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# QUIRINIUS Drone Detection System



# An innovative concept for the recognition of drones



## Danger from drones

It is a fact that drones or UAV's are used for criminal or terrorist activities. Airfields, prisons or other critical infrastructures therefore require reliable and professional surveillance of airspace for unwanted, dangerous flying objects.



## Reliable functionality

QUIRINIUS surveillance systems enable the identification and localization of RF signals that occur in the presence of drones or unmanned aerial vehicles (UAVs). By continuously monitoring the spectrum, transmit signals from unknown sources can be identified as they occur in real time. Patterns of unwanted signal activity can also be investigated, providing an efficient way to characterize and locate the source of the unidentified or threatening system.

## State-of-the-art technologies and algorithms

The QUIRINIUS system uses Time Difference of Arrival (TDOA) - a technique for geographic localization of RF sources. Three or more signal sensors are required to detect the signal of interest. Each sensor is time-synchronized via GPS to capture corresponding I/Q data blocks. The software calculates the difference in arrival time at each transmitter - this result in the difference of the distance of the source from each set of test receivers.

TDOA can provide a very accurate location within meters in a few seconds. In addition to intermittent signal detection, general spectrum monitoring is also used to identify existing signal types or to continuously scan frequency channels for signal activity or interference signals.

## Sensors as highly critical element

For professional detection, extremely powerful signal receivers up to 6GHz are required, which are equipped with integrated signal (pre)processing.



## Stationary or tactical use

Depending on the situation and hazard potential, the QUIRINIUS system can be used for fixed installations in systems or for temporary field applications. Readiness is established within a few minutes and can be monitored for a permanent period of 24 hours / 7 days.



The QUIRINIUS test receiver for tactical use in the field - shown left on a tripod with adjustable antenna.

A signal range from 10MHz to 6GHz is monitored.

## An professional system concept

QUIRINIUS is a highly modular hardware and software system that covers the entire frequency range of YOTAVIS Remote Spectrum monitors.

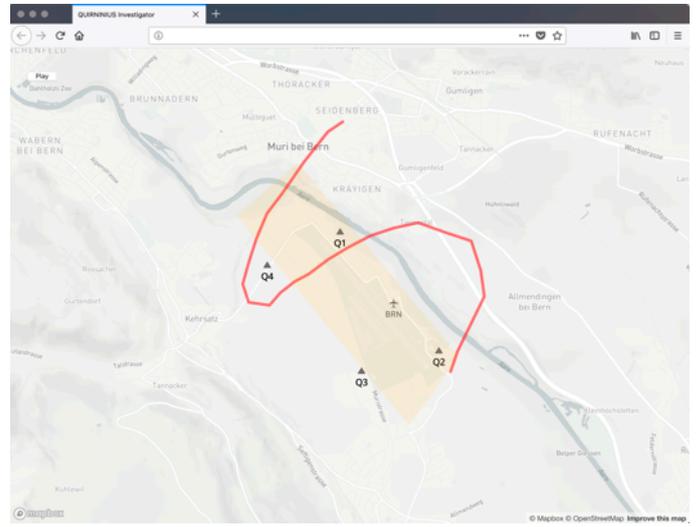
Various features integrated into the software allow the user to quickly and automatically perform drone monitoring and frequency spectrum analysis, record measurements and create optional reports on signal quality and performance characteristics.

## Extensions are pre-programmed

QUIRINIUS can also be combined with other sensors such as radar, video cameras (3D) or acoustic arrays. The addition of defensive counter-measures such as jamming or signal sniper drones are possible by arrangement.



The QUIRINIUS system structure is modular and future-oriented with state-of-the-art hardware and software components.

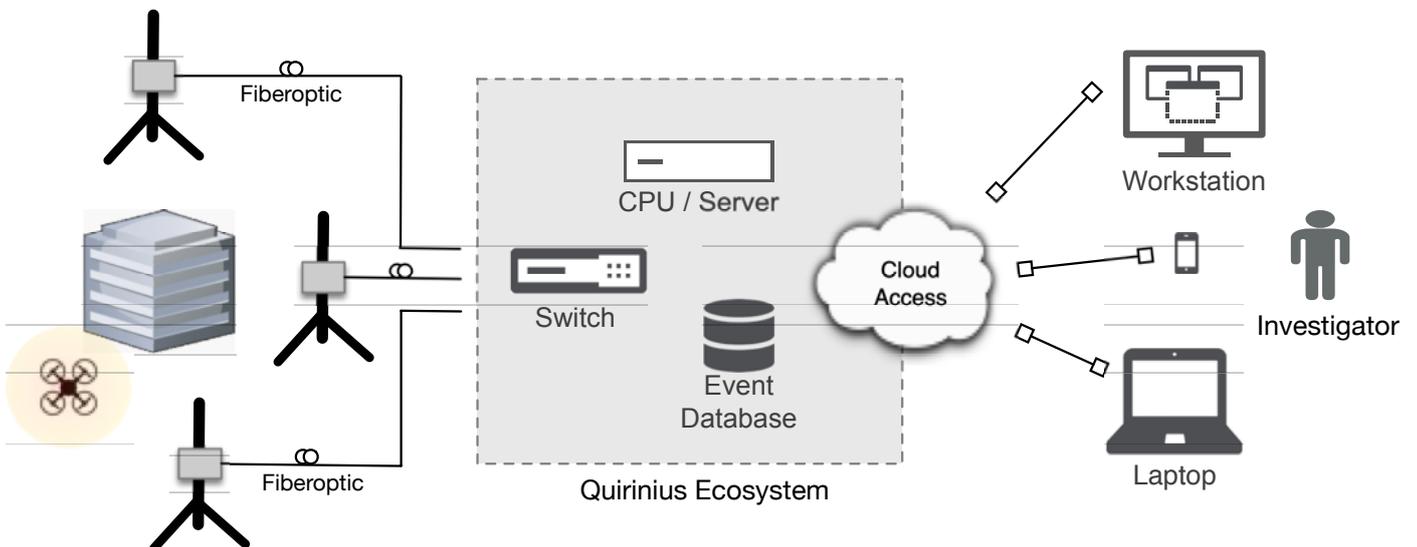


## Realtime and functional display in web browser

The recordings of drone flights are stored in an event-database and clearly displayed 'live' or retrospectively in a web browser. The user (Investigator) can log in from different devices and follow the activities. Alarm functions via SMS or email are also available.

The system operator can also evaluate and export all recorded signal and measurement data in a variety of ways. In addition, the alarm zones are defined and the user rights defined.

QUIRINIUS can be used to control up to 24 RF test receivers, enabling area-wide monitoring. In addition to the basic version, the QUIRINIUS software suite also includes various options for extended signal measurements.



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