

SYSTEM APPROACH BASED ON THE MASTERY OF KEY EQUIPMENT

The system approach proposed by Safran Electronics & Defense relies on the analysis of the mission spectrum, either standard or autonomous, that can be assigned to this type of vehicle. A global functional approach enables to provide an optimized software and hardware architecture with reliability, security and safety properties. The project team masters all critical components and equipment of the vehicle backbone.



eRider is a concept car for Forces fitted with a range extender allowing the vehicule to increase its operational range by 200 up to 300 km depending on fuel tank volume. The vehicule can reach 70 km/h on tracks with current engines, but a more powerful engine can be integrated. Lastly, eRider can integrate directional rear wheels to improve mobility. eRider is able to support stealth operation: low thermal and acoustic signatures, stand-by sensors (radars, lidars,...) and very low communication level.

**VEHICLE CHARACTERISTICS**

**DIMENSIONS**  
l = 1.7 m x L = 3.8 m x h = 2 m

**TOTAL EMPTY WEIGHT**  
1500 kg

**MAXIMAL LOADING**  
500 kg

**ELECTRIC ENGINE**  
15kW nominal  
20kW maximal

**DRIVELINE**  
4 steering driving wheels

**BATTERY**  
Lithium-ion 72V - 10kW  
140A-25A in charge

**TORQUE**  
75Nm of 0-5000 t/mn

**THERMAL GENERATOR**  
2,6kW - 30A.

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ELECTRONICS & DEFENSE

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eRider  
Autonomous multi-mission platform

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OUR BUSINESS AT THE CORE OF AUTONOMOUS MOBILITY

Safran Electronics & Defense business is core to autonomous mobility: all-weather vision, geolocation, embedded electronics, mission planning, as well as command and control. We are able to develop a functional approach, integrated and optimized between operational functions, mission and autonomy equipment.



On the basis of an existing platform, we chose to develop a hybrid all-terrain vehicle, stealth, open and highly mobile (light strike vehicle). eRider is therefore our development platform for partial or complete autonomy functionalities. It will enable evaluation and demonstration of these functionalities within Forces. Based on the concept of the Patroller UAV, eRider can be classically piloted. This logic is applicable to most of existing piloted platforms with modern features.

A French cluster



In 2013, Safran and VALEO set up a cooperation on the mobility of the future. The goal is to develop technological and functional building-blocks, as well as system architectures for autonomous platforms. Our cooperation has been extended with the car manufacturer PSA, the Ecole des Mines de Paris and INRIA. We have also reinforced the “France” team with innovative SME, well-known in their domains: Technical Studio for the platform, Effidence for robotization as well as 4D Virtualized and Artelys.

AN INTEGRATED APPROACH OF PLATFORM CAPABILITIES



INTELLIGENCE AND STAND-OFF ENGAGEMENT

The core missions addressed by Safran Electronics & Defense. The ambition is to provide intelligence and combat tools enhancing performances and ranges in order to operate safely and in a confident way.

SELF-PROTECTION AND TACTICAL AWARENESS

Most of the vehicles provide their own self-protection capabilities. They have to be associated with a high performance panoramic surveillance system (a few hundreds of meters). This system also enables to inform the tactical situation for the benefit of combat units.

PROXIMAL AWARENESS, AUTONOMY

To safely move with efficiency, an autonomous vehicle has to ‘know’ its proximal environment and must be able to interpret it in all conditions (up to a twenty meters).

Thanks to its integrated and communicating architecture, the eRider platform will provide breakthrough for collaborative combat as well as for mounted-dismounted continuity. This is applicable in particular within the SCORPION-FELIN context.

AN INCREMENTAL AND CONFIGURABLE AUTONOMY

eRider includes partial or total autonomous functionalities, which can be configured and parametrized. The Safran Electronics & Defense concept introduces progressively and incrementally autonomous missions based on a classical platform, either piloted or unmanned. This approach changes significantly the integration of autonomous missions within Forces.



Logistic and Convoy Mission

This mode addresses support mission for dismounted combat, logistic transport or medical evacuation.

- eRider functionalities: Follow-me robotic mode
- eRider advantage: Cognitive and logistic loads relief, avoid soldier exposure



Perimeter protection mission

This mode corresponds to area, improvised or built-in camps.

- eRider functionalities: Alert and sentry modes. Automatic configurations and observations according to contingencies
- eRider advantage: Complete and harden surveillance missions performed by soldiers



Intelligence and reconnaissance mission

This mode aims at projecting the robotic vehicle in a terrain area in order to acquire information and perform reconnaissance.

- eRider functionalities: Robot trajectory adapts according to the assigned mission as well as environment conditions and contingencies
- eRider advantage: Avoid soldier exposure, increased endurance and persistence

Our multi-mission platform eRider can be configured in 2 seats, 4 seats or can be unmanned as an autonomous observer, carry-all and can perform basic medical evacuation. The vehicle can also receive the soldier-operated weapon-station such as the Safran WASP.