RAS Experiment Spiral 1: the Italian Army looks to the future

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The Italian Army Robotic Experiment Open Day, which took place on February 16th in Rieti, in the nuclear-biologic-chemical training area part of the Joint NBC School, marked the end of the first spiral of the RAS (Robotic Autonomy System) programme which was started in 2020 by the Army HQ.

The RAS programme was the first experimentation campaign to be launched by the newly formed Army Innovation Office, which is tasked to carry out the Concept Development and Experimentation cycle designed by NATO within the Italian Army. It is therefore based on three branches, Concept Development, Doctrine and Standardisation, and Experimentation and Lessons Learned.

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To understand the potential impact on RAS technologies at 5-15 years distance, the experimentation work was started gathering academia, research centres and industry, which answered the Technology Call launched by the Army Innovation Office. This allowed to identify potential partners interested in taking part in the experimentation, allowing on one hand the Army to better understand which capabilities are already available and how much these impact on doctrine, training and operations, while on the other non-military participants could better focus which are the real need of the Army, better orienting their activities.

A first Capability Spotlight was organised in October 2020, with a first demonstration of ground and air unmanned vehicles supporting an infantry section playing one of the vignettes, all related to urban terrain, that were considered for the project.

The next step saw the issue of a Request for Proposal, through the NSPA (NATO Support and Procurement Agency) to identify a System Integrator capable to handle the organisational aspects of the programme and provide metrics for the evaluation phase. Milrem Robotics was selected for this role and won a five years framework contract that will allow the Italian Army to pursue its evaluation of RAS in the coming years, which will be crucial as the service is about to launch a modernisation plan for its heavy forces, which will certainly see UASs and UGVs operating alongside manned platforms such as main battle tanks and armoured infantry fighting vehicles. These will act as force multipliers, allowing to split effects on a number of platforms working together in a synergistic mode, which will also result in keeping under control the mass of the heaviest and biggest platforms, bringing them back to values that are compatible with infrastructures such as roads and rails, inherently enhancing their mobility.

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Some complementary activities were also carried out during the Italian Army RAS Experiment – Spiral 1, one of them being shown in Rieti in a second phase of the demonstration. Using the SAGUVET, an acronym for Universal Vehicle Autonomous Driving System, developed by LEM, a company based close to Rome, an LMV 4×4 light armoured vehicle produced by IDV was first driven by teleoperation, and then moved in full autonomy on a course within the training area. The drive by wire kit includes a vision integrated system with cameras and LIDAR, IMU and odometry sensors being also installed, a computer that transforms sensors data as well as commands coming from ground control station, via long range radiolink, 4G or WiFi, in inputs for the interface between the driving kit and the vehicle original commands. As the Italian Army is close to replace many of its armoured vehicles currently in service, using tjose legacy platforms as autonomous or optionally-manned assets might allow to exploit their capacities, while not putting at risk human lives.

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