



ΕΥΡΩΠΑΙΚΗ
ΕΝΩΣΗ ΕΥΡΩΠΑΪΚΟ
ΤΑΜΕΙΟ

ΠΕΡΙΦΕΡΕΙΑΚΗΣ

Υπουργείο Παιδείας και Θρησκευμάτων, Πολιτισμού και Αθλητισμού



η περιφέρεια στο επίκεντρο της ανάπτυξης



Παραδοτέο 5.2. Πλατφόρμα ταχείας Αποτίμησης Σεισμικών Βλαβών

ΕΘΝΙΚΟ ΜΕΤΣΟΒΙΟ ΠΟΛΥΤΕΧΝΕΙΟ

ΣΕΠΤΕΜΒΡΙΟΣ '15

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1 Introduction

This document is the user manual of the Front End Application or Graphical User Interface for the RARE system, which has been developed within the project. The GUI has been implemented as a web application using Angular, which is an open-source web application framework mainly maintained by Google and by a community of individual developers and corporations to address many of the challenges encountered in developing single-page applications. It aims to simplify both the development and the testing of such applications by providing a framework for client-side model–view–controller (MVC) and model–view–viewmodel (MVVM) architectures, along with components commonly used in rich client Internet applications.

The user manual is structured in the same way as the use cases described within other deliverables and contains a walk through all of the functionality of the RARE system in logical steps.

2 Detection of an earthquake/presentation to the user

When no earthquake is ongoing, the round indication presented in the figure below is green and no alarm is sounded.

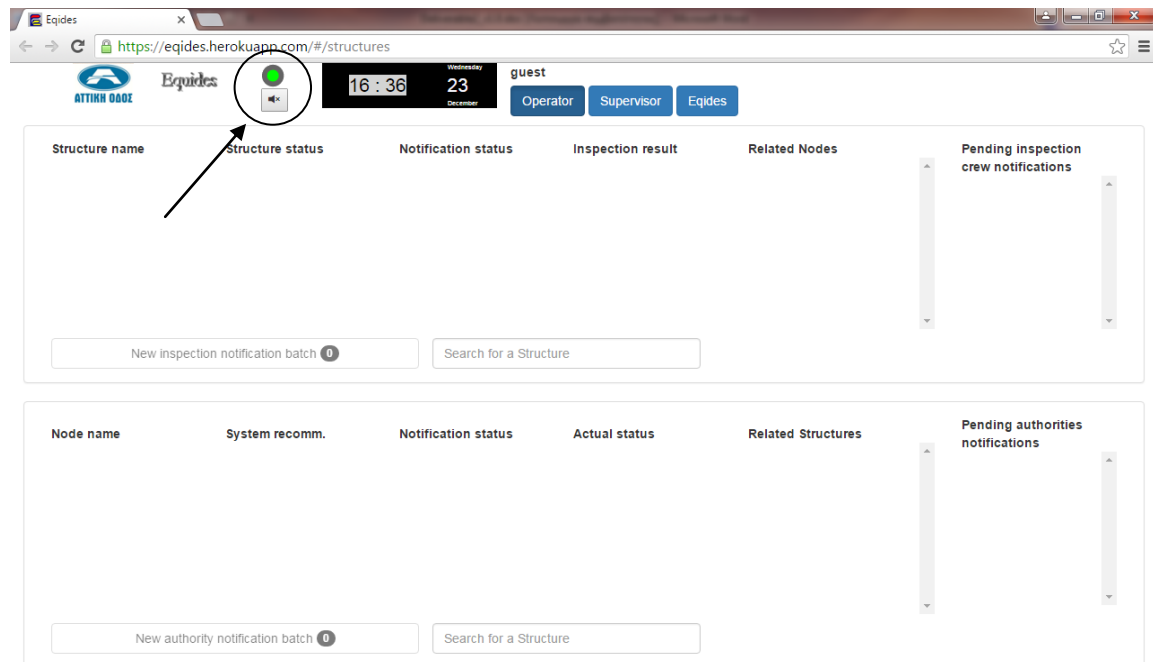


Figure 1. No earthquake ongoing

Whenever the RARE system detects an earthquake occurrence, the round indication presented in the figure below turns red and an audible alarm is issued. The user can silence the alarm using the speaker icon below.

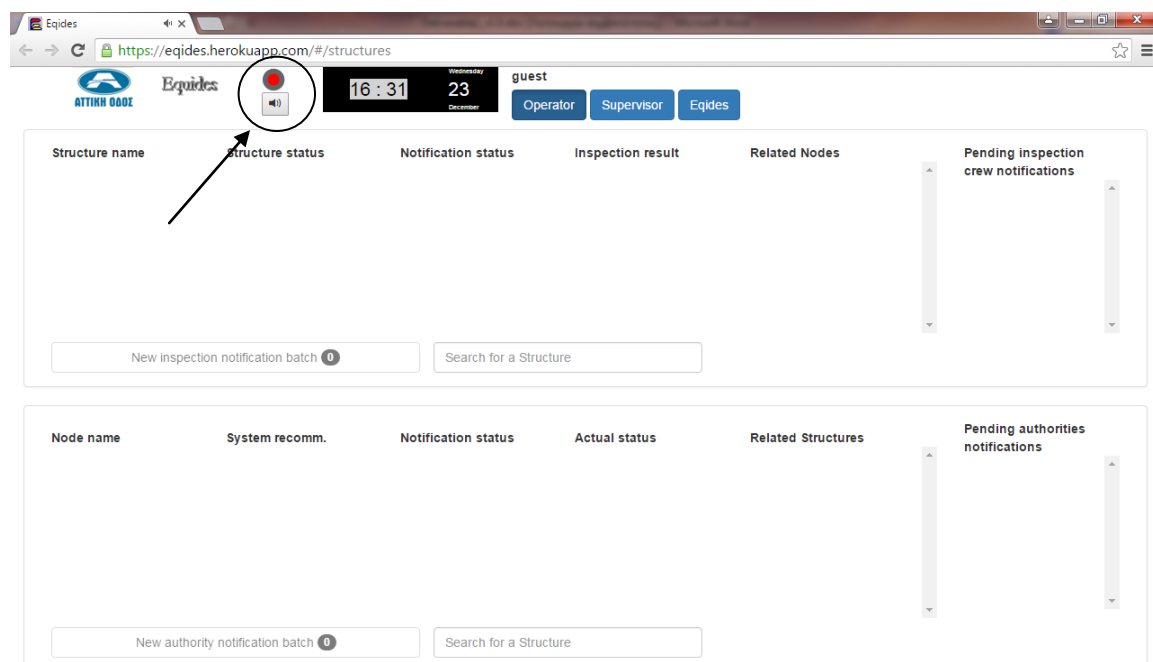


Figure 2. Earthquake indication and muting the alarm

3 Presenting the user with the list of potentially damaged structures

When an earthquake occurs and the RARE system calculates the damage indices for each structure, it can discern those which may have experienced damage rendering them potentially unsafe. The first step when that information is available is to present it to the user so that the relevant workflows can be initiated. In order to avoid overloading the user, only structures whose related “Structure status” state variables have a value of “Potentially damaged” or “Damaged” AND the current value of the actual node status of at least one related node is “Open” are presented. The presentation is done in a table, containing 1 row per structure and 5 columns (see figure below):

1. The first contains the name of the structure
2. The second contains the value of the related “Structure status” state variable
3. The third contains the current status of the “inspection notification” workflow state variable related to the specific structure
4. The fourth contains the current status of the “inspection result collection” workflow state variable related to the specific structure
5. The fifth contains the related “node” entity instances, using color coding to indicate their actual status (current value of the related “Actual status” state variable). The colors used are vivid red if the value is “Open” and grey if the value is “Closed”

