Claims

1. A method for mutual monitoring and/or control of a plurality of autonomous technical systems, which are at least partly interconnected via a communication network (NW), wherein:
- at least one of the autonomous technical systems (AS1, AS2, AS3, ...) is designed as a monitoring autonomous technical system (ASobs1) and monitors the operating behavior of other autonomous technical systems (S1),
- abnormal operating behavior of a first autonomous technical system (AS1) is detected by the monitoring autonomous technical system (ASobs1) based on a specified first rule and a status message regarding the abnormal operating behavior of the first autonomous technical system (AS1) is generated therefrom (S2),
- the status message is transmitted from the monitoring autonomous technical system (ASobs1) to some of the other autonomous technical systems (S3),
- the status message is received by some of the other autonomous technical systems and jointly evaluated by them and, depending on the evaluation, a control rule is derived for the first autonomous technical system (AS1) (S4),
and
- the control rule is sent to a control module (CTLM), which is assigned to the first autonomous technical system (AS1), and the operating behavior of the first autonomous technical system (AS1) is controlled by the control module (CTLM) according to the control rule (S5),
wherein a weighting is assigned to each autonomous technical system that evaluates a status message and thus the joint evaluation of a status message is determined from weighted evaluations.

2. The method as claimed in claim 1, wherein a monitoring autonomous technical system (ASobs1) comprises at least one sensor (S), the sensor (S) records sensor data, and abnormal

operating behavior of one of the other autonomous technical systems (AS1, AS2, AS3, ...) is detected using the sensor data.

3. The method as claimed in one of the preceding claims, wherein the status message is transmitted and/or the status message is jointly evaluated and/or the control rule is sent by means of encrypted data transmission via the communication network (NW) and/or after mutual identification of the autonomous technical systems.

4. The method as claimed in one of the preceding claims, wherein several autonomous technical systems are designed as monitoring autonomous technical systems (ASobs1, ASobs2, ASobs3, ...) and each of these monitoring autonomous systems transmits a status message to other autonomous technical systems (AS1, AS2, AS3, ...) and the status messages are jointly evaluated.

5. The method as claimed in one of the preceding claims, wherein the monitoring and/or the evaluation of a status message and/or the control according to a control rule of at least one autonomous technical system are carried out continuously and/or at predetermined times.

~~6. The method as claimed in one of the preceding claims, wherein a weighting is assigned to each autonomous technical system that evaluates a status message and thus the joint evaluation of a status message is determined from weighted evaluations.~~

~~7~~6. The method as claimed in one of the preceding claims, wherein the weighting is dynamically adjusted depending on a monitoring quality and/or on a rank of an autonomous technical system.

~~8~~7. The method as claimed in one of the preceding claims, wherein a computer-aided simulation of the operating behavior of another autonomous technical system (AS1, AS2, AS3, ...) is carried out by a monitoring autonomous technical system

(ASobs1) based on sensor data of the monitoring autonomous technical system (ASobs1) and/or on sensor data of other monitoring autonomous technical systems (ASobs2, ASobs3, ASobs4, ...) and, based on the simulation, a prediction of future operating behavior is derived and transmitted as a status message to at least some of the autonomous technical systems.

~~9~~8. The method as claimed in claim ~~8~~7, wherein future, abnormal operating behavior is detected using the computer-aided simulation and a specified second rule, a status message is generated therefrom and this status message is transmitted to at least some of the autonomous technical systems.

~~10~~9. The method as claimed in one of the preceding claims, wherein, in a non-autonomous technical system (NAS) which is connected to the communication network,
- the operating behavior of the non-autonomous technical system is monitored by at least one monitoring autonomous technical system (ASobs1) and, according to a specified third rule, abnormal operating behavior of the non-autonomous technical system (NAS) is detected,
- a status message is evaluated by at least some of the other autonomous technical systems and a control rule is derived therefrom for the non-autonomous technical system
and
- the operating behavior of the non-autonomous technical system is controlled by a control module, assigned to the non-autonomous technical system, by means of a control rule.

~~11~~10. A device for mutual monitoring and control of a plurality of autonomous technical systems, which are at least partly interconnected via a communication network,
which is configured in such a manner as to carry out the steps of a method as claimed in one of claims 1 to ~~10~~9, comprising at least one monitoring module (OM) of an autonomous, technical

system and at least one control module (CTLM), which is assigned to another autonomous technical system.

~~12~~11. The device as claimed in claim ~~11~~10, wherein at least some of the autonomous technical systems (AS1, AS2, AS3, ...) are designed as monitoring autonomous technical systems (ASobs1, ASobs2, ASobs3), comprising respectively one monitoring module (OM1, OM2, OM3, ...) and at least one sensor (S), and at least some of the autonomous technical systems (AS1, AS2, AS3, ...) respectively comprise a control module (CTLM1, CTLM2, CTLM3, ...), wherein at least some of the monitoring modules (OM1, OM2, OM3, ...) and at least some of the control modules (CTLM1, CTLM2, CTLM3, ...) are interconnected via the communication network.

~~13~~12. The device (100) as claimed in claim ~~11~~10 or ~~12~~11, wherein a control module (CTLM) comprises a first communication interface (IF1) to the communication network (NW) for receiving and decrypting encrypted data transfer.

~~14~~13. The device (100) as claimed in claim ~~11~~10 or ~~12~~11, wherein a monitoring module (OM) comprises an evaluation unit (AM) for evaluating a status message generated and/or received by the evaluation unit (AM).

~~15~~14. The device (100) as claimed in claim ~~14~~13, wherein a monitoring module comprises a second communication interface (IF2) to the communication network (NW) for encrypted data transmission and decryption of encrypted data.

~~16~~15. The device (100) as claimed in claim ~~14~~13 or ~~15~~14, wherein a monitoring module (OM) comprises a simulation unit (SIM) for simulating operating behavior of another autonomous technical system, based on sensor data of the monitoring autonomous technical system (ASobs1) and/or on sensor data of other

monitoring autonomous technical systems (ASobs2, ASobs3, ASobs4, ...).

~~17~~16. A computer program product, which can be directly loaded into a programmable computer, comprising program code parts, which are suitable for carrying out the steps of the method as claimed in one of claims 1 to ~~10~~9.