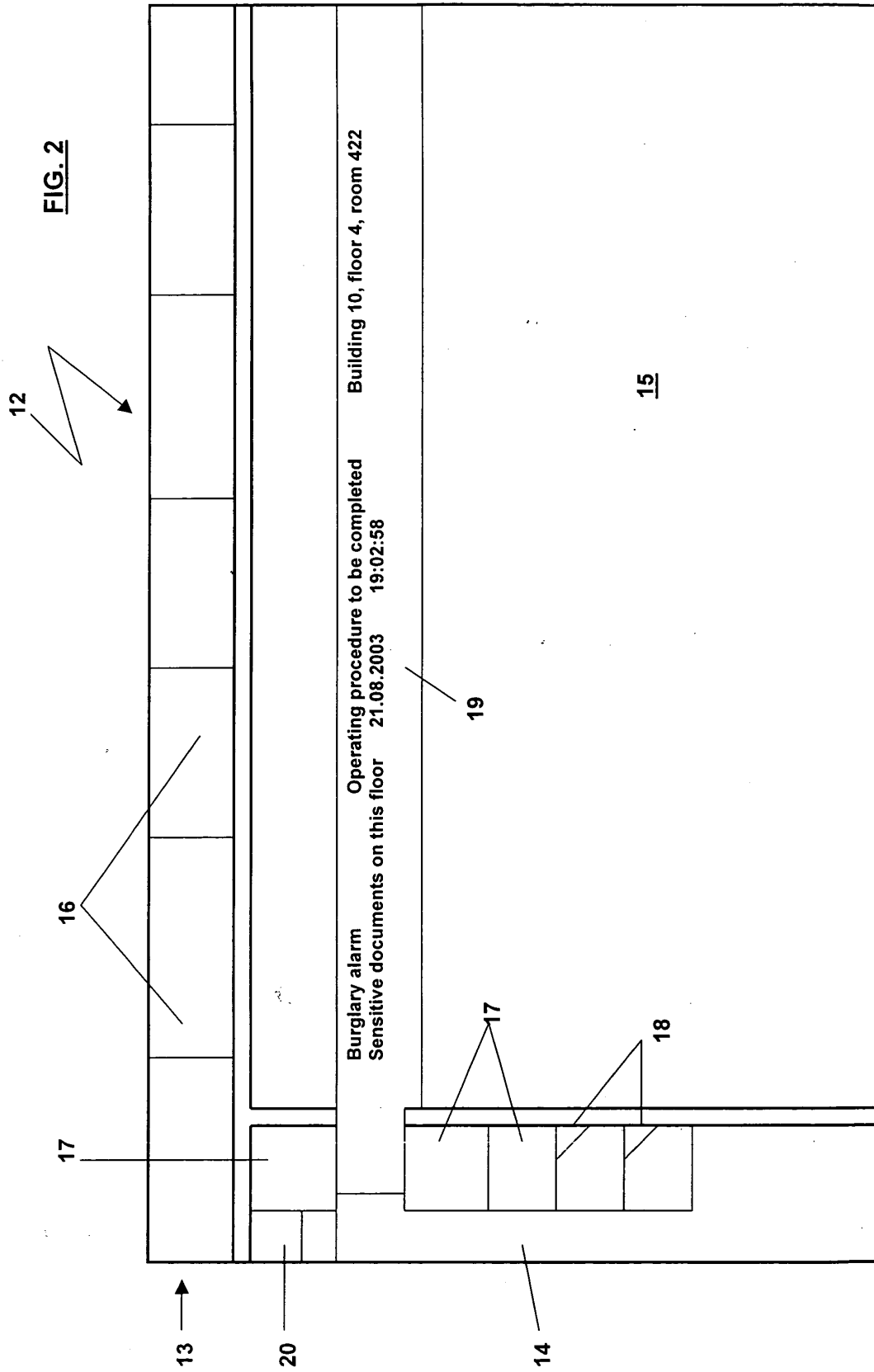
1. User interface for a control station of a security system, in particular a danger management system, the interface comprising a display screen (12) for the indication of an events in the system and means for the treatment of the indicated events by an operator, **characterized in that** the display screen (12) is segmented into three areas, a first area (13) which represents the summary of the events in the system, a second area (14) representing an event list comprising information about the displayed events in a symbolic form, and a third area (15) which can be used for any application useful for the operation of the control station, whereby the first and the second area (13, 14) cannot be covered by other windows.
2. User interface according to claim 1, **characterized in that** the display screen (12) is dynamically segmented such that a permanent overview over events is preserved even when a detailed view of a single event is active.
3. User interface according to claim 2, **characterized in that** the first area (13) has the form of a column or row and is provided at a first edge of the display screen (12), **in that** the second area (14) has the form of a column or row and is provided perpendic-

ular to the first area (13) at a second edge of the display screen (12), and **in that** the third area covers the remaining surface of the display screen (12).