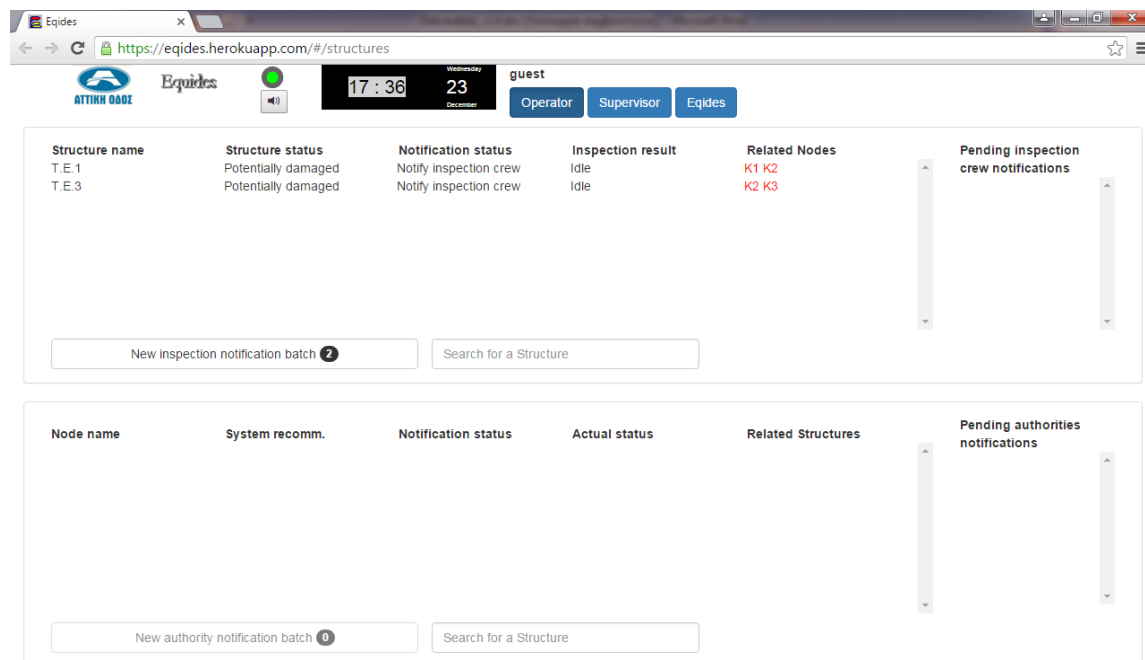


Figure 3. Presenting the user with the list of potentially damaged structures

When inspections have not yet been initiated for some of the structures, the related button used to create a new inspection notification batch is enabled and the number of inspections to be contained in the batch is also shown.

4 Assisting the user to notify field crews so as to inspect potentially damaged structures

Once the user clicks on the “New inspection notification batch” button, a new batch is created and appears in the top right hand side pane. At the same time, the contents of the “Notification status” column change to “Notification batch created” to indicate that the next step is to notify the crews so as to perform field inspections. The “New inspection notification batch” button is greyed out, since no other inspection notifications are pending. The procedure is presented in the figure below.

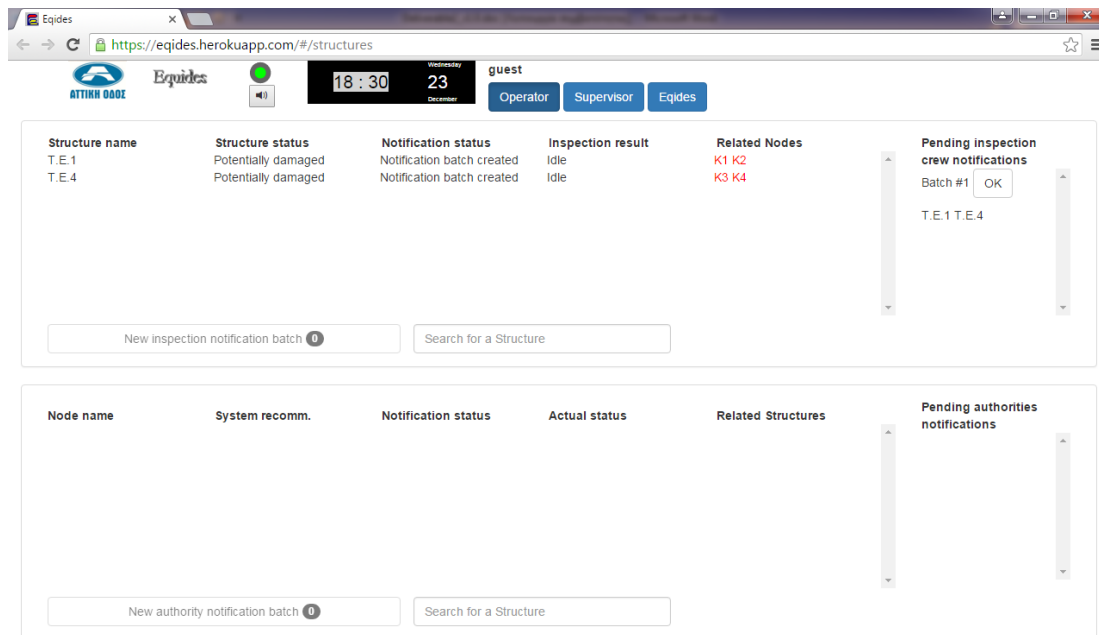


Figure 4. Creating a new inspection notification batch

The next step is to notify the inspection crews on which structures may have suffered damage and need inspection. Once the inspection notifications have been successfully issued, the user will have to click on the “OK” button within the specific batch to notify the RARE system on the event. Once the button is clicked, further confirmation is requested in the form of a popup window, as per the figure below.

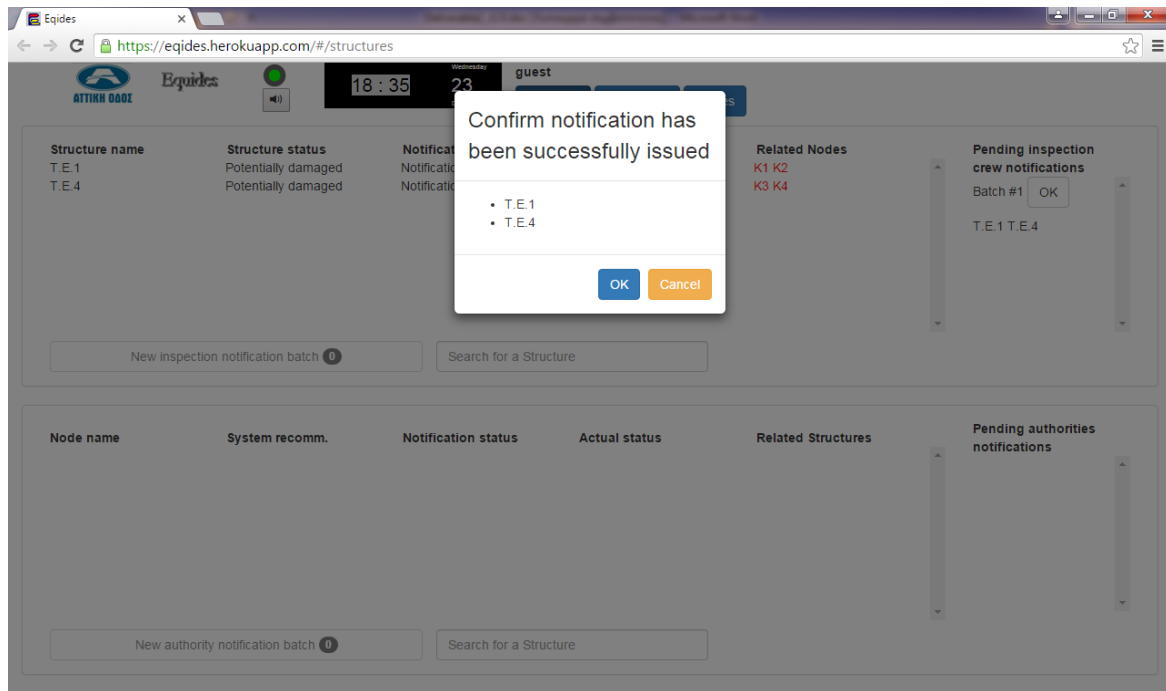


Figure 5. Verifying the correct notification of inspection crews

When the user clicks on “OK”, the contents of the “Notification status” column change to “Inspection crew notified” to indicate that the crews have been successfully notified and the contents of the “Inspection result” column change to “Inspection result pending” to indicate that the operator is waiting for the results to come in, as presented in the figure below.

