



## MSMT – Moving sensor moving target

The aim of the project is the provision of mobile sensors in conjunction with planning and evaluation software for the localization and acquisition of mobile radio stations and emitters in urban scenarios.



In urban scenarios, a large quantity and different kind of radio emitters are active. The radio stations are generally used for communication and control purposes. Analog and diverse digital modulation techniques are used. Unauthorized use and the communication of security-relevant radio stations are of interest and importance for sovereign services and authorities. It should be taken into account that the interesting emitters are also used in mobile operation case by case.

The propagation conditions in urban scenarios are dependent on various specific factors and the physical phenomenon of wave propagation. The density and type of buildings, structures, also mobile reflectors influence effects, such as shading, missing line-of-sight connection, multipath propagation, fading, Doppler effects, and others. These influences prevent the successful detection, location and detection of the relevant radio stations with traditional radio sensors and direction finding systems. Single measurements and the stationary operation of reconnaissance equipment generally do not produce the desired results.

The goals of the project are conceptual research, and the development of a suitable solution. The reduction of costs and easy operation of the sensors in conjunction with the control and evaluation software are further requirements.

The location and detection of mobile electromagnetic signal sources can be carried out with the use of suitable mobile sensors. The following procedures are used:

- Sensors can be configured as multi-channel systems.
- The targeted acquisition of interesting emitters takes place after the application of classification methods. Various features are used, which are determined in real time in the sensor.
- Sensor data fusion delivers aggregated results with improved accuracy and relevance.
- Tracking procedures allow pursuit of mobile emitters.
- Mobile sensors provide multiple measurement results, which can be combined with data and information fusion methods.

Of particular importance is the robust and easy handling of the system components. This also allows the use on acquisition platforms, which are operated without reconnaissance specialists.

Technology	Receiver, tuner, electronics, signal processing, radio acquisition, classification, tracking, sensor data fusion, information processing.
Market	Security agencies, regulation agencies.
Remarks	None.