~~What is claimed is:~~CLAIMS

1. An elevator operation state visualization apparatus including a visualization processing unit configured to visualize an operation state of an elevator based on elevator operation information, the apparatus comprising:

a storage device holding an analysis condition database that registers an analysis condition for analyzing the operation state of the elevator from the elevator operation information and an improvement method database that registers an improvement method for each cause of deterioration that deteriorates the operation state of the elevator;

an operation state analysis processing unit configured to analyze the operation information based on the analysis condition registered in the analysis condition database and specify the cause of deterioration when determining that the operation state of the elevator has deteriorated; and

a totalization processing unit configured to acquire an improvement method corresponding to the cause of deterioration specified by the operation state analysis processing unit from the improvement method database, wherein

the operation information is information for each floor of the elevator,

the storage device stores an operation information database that registers date and time information related to date and time when the operation information has been detected in association with the operation information for each floor,

the operation state analysis processing unit executes an analysis for specifying the cause of deterioration for each floor and each operation information associated with

the date and time information, and

the visualization processing unit creates visualization data for visualizing the cause of deterioration specified by the operation state analysis processing unit and the improvement method acquired by the totalization processing unit., and visualization data for visualizing a graph composed of numerical values of the cause of deterioration specified by the operation state analysis processing unit and the date and time information.

2. The elevator operation state visualization apparatus according to claim 1, wherein

the improvement method database registers an estimated factor that causes the cause of deterioration and an improvement method for each of the estimated factors in association with the cause of deterioration,

the operation state analysis processing unit specifies an estimated factor that has caused the cause of deterioration based on the analysis condition registered in the analysis condition database,

the totalization processing unit acquires an improvement method corresponding to the estimated factor specified by the operation state analysis processing unit from the improvement method database, and

the visualization processing unit creates visualization data for visualizing the estimated factor specified by the operation state analysis processing unit and the improvement method acquired by the totalization processing unit.

3. The elevator operation state visualization apparatus according to claim 1 or 2, wherein

~~the operation information is information for each floor of the elevator,~~

~~the storage device stores an operation information database that registers date and time information related to~~

~~date and time when the operation information has been detected in association with the operation information for each floor, and~~

the visualization processing unit creates visualization data for arranging and displaying a graph corresponding to normal times where no deterioration in operation state is detected by the operation state analysis processing unit ~~executes an~~and a graph corresponding to bad times where a deterioration in operation state is detected by the operation state analysis ~~for specifying the cause of deterioration for each floor and each operation information associated with the date and time information.~~processing unit.

4. The elevator operation state visualization apparatus according to ~~claim~~any one of claims 1 to 3, wherein

~~the visualization processing unit creates visualization data for visualizing a graph composed of the operation information and the date and time information.~~

~~5. The elevator operation state visualization apparatus according to claim 4, wherein~~

the visualization processing unit creates the visualization data so as to display an analysis result obtained by the operation state analysis processing unit, the cause of deterioration, the improvement method, and the graph on one screen.

~~6~~

5. The elevator operation state visualization apparatus according to ~~claim 3~~any one of claims 1 to 4, wherein

the storage device holds an analysis result database that registers the cause of deterioration specified by the operation state analysis processing unit and the date and time information registered in the operation information database in correspondence with the operation information, in which the cause of deterioration has been specified, in association with each other, and

the totalization processing unit acquires the improvement method registered in correspondence with the

cause of deterioration from the improvement method database based on the cause of deterioration registered in the analysis result database.

~~7~~

6. The elevator operation state visualization apparatus according to ~~claim~~any one of claims 1 to 5, wherein

the improvement method database registers, as the improvement method, a method related to an operation of the elevator and a method related to control of the elevator upon classification, and

the visualization processing unit creates visualization data for visualizing the classification together with the improvement method.

~~8~~

7. The elevator operation state visualization apparatus according to claim ~~7,~~6 wherein

when the method related to the control of the elevator is acquired from the improvement method database as the improvement method corresponding to the cause of deterioration specified by the operation state analysis processing unit, the visualization processing unit creates visualization data to select whether to execute the improvement method for each acquired improvement method.