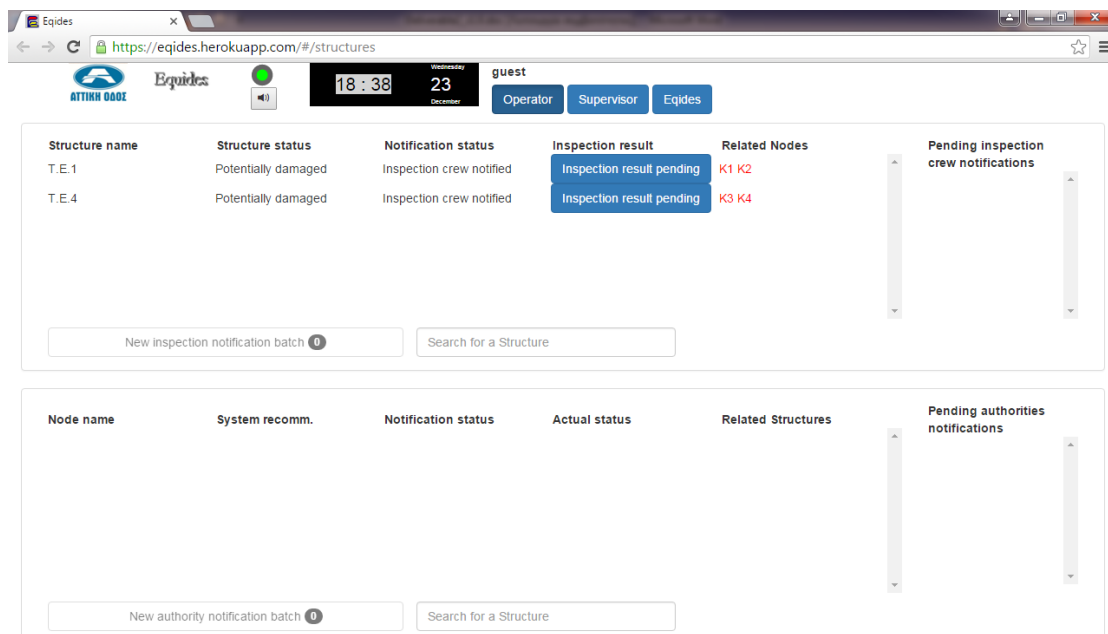


Figure 6. Indicating the inspections for which results are pending

5 Assisting the user to collect inspection results and record the actual structure status

When an inspection result comes in, the user will have to click on the respective entry under the “Inspection result” column (which is in fact a clickable button), so as to record the outcome. Once a button is clicked, a popup appears, enabling the operator to declare the actual status of the structure and to provide a textual representation of the inspection outcome for future use, as presented in the figure below. The user can cancel the action at any time by clicking on the “Cancel” button.

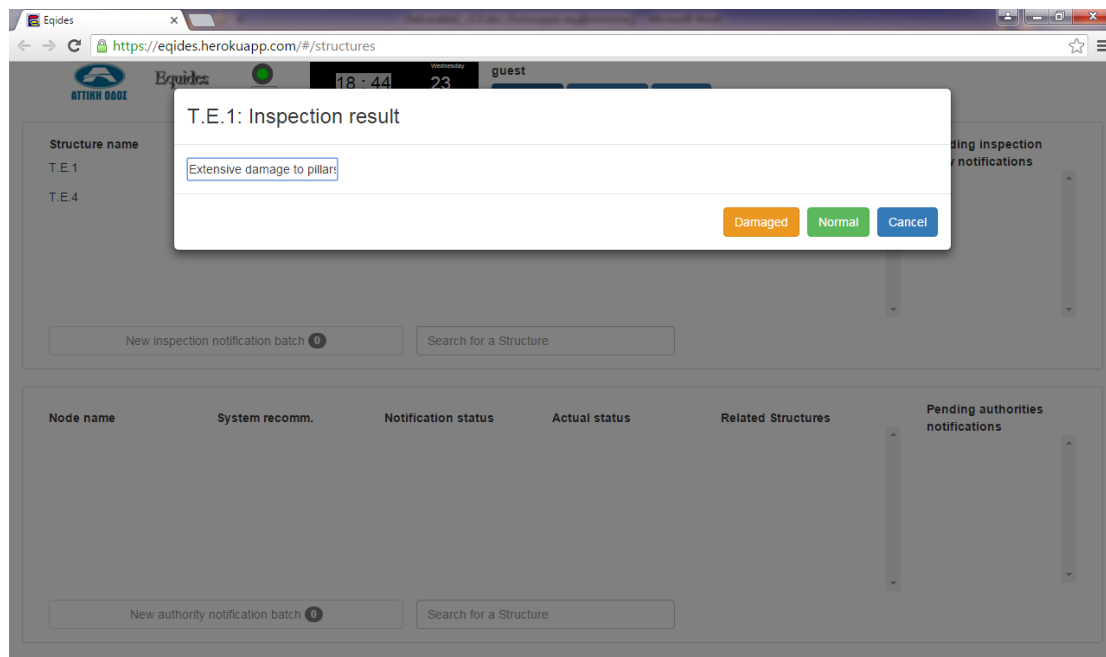


Figure 7. Recording the inspection result

If the user clicks on the “Damaged” button, the value of the entry under the “Structure status” column is changed to “Damaged”, since this is the actual status of the structure after a field inspection has been carried out. At the same time, the value of the entry within the “Inspection result” column changes to “Inspection result collected” and the respective nodes which lead to the damaged structure appear in the table at the bottom of the interface, together with the system recommendation, the current status of any activity to notify Civil Protection Authorities, the actual status of the node and the related structures to which access will be prohibited if the node is closed. This is presented in the figure below.