4. User interface according to claim 3, **characterized in that** the first area (13) is provided at the upper edge and **in that** the second area (14) is provided at the left edge of the display screen (12). 5
5. User interface according to one of claim 1 to 4, **characterized in that** the second area (14) comprises a number of display fields which are herein-after called event tags (17) and comprise an icon that represents the cause of the alarm and furnish the operator with information about the urgency of the action to be taken. 10 15
6. User interface according to claim 5, **characterized in that** each event tag (17) represents one alarm. 20
7. User interface according to claim 5 or 6 **characterized in that** by the clicking of an event tag the third area (15) is covered by a semi-transparent screen.
8. User interface according to claim 7, **characterized in that** by clicking of an event tag (17) the respective event tag (17) is expanded to an event object (19) in the form of a row which provides a larger screen extension and allows to display a detailed description of the respective alarm in detailed form. 25 30
9. User interface according to claim 8, **characterized in that** the second area (14) can be expanded to a full featured alarm list with all event tags (17) being expanded from left to right up to the coverage of the full third area (15). 35
10. User interface according to one of claims 1 to 9, **characterized in that** the first area (13) provides information about the categories of the alarms to have a first indication of their severity. 40
11. User interface according to claim 10, **characterized in that** both in the first and the second area (13, 14) each alarm category has assigned a specific color which is constant in the system. 45
12. User interface according to claims 11 and 6, **characterized in that** each event tag (17) is formed by a square comprising the said icon and a triangle (18) in a corner of the square to indicate the category of a suspended alarm. 50
13. User interface according to claim 12, **characterized in that** a triangle (18) in full color indicates the category of the alarm and a blinking triangle (18) indicates that the alarm requires action. 55

14. User interface according to claim 13, **characterized in that** a blinking square or triangle (18) indicates that an action and a steady square or triangle (18) indicates that no action is necessary, and **in that** a blinking square indicates a more urgent necessary action than a blinking triangle (18).

**FIG. 1**





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 03 02 0878

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
Y	US 6 529 137 B1 (ROE WILLIAM) 4 March 2003 (2003-03-04) * column 1, line 60 - line 65 * * column 2, line 1 - line 20 * * column 2, line 60 - line 65 * * column 3, line 20 - column 4, line 39 * * column 5, line 1 - line 11; figures 2-5 *	1-11	G08B25/14 G08B26/00
A	---	12-14	
Y	US 5 297 252 A (BECKER DON) 22 March 1994 (1994-03-22) * column 2, line 35 - line 55 * * column 5, line 1 - column 6, line 17; figures 2,3 *	1-11	
A	---	12-14	
A	EP 0 940 787 A (NOHMI BOSAI LTD) 8 September 1999 (1999-09-08) * paragraphs [0009], [0014] - [0019], [0026], [0027]; figures 2,4C,4D * -----	1-12	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			G08B
The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 13 February 2004	Examiner Dascalu, A
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

1
EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 03 02 0878

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

13-02-2004

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6529137	B1	04-03-2003	NONE
US 5297252	A	22-03-1994	NONE
EP 0940787	A	08-09-1999	JP 3390204 B2 24-03-2003
			JP 6282770 A 07-10-1994
			JP 6290381 A 18-10-1994
			EP 0940787 A2 08-09-1999
			AU 668054 B2 18-04-1996
			AU 1613395 A 08-06-1995
			AU 659972 B2 01-06-1995
			AU 5905194 A 29-09-1994
			CN 1096385 A ,B 14-12-1994
			CN 1121614 A ,B 01-05-1996
			DE 69424334 D1 15-06-2000
			DE 69424334 T2 30-11-2000
			DE 69428816 D1 29-11-2001
			DE 69428816 T2 11-04-2002
			EP 0617390 A2 28-09-1994
			US 5428341 A 27-06-1995