The Adaptive Routing for Conflict mAnagement for UAV (ARCA) is a 30 months project funded under the Eurostars Program, the first European funding and support program specifically dedicated to SMEs, fostering collaborative research and innovation. The Spanish funding for the project has been enshrined in the "Interempresas Internacional sub-programme" from CDTI

The goal of ARCA is to develop an on-board flight system able to guide an UAV towards a specific destination modifying its own flight trajectory in reaction to a variety of external situations, maintaining the separation with other aircrafts. This system is based on a Game Theory Algorithm which runs on the UAV embedded Processor.

In restricted airspaces this system will allow a UAV to separate from other UAV by co-ordinating with them and solving possible trajectory conflicts. The system will also offer the same capabilities for the non restricted airspace, including separation from commercial aircraft. This capability will only be exploitable if particular operational conditions are met (e.g. all commercial traffic is equipped with the devices for providing navigation information such as the ADS-B; adequate ATM procedures are defined to deal with equipment failures). However, the presence of this system will allow the first tests and experiences in this direction facilitating a smooth introduction of UAV in the non restricted airspace
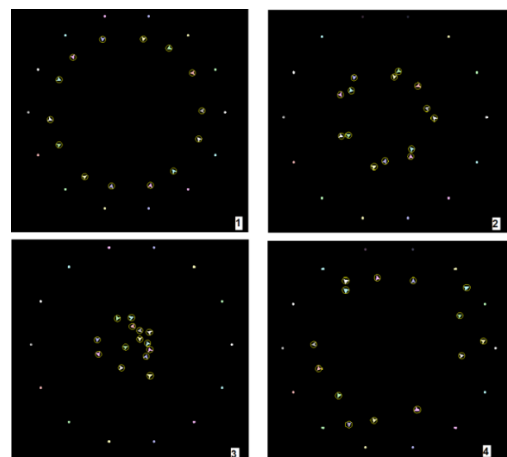
The consortium was identified with respect to the complementarities of the needed scientific and technical skills and the minimization of competence overlapping, choosing Research Centers and SMEs leaders in the European market and is composed of:

- Deep Blue (Italy). Besides the coordination role, Deep Blue is in charge of the Design, Implementation and Optimization of the algorithm that controls the routing. www.dblue.it

- ENEA (Italy): ENEA is the entity responsible for the Simulator Core Design and Implementation and the Integration, Validation and Tests. www.enea.it

- ERZIA (Spain). Erzia is responsible for the System communications. This includes the inter-UAV links which allows the information exchange between UAVs and UAV-Base Station link which allows monitoring the UAVs routing. www.erzia.com

- ESC (Czech Republic): ESC leads the design and implementation of the embedded processor and OS design/implementation. They also provide the UAV to carry out the system trials. www.evolvsys.cz

Game Theory Algorithm

Traffic Display