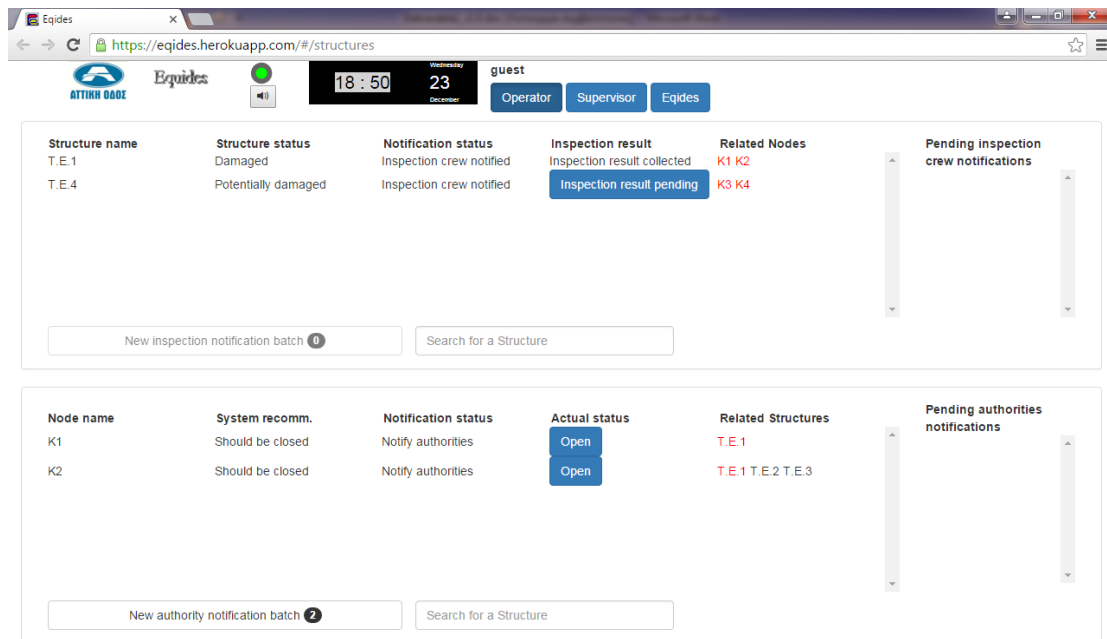


Figure 8. Declaring a structure as “Damaged”

If, on the other hand, the user clicks on the “Normal button, the respective structure is removed from the top table and nothing is recorded in the bottom one, as presented in the figure below for T.E. 4.

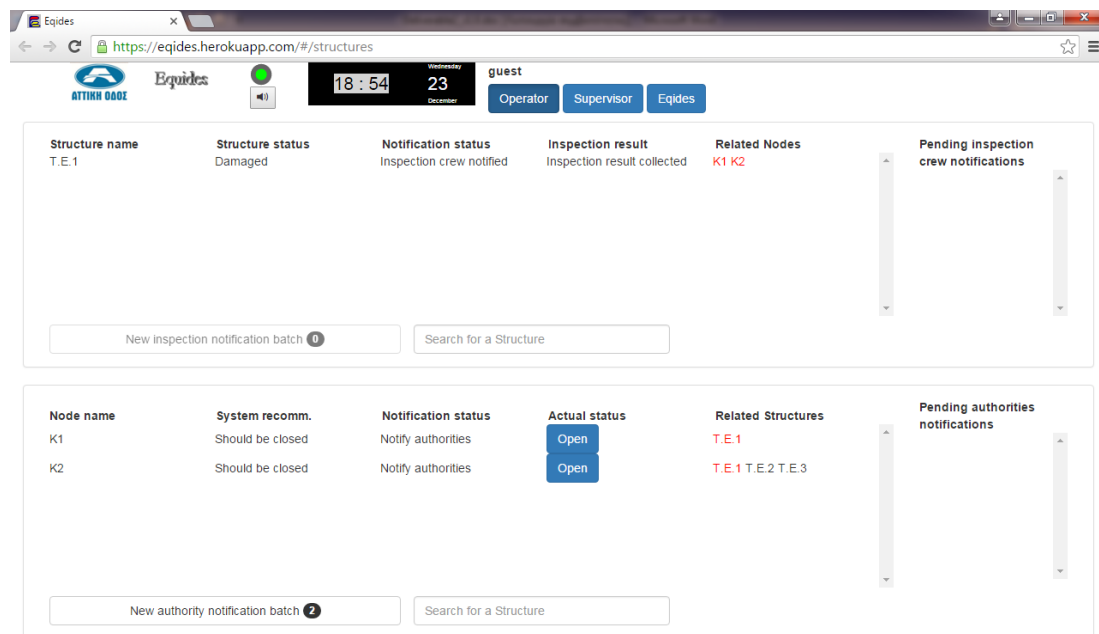


Figure 9. Declaring a structure as “Normal”

6 Assisting the user to notify the authorities regarding the indicated nodes

Once a structure is declared as “Damaged”, the Civil Protection Authorities have to be notified so that the respective nodes are closed and access to it is restricted for the general public. For that purpose, the same batching approach employed for inspection notifications will be followed. The user can click on the “New authority notification batch” button to create a new notification batch, as presented in the figure below.

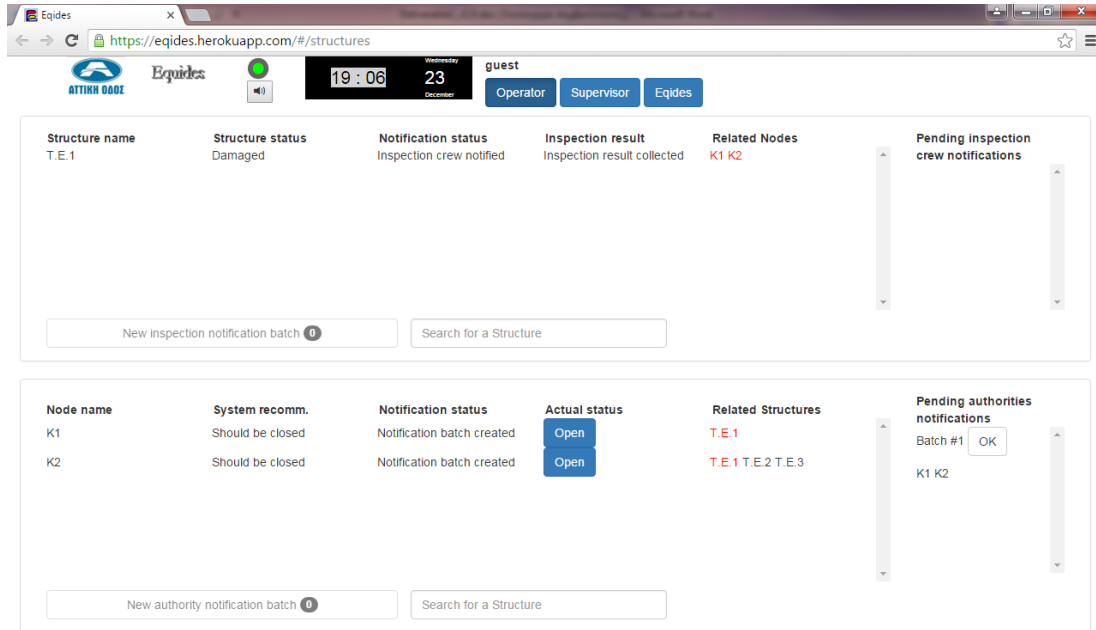


Figure 10. Creating a new authority notification batch

Once the authorities are notified, the operator will have to confirm by click on the “OK” button, as presented in the figure below.