~~9~~

8. The elevator operation state visualization apparatus according to ~~claim~~any one of claims 1 to 7, wherein

the elevator operation information is information acquired from an elevator controller or a simulator that simulates an elevator operation.

~~10~~

9. The elevator operation state visualization apparatus according to any one of claims 1 to ~~9~~8, wherein

the storage device stores an operation information database that registers operation information of a plurality of elevators provided in the same bank, for each bank, and

the operation state analysis processing unit analyzes

the operation information of the plurality of elevators for each bank.

~~11~~ 10. An elevator control system comprising:

an elevator controller configured to control an elevator operation;

an elevator operation state visualization apparatus configured to visualize an operation state of an elevator; and

a terminal device including a display unit and an operation unit that operates setting for control in the elevator controller,

the elevator operation state visualization apparatus including:

a visualization processing unit configured to visualize the operation state of the elevator and display the operation state on the display unit of the terminal device;

a storage device holding an analysis condition database that registers an analysis condition for analyzing the operation state of the elevator from the elevator operation information and an improvement method database that registers an improvement method for each cause of deterioration that deteriorates the operation state of the elevator;

an operation state analysis processing unit configured to analyze the operation information based on the analysis condition registered in the analysis condition database and specify the cause of deterioration when determining that the operation state of the elevator has deteriorated; and

a totalization processing unit configured to acquire an improvement method corresponding to the cause of deterioration specified by the operation state analysis processing unit from the improvement method database, wherein

the operation information is information for each floor of the elevator,

the storage device stores an operation information database that registers date and time information related to date and time when the operation information has been detected in association with the operation information for each floor,

the operation state analysis processing unit executes an analysis for specifying the cause of deterioration for each floor and each operation information associated with the date and time information, and

the visualization processing unit visualizes and allows the display unit of the terminal device to display the cause of deterioration specified by the operation state analysis processing unit ~~and~~, the improvement method acquired by the totalization processing unit, and a graph composed of numerical values of the cause of deterioration specified by the operation state analysis processing unit and the date and time information.

11. The elevator control system according to claim 10, wherein

~~12. The elevator control system according to claim 11, wherein~~

the improvement method database registers, as the improvement method, a method related to an operation of the elevator and a method related to control of the elevator upon classification, and

the visualization processing unit creates visualization data for visualizing the classification together with the improvement method, and, when the method related to the control of the elevator is acquired from the improvement method database as the improvement method corresponding to the cause of deterioration specified by the operation state analysis processing unit, allows the display unit of the terminal device to perform display for selecting

whether to execute the improvement method for each acquired improvement method.

~~13. The elevator control system according to claim 12, wherein~~

12. The elevator control system according to claim 11, wherein

the elevator operation state visualization apparatus comprises a usability specification data transmission unit configured to, when the terminal device performs an operation for selecting execution of the improvement method, causes the elevator controller to execute the improvement method based on the display for selecting whether to execute each improvement method.

~~14~~

13. The elevator control system according to any one of claims ~~11~~10 to ~~13~~12, wherein

the elevator operation information is information acquired from the elevator controller or a simulator configured to simulate the elevator operation.

~~15~~

14. An elevator operation state visualization method for visualizing an operation state of an elevator based on elevator operation information, the method comprising:

causing a storage device to hold an analysis condition database that registers an analysis condition for analyzing the operation state of the elevator from the elevator operation information for each floor and an improvement method database that registers an improvement method for each cause of deterioration that deteriorates the operation state of the elevator;

causing an operation state analysis processing unit to analyze the operation information based on the analysis condition registered in the analysis condition database and specify the cause of deterioration when determining that the operation state of the elevator has deteriorated;

causing a totalization processing unit to acquire the

improvement method corresponding to the cause of deterioration specified by the operation state analysis processing unit from the improvement method database; ~~and~~

storing in the storage device, an operation information database that registers date and time information related to date and time when the operation information has been detected in association with the operation information for each floor, and

executing by the operation state analysis processing unit, an analysis for specifying the cause of deterioration for each floor and each operation information associated with the date and time information, and

causing the visualization processing unit to create visualization data for visualizing the specified cause of deterioration and the acquired improvement method~~.~~

, and visualization data for visualizing a graph composed of numerical values of the cause of deterioration specified by the operation state analysis processing unit and the date and time information.