The research leading to these results has received funding from the European Union Seventh Framework Programme (FP7/2007-2013) under Grant Agreement no. 284851.
Overview

DARIUS = Deployable SAR Integrated Chain with Unmanned Systems

SAR = Search And Rescue

EU FP7 Security Project

Total value: Euro 10.7 M

EU contribution: Euro 7.5 M

Start: March 2012

Finish: February 2015
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<th>Type</th>
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DARIUS considers various SAR scenarios where the operations require the intervention of multiple agencies in a multi-national context.

Build a DARIUS system comprising:
- C4I Segment
- Communications Segment
- Ground Control Stations
- Platforms (unmanned vehicles)
- Sensors
- Other payloads

Scenario trials
- Maritime SAR
- Forest fire with explosion hazards
- Urban/indoor earthquake and Seveso-like chemical accident
Objectives

• Develop interoperability solutions for the unmanned systems
• Seamlessly integrate the unmanned platforms in the command and control loop (i.e. C2/C4I platforms)
• Provide and demonstrate the necessary communication structure without relying on existing infrastructure
• Support the interaction between humans and systems, i.e. first responders, victims, unmanned vehicles and payloads
• Develop a Generic Ground Station
• Define the capability, deployability and sustainability requirements for future SAR unmanned vehicles
• Define and demonstrate operational performance improvements of current deployed solutions
• Reduce the cost of unmanned SAR solutions
Technical Solution

[Diagram showing various ground stations for different vehicles such as Ground Vehicle, Underwater Vehicle, Maritime Vehicle, Tactical UAS, Mini/Micro UAS, and a generic ground station. Connections are made to different control and coordination centers such as Police C&C, Maritime C&C, Health Services System, Civil Protection C&C, Fire Brigade C&C, First Responders in the Field, Tactical Command Post, and Fixed Coordination Centre (Planning and Allocation of Resources).]
Platforms and Payloads

Unmanned Platforms
- UAV HALE / MALE (simulated)
- UAV large rotary (TANAN)
- UAV medium rotary (ReSSAC)
- UAV micro rotary (DFRC)
- USV (INSPECTOR)
- UGV (RoboVolc)
- UGV (CAMELEON)

Payloads
- Comms relay
- Cameras (video, HD, thermal)
- 3D LIDAR
- Towed sonar, echo sounder (maritime)
- Chemical sensors (CO, CO2, CBRN, Hazmat)
- Mobile phone detectors
- Rescue equipment (e.g. lifebelts, drinking water)
Summary of achievements so far

- Concept of operations defined and documented
- Architecture and integration concept defined and documented
- Development and integration ongoing
- Field testing to refine scenarios and reduce technical risk
- Simulated maritime trial, June 2013
- Maritime trial, December 2013
- Urban/indoor and forest fire trials planning and preparation in progress
Engagement with User Advisory Board (UAB)

- Elaborate User Requirements and Concepts of Operation
- Review the evolving technical solution
- Participate in scenario trials:
  - Maritime (December 2013)
  - Urban/indoor (May 2014)
  - Forest fire (October 2014)
- Review results and support exploitation
- Annual UAB Workshops and Dissemination Events

- We want your feedback:
  - Would you buy / use DARIUS?
  - What are we doing well?
  - What are we doing badly?
  - How can we improve?
How DARIUS will benefit users

- Enable the simultaneous control of several heterogeneous unmanned platforms.
- Enable the sharing of unmanned platforms between several user entities participating in the same operation.
- Enable access to the information collected by the unmanned systems by all the interested actors, including actors from different countries.
- Enable the sharing, fusion and correlation of the information through networking the unmanned systems in the same system of systems.
- Enable the integration of the unmanned systems in the overall surveillance/information chain.
- Enable easy integration of the unmanned systems in various legacy C4I/Information chains.
Thank you

For further information, please enquire by email to:

contact@darius-fp7.eu

or visit our Web site:

www.darius-fp7.eu