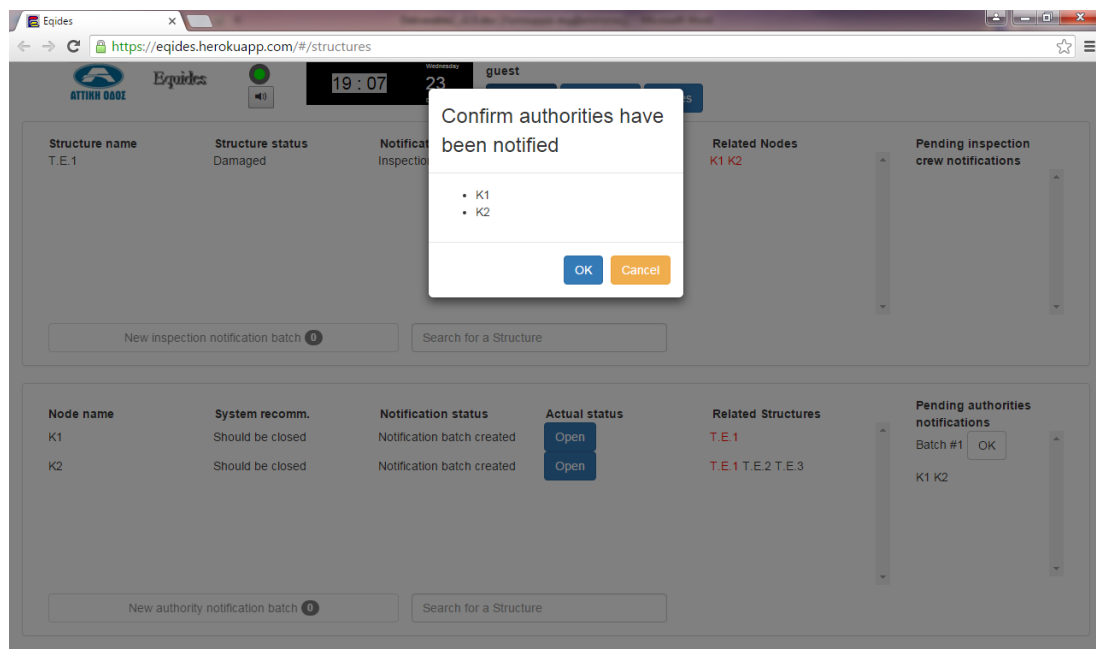


Figure 11. Verifying the notification of the authorities

The contents of the “Notification status” column change accordingly.

The screenshot shows the Eqides web application interface. At the top, there is a navigation bar with the Eqides logo, a clock showing 19:09 on Wednesday, 23 December, and user role buttons for Operator, Supervisor, and Eqides. Below the navigation bar, there are two main data tables. The first table displays structure information, and the second table displays node information. Both tables include columns for names, statuses, notification statuses, and related items. The notification status for the structure T.E.1 is 'Inspection crew notified', and for nodes K1 and K2, it is 'Authorities notified'. The actual status for nodes K1 and K2 is 'Open', indicated by blue buttons. There are also search bars and notification batch buttons at the bottom of each table.

Structure name	Structure status	Notification status	Inspection result	Related Nodes	Pending inspection crew notifications
T.E.1	Damaged	Inspection crew notified	Inspection result collected	K1 K2	

Node name	System recomm.	Notification status	Actual status	Related Structures	Pending authorities notifications
K1	Should be closed	Authorities notified	Open	T.E.1	
K2	Should be closed	Authorities notified	Open	T.E.1 T.E.2 T.E.3	

Figure 12. Successful notification of the authorities

7 Changing the actual status of a node

Then, the user can change the actual status of a node by clicking on the respective table entry under the column “Actual status”. A popup appears for confirmation, as presented in the figure below.

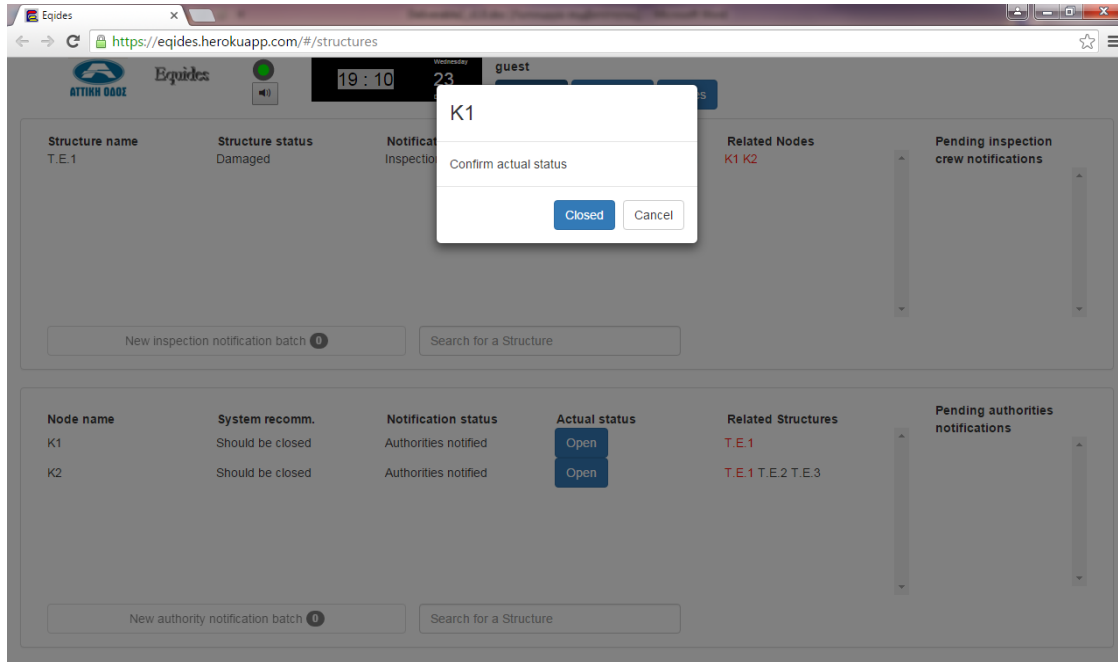


Figure 13. Changing the actual status of a node

Only transitions from “Open” to “Closed” shall be allowed to the user, i.e. when the current value of the state variable is “Closed”, the item is not clickable, as presented in the figure below.

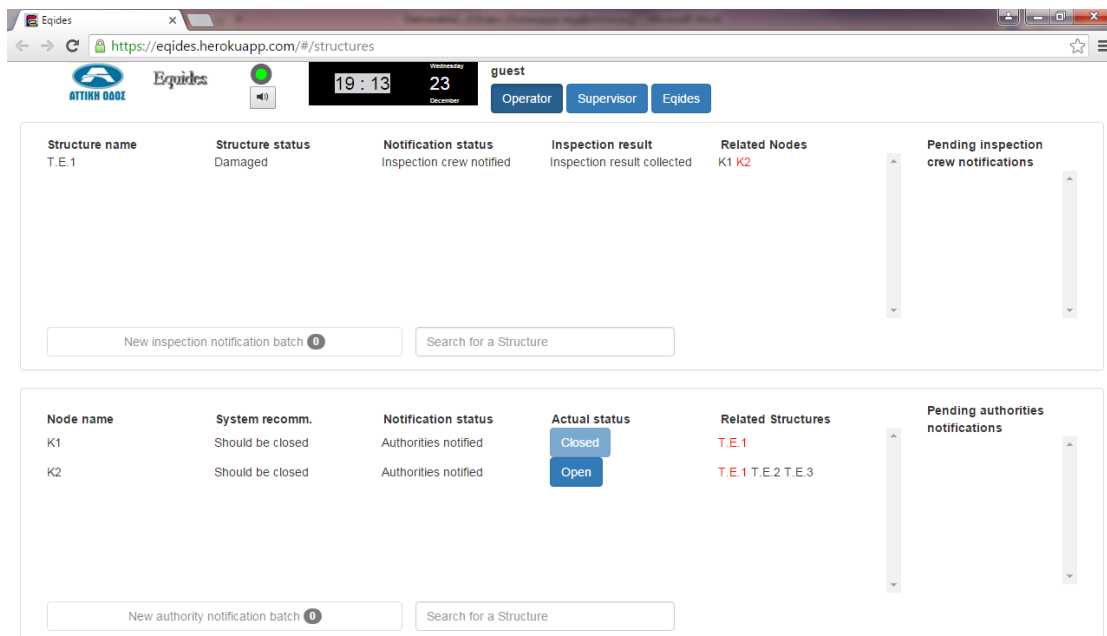


Figure 14. The actual status of “closed” nodes cannot be changed

8 Manually setting the value of the “structure status” state variable

If the user logs in as an administrator, he/she can change the status of a structure from “Normal” to “Damaged” and vice versa. Since only “Potentially damaged” or “Damaged” structures appear in the top table, a separate toggle button, visually connected to the table exists only when the user has logged in with the supervisor role, as presented in the figure below.

