CLAIMS

1. A method for supervising an air traffic tracking system, in a current situation of the tracking system as defined by a real-time situation of a position and a speed vector relating to at least one aircraft, said position and said speed vector being determined based on data from one or more sensors, the method comprising a step of determining with a computer performance indicator values representing said current situation, the method further comprising the steps of:

- determining with the computer an operating feature of the tracking system for said current situation on a basis of said performance indicator values;
- if said operating feature is representative of an operating abnormality of said tracking system, determining with the computer at least one performance indicator corresponding to said operating abnormality, and determining values of said at least one performance indicator corresponding to normal operation;
- determining with the computer at least one quality of service measure of the tracking system for said current situation based on the performance indicator values representing said current situation;
- if said at least one quality of service measure is representative of a degradation in the quality of service, determining with the computer at least one performance indicator corresponding to said degradation in the quality of service;
- executing at least one evaluation process associated with said at least one performance indicator corresponding to said operating abnormality and/or to said degradation in the quality of service,

wherein the at least one evaluation process comprises determining or identifying emergency procedures for execution by a maintenance operator.

2. The method as claimed in claim 1, further comprising implementing the computer with a processor, one or more storage peripherals, an input/output (I/O) interface and/or a human-machine interface (HMI), wherein said operating feature is a state chosen from the group comprising a normal operating state, at least one known abnormal operating state, an unknown abnormal operating state, and an impossible operating state, and wherein said operating feature being associated with an operating abnormality of said tracking system if said operating feature is not a normal operating state.

3. The method as claimed in claim 2, characterized in that said normal operating state corresponds to a known situation for a given configuration, said given configuration corresponding to a first configuration in which said at least one aircraft is cruising or to a second configuration in which said at least at least one aircraft is approaching a given airport associated with a given positioning of one or more sensors and with a given type of weather for said given airport, said at least one known abnormal operating state being predefined, and wherein said impossible operating state corresponding to impossible combinations of the performance indicator values.

4. The method as claimed in either one of claims 2 and 3, characterized in that the step of determining performance indicator values representing said current situation comprises partitioning the space of a performance indicator values into a plurality of areas comprising at least one normality area and at least one known abnormality area, each area of said plurality of areas representing a normality class and being associated with an operating state of said tracking system, said at least one normality area being associated with said normal operating state, and wherein each of said at least one known abnormality areas being associated with a known abnormal operating state.

5. The method as claimed in claim 4, characterized in that partitioning the space of the performance indicator values comprises determining said at least one normality area, based on standard data corresponding to performance indicator values obtained in normal operating situations, by applying an unsupervised machine learning technique.

6. The method as claimed in claim 5, characterized in that said unsupervised machine learning technique is chosen from a group comprising linear dimensionality reduction techniques, non-linear dimensionality reduction techniques, partitioning techniques and kernel methods.

7. The method as claimed in either one of claims 5 and 6, characterized in that the step of determining performance indicator values representing said current situation comprises determining a set of data based on said standard data and partitioning said set of data into subsets by applying a supervised learning method, each subset corresponding to performance indicator values representing a known abnormality area.

8. The method as claimed in claim 7, characterized in that said supervised learning method is a data classification method.

9. The method as claimed in any one of the preceding claims, characterized in that a quality of service measure corresponds to multi-sensor tracking or single-sensor tracking, said quality of service measure corresponding to an overall tracking quality for a plurality of sensors for multi-sensor tracking, and to the tracking quality for a given sensor for single-sensor tracking.

10. The method as claimed in any one of the preceding claims, characterized in that said performance indicator values for the current situation are contained within a normality class corresponding to said operating feature of the tracking system for said current situation, a quality of service measure of said tracking system being determined on the basis of said normality class.

11. The method as claimed in any one of the preceding claims, characterized in that said tracking system is used to track said at least one aircraft in an airspace divided into a plurality of spatial areas, a quality of service measure of said tracking system being determined in association with each of the plurality of spatial areas.

12. The method as claimed in any one of the preceding claims, characterized in that the performance indicator values have at least one missing value, a quality of service measure of said tracking system being determined in a presence of at least one missing performance indicator value.

13. The method as claimed in any one of the preceding claims, characterized in that the step of determining said at least one performance indicator corresponding to said degradation in the quality of service comprises determining an influence indicator associated with each performance indicator.

14. The method as claimed in any one of the preceding claims, characterized in that each performance indicator is associated with a set of executable evaluation processes for evaluating a state of a subsystem of said tracking system, the step of executing at least one evaluation process comprising executing the evaluation processes associated with said at least one performance indicator corresponding to said operating abnormality of said tracking system and/or with said at least one performance indicator corresponding to said degradation in the quality of service.

15. A device for supervising an air traffic tracking system, in a current situation of the air traffic tracking system as defined by a real-time situation of a position and a speed vector relating to at least one aircraft, said position and said speed vector being determined based on data from one or more sensors, the device being configured to determine performance indicator values representing said current situation, characterized in that the device comprises:
- a computer to determine an operating feature of the air traffic tracking system for said current situation on the basis of said performance indicator values;
- if said operating feature is representative of an operating abnormality of said air traffic tracking system, the computer being further configured to determine at least one performance indicator corresponding to said operating abnormality, and determine values of said at least one performance indicator corresponding to normal operation;
- the computer being further configured to determine at least one quality of service measure of the air traffic tracking system for said current situation based on the performance indicator values representing said current situation;
- if said at least one quality of service measure is representative of a degradation in the quality of service, the computer being further configured to determine at least one performance indicator corresponding to said degradation in the quality of service; and
- the computer being further configured to execute at least one evaluation process associated with said at least one performance indicator corresponding to said operating abnormality and/or to said degradation in the quality of service,
wherein at least one evaluation process comprises determining or identifying emergency procedures for execution by a maintenance operator.

16. A non-transitory computer program product comprising instructions when executed on a computer for implementing a method for supervising an air traffic tracking system, in a current situation of the tracking system as defined by a real-time situation of a position and a speed vector relating to at least one aircraft, said position and said speed vector being determined based on data from one or more sensors, the instructions of the non-transitory computer program product comprising a step of:
- determining with the computer performance indicator values representing said current situation, the method further comprising the steps of:
- determining with the computer an operating feature of the tracking system for said current situation on a basis of said performance indicator values;

- if said operating feature is representative of an operating abnormality of said tracking system, determining with the computer at least one performance indicator corresponding to said operating abnormality, and determining values of said at least one performance indicator corresponding to normal operation;
- determining with the computer at least one quality of service measure of the tracking system for said current situation based on the performance indicator values representing said current situation;
- if said at least one quality of service measure is representative of a degradation in the quality of service, determining with the computer at least one performance indicator corresponding to said degradation in the quality of service; and
- executing with the computer at least one evaluation process associated with said at least one performance indicator corresponding to said operating abnormality and/or to said degradation in the quality of service,

wherein the at least one evaluation process comprises determining or identifying emergency procedures for execution by a maintenance operator.