AMFIS: Simulation of a UAV operation during a fire.

The simulation of scenarios with AMFIS is integrated into the AMFIS control station in such a way that there is no difference betweenreal and simulated sensors and sensor carriers in terms of control technology - they are seamlessly interchangeable.

This enables:

Visualization and simulation of scenarios
Education and training of personnel
Research into different sensors and sensor carriers
Sensor deployment planning

Examples of application areas for AMFIS

Reconnaissance and monitoring of properties and areas
Rapid reconnaissance of major incidents
Mass events
People search
Traffic monitoring
Data archiving for the preservation of evidence

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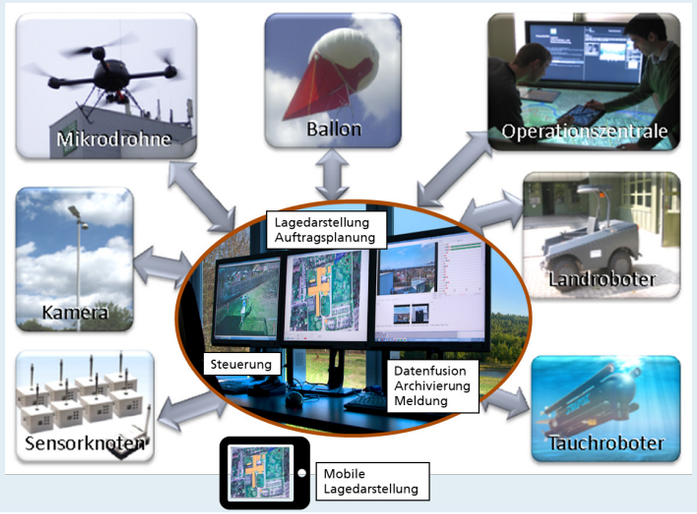
Use of groups of heterogeneous sensors and mobile systems

AMFIS reconnaissance with mobile and stationary Sensors in a combined System



AMFIS reconnaissance with mobile and stationary Sensors in a combined System

Use of groups of heterogeneous sensors and mobile systems

Complex reconnaissance and surveillance tasks often cannot be solved with stationary sensors alone or with just one mobile sensor carrier (e.g. a drone). If several mobile systems are used simultaneously in a scenario, conventional individual applications quickly reach their limits. On the one hand, each mobile system requires its own monitoring, control and appropriately trained operators; on the other hand, it is difficult to link the sensor and status data of the individual systems with each other and to evaluate or archive them synchronously.
To solve such problems, Fraunhofer IOSB developed the AMFIS integration platform, which can manage groups of heterogeneous mobile systems and quickly provide a comprehensive picture of the situation in a complex environment with the help of several stationary and mobile sensors. The AMFIS generic control station can be used to uniformly control and coordinate various air, land and water vehicles (sensor carriers) as well as stationary ad hoc sensor networks and heterogeneous sensors.

Thanks to the generic approach, the system is multi-sensor capable and can be equipped with electro-optical or thermal imaging cameras, motion detectors, acoustic, chemical, radio or radiation sensors, etc., depending on the application. It makes no difference whether the sensors are mounted on mobile sensor carriers or installed in a stationary position. AMFIS has a modular structure and can be scaled as required and adapted to application-specific requirements by selecting suitable modules or integrating new ones.

Open interfaces based on standards ensure that other system types are interoperable and easy to integrate and that the collected data can be delivered to command and control or evaluation systems in real time (even while the mobile systems are in motion).

Mobile AMFIS control station (integrated in a Sprinter).

AMFIS-Functionalities (excerpt):

Automated planning and execution of even complex reconnaissance and surveillance missions

Mission-based automatic control of multiple systems with rule-based reactions and the use of AI

Simple, standardized commissioning and control (card-based or direct)

Message generation: archiving, filtering and needs-based interoperable distribution of the data and information obtained

Support for different sensors, sensor carrier platforms (UAV, UGV, AUV, ...) and information systems/standards (e.g. STANAGs)

Easy connection to existing monitoring systems and operations control centers

Support for real and simulated sensors and sensor carriers