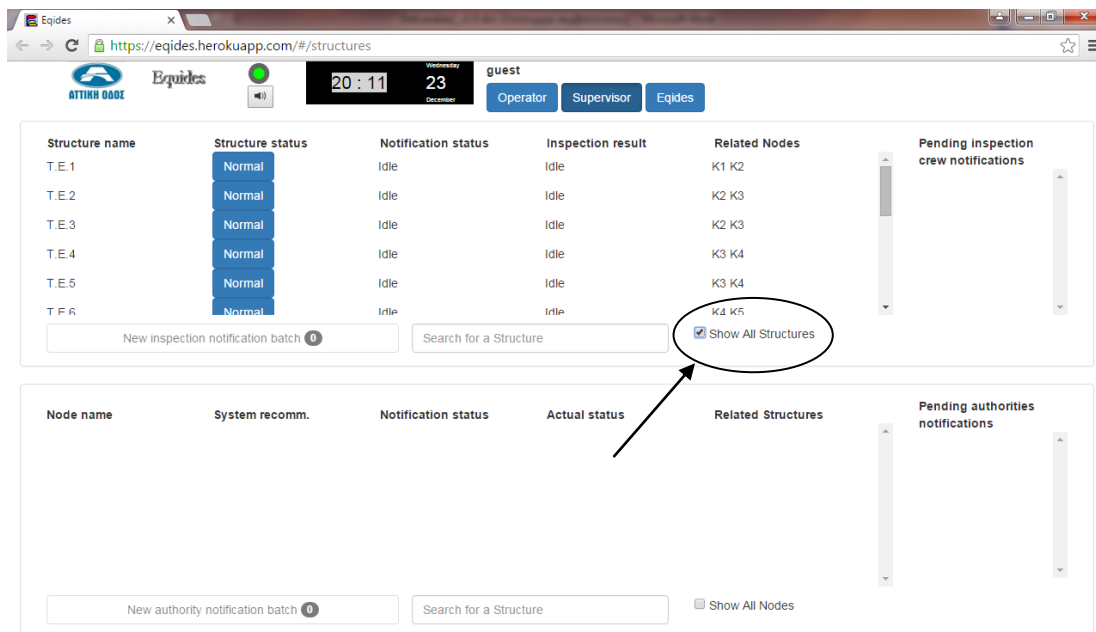


Figure 15. Showing all structures when logged in as supervisor

Since the supervisor can receive information regarding the actual structure of a structure irrespective of whether an earthquake has occurred, he/she has the capability to change it by clicking on the respective table entry. A reason for the change will have to be provided as a free text entry within a popup that appears when the respective button is clicked. The figures below present what happens when the user clicks on the button when the current state of the structure is “Normal” and it is changed to “Damaged”.

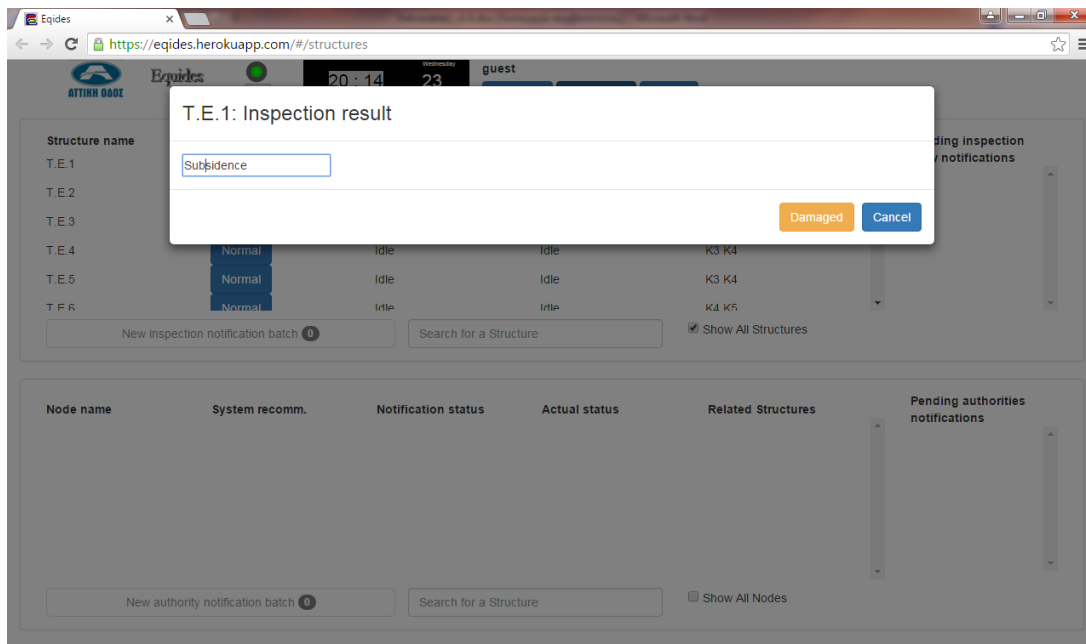


Figure 16. Changing the structure status from “Normal” to “Damaged” (1/2)

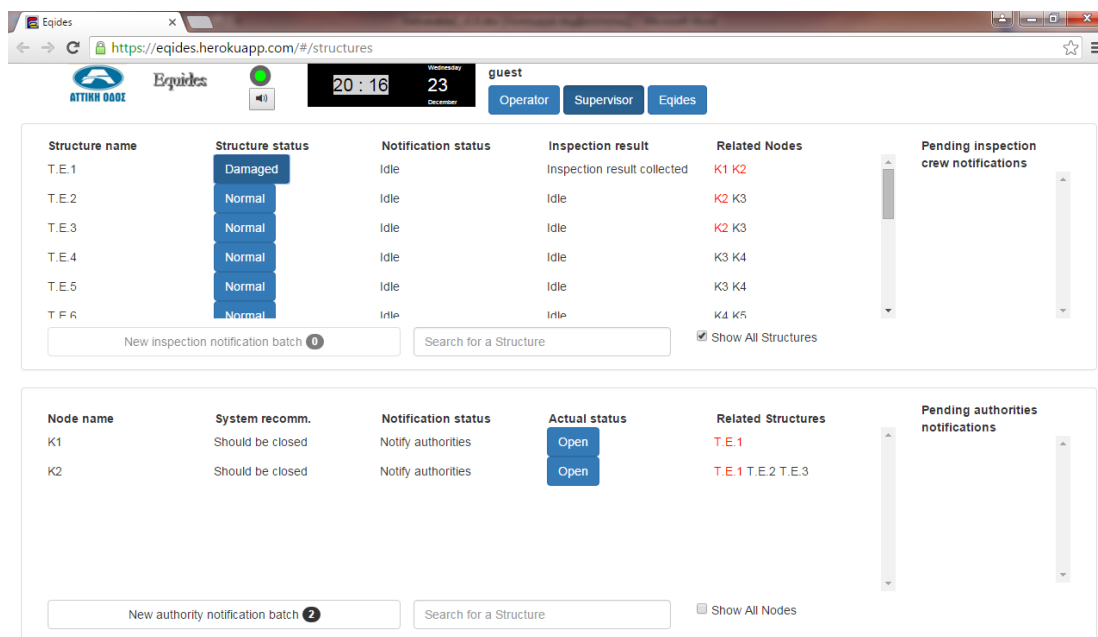


Figure 17. Changing the structure status from “Normal” to “Damaged” (2/2)

The remainder of the workflow is the same as the one resulting from an earthquake and has already been presented in previous sections. The figures below present what happens when the user clicks on the button when the current state of the structure is “Damaged” and it is changed to “Normal”.

