ISMAEL - Intelligent Surveillance and Management for Airfield Applications Based on Low Cost Magnetic Field Detectors

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Abstract:

Against the background of aggravated capacity constraints at airports due to increasing air traffic, airports are in need of innovative systems enabling Air Traffic Controllers to precisely determine the position of vehicles moving on the surface, even under reduced visibility conditions. While this demand is addressed by the development and introduction of Advanced Surface Movement Guidance and Control Systems (A-SMGCS), technologies currently applied to A-SMGCS feature some weak points regarding coverage and robustness interference and climate conditions. The EC-funded research project ISMAEL targets these weak points by developing an innovative detection solution based on magnetic sensing technology. Thus, ISMAEL will represent a valuable and cost-efficient complementary contribution to existing and planned A-SMGCS at small and large airports. During the past project stage, magnetic sensor prototypes have been designed and tested. Initial field tests on airport taxiway area have proven that the sensors can be used to detect aircraft on ground within a range of certain meters. In the next stage sensors will be integrated with the sensor data fusion (SDF) server, which initially processes the data from sensors to extract target plots and then based on Kalman filtering provides target tracks. Further demonstration activities based on both sensor and SDF development are planned this year.