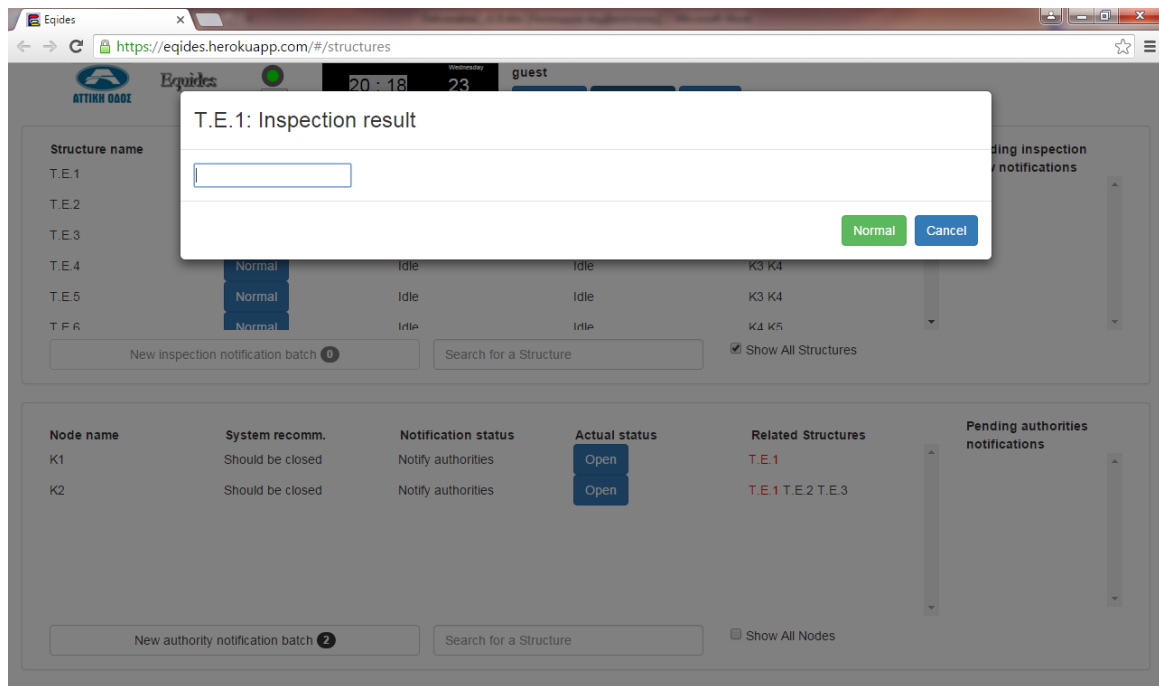


Figure 18. Changing the structure status from “Damaged” to “Normal” (1/2)

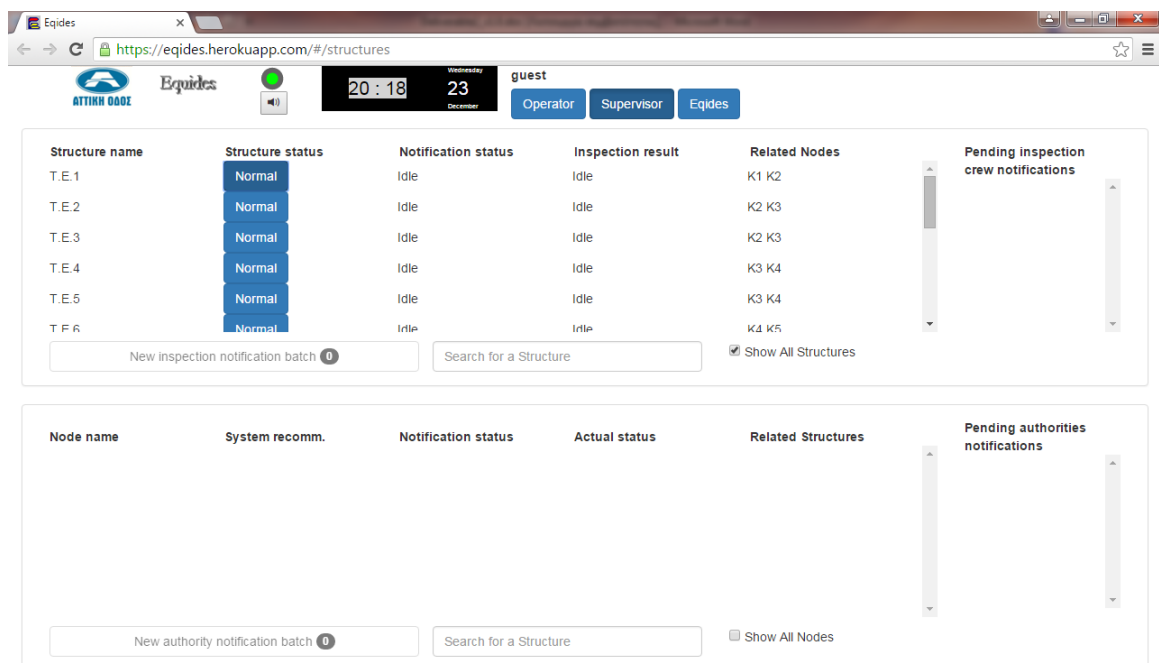


Figure 19. Changing the structure status from “Damaged” to “Normal” (2/2)

9 Manually setting the value of the “node status” state variable

If the user logs in as an administrator, he/she can change the status of a node from “Open” to “Closed” and vice versa. Since the supervisor can receive information regarding the actual structure of a structure irrespective of whether an earthquake has occurred, he/she has the capability to change it by clicking on the respective table entry. Confirmation for the change will have to be provided within a popup that appears when the respective button is clicked. The figures below present what happens when the user clicks on the button when the current state of the node is “Open” and it is changed to “Closed”.

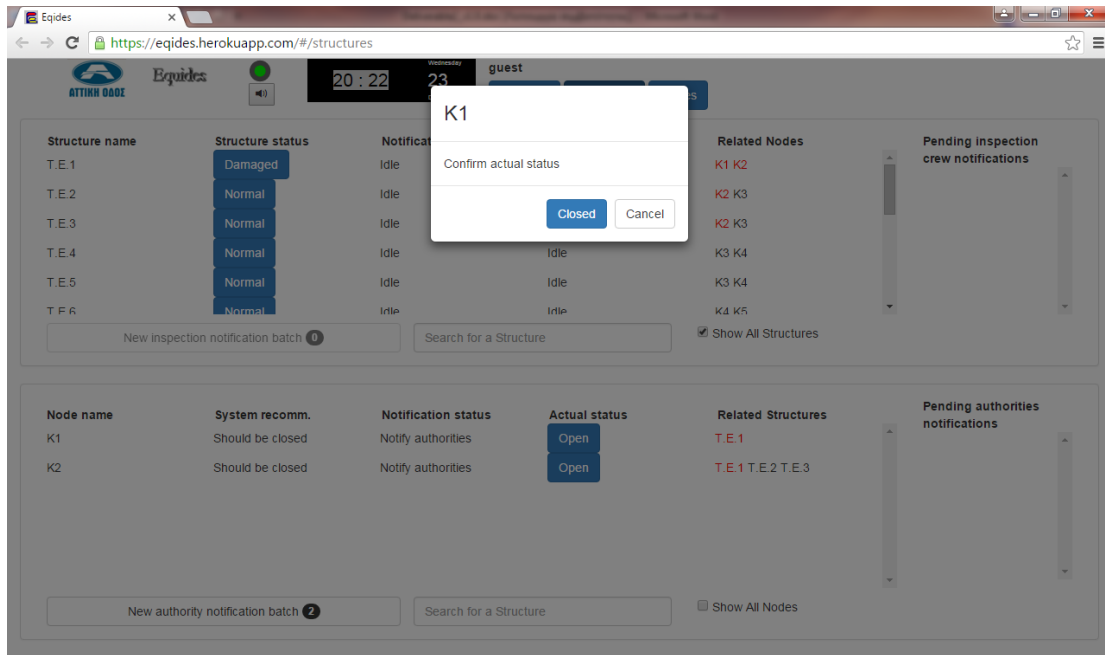


Figure 20. Changing the node status from “Open” to “Closed” (1/2)

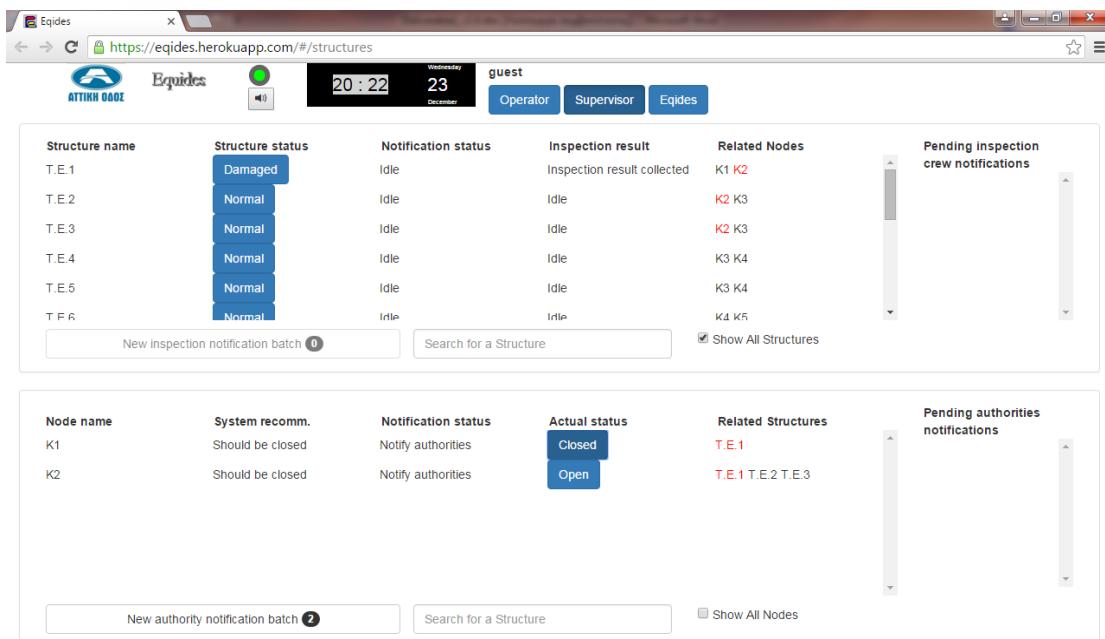


Figure 21. Changing the node status from “Open” to “Closed” (2/2)

The figures below present what happens when the user clicks on the button when the current state of the node is “Closed” and it is changed to “Open”.

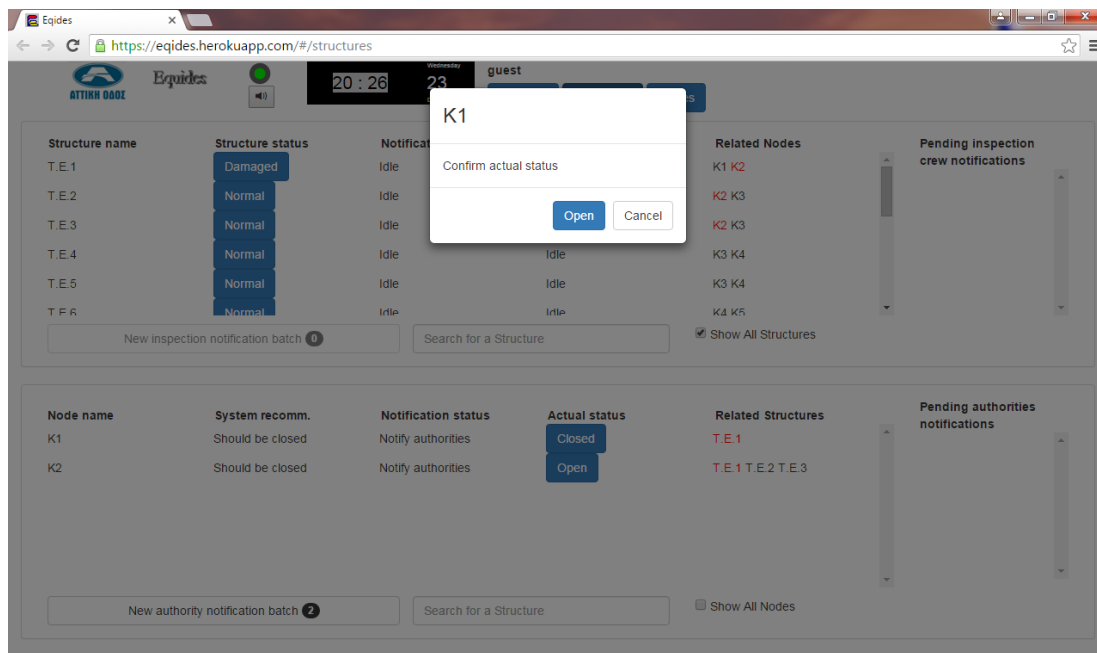


Figure 22. Changing the node status from “Closed” to “Open” (1/2)

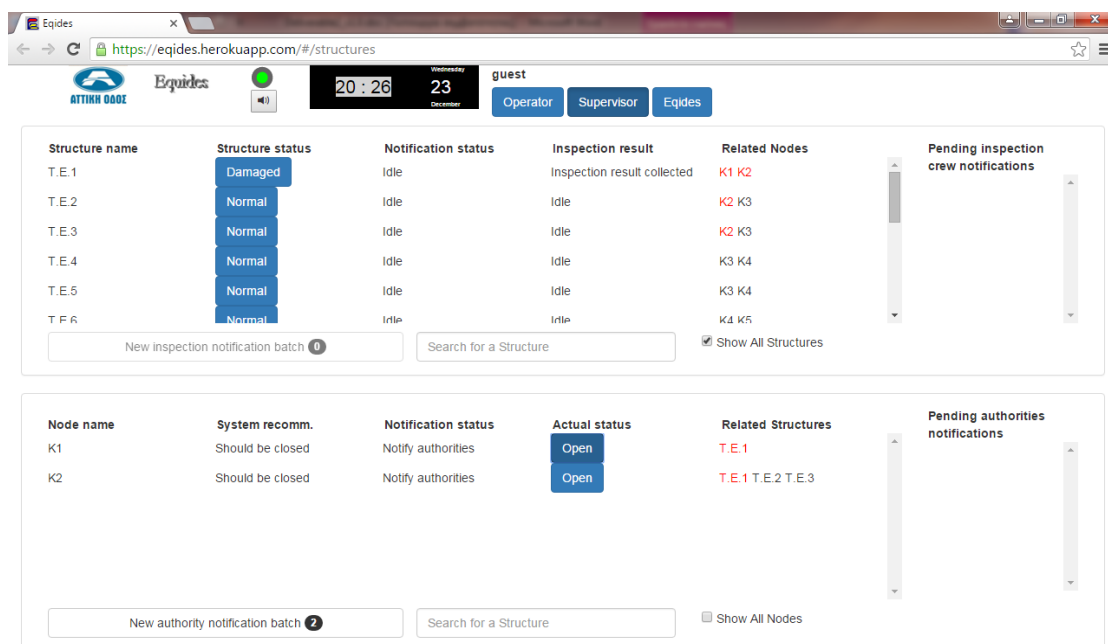


Figure 23. Changing the node status from “Closed” to “Open” (2/2)