

SYMPOSIUM ON INTEGRATED APPLICATIONS (B5)  
Tools and Technology in Support of Integrated Applications (2)

Author: Mr. Luca del Monte  
European Space Agency (ESA), France

Mr. Erwin Duhamel  
European Space Agency (ESA), France

Ms. Charlotte Mathieu  
European Space Agency (ESA), France

A EUROPEAN APPROACH TO CRISIS MANAGEMENT BY RESPONSIVE SPACE

**Abstract**

With the endorsement of the European Security Strategy together with the Climate Change and International Security in 2008, European governments committed to give the EU the tools to address security risks induced by climate changes, humanitarian crisis, natural and industrial disasters, terrorism, regional conflicts, organized crime and state failure. Space capabilities could significantly contribute in these areas, but still need to develop into a more mature dimension, as demonstrated by GMES studies such as those on the core service on emergency response, or LIMES, or the on-going G-MOSAIC. The “S of GMES” needs to be substantially improved in order to meet the operational requirements of ESDP or civil security. In each major crisis situation, senior operational officers report shortfalls in tactical space capabilities, such as those intended to provide communications and imagery data to the operations on theatre. While space assets have demonstrated in the past their indisputable added value in support of strategic decision making, margin for improvements exist to make space systems more responsive/reactive (measured in term of time to respond to users’ request), more robust (time to restore the strategic capability) and more affordable.

Initial Earth observation providers competed mainly on pixel quality (i.e. ground sampling distance, number of colour bands, radiometric calibration, etc.). Today they are competing on information attributes as: “Responsiveness”, “Freshness” (Time to customer), “Synopticity”(Swath width and length) or “Affordability”. The ultimate goal is not to blanket the Earth with coverage, but to get the right information to the right people, when they need it.

Europe has currently only some developments complying with the needs of Responsive Space, mostly through scarcely coordinated efforts in industry and agencies, in areas as highly reactive/reconfigurable constellations, formation flight, agility, Plug and Play sensors/platform integration, rapid launch campaign concepts, mini/micro/nano standardised platforms. In order to structure this landscape the European Space Agency has initiated an investigation study concerning the potential and progressive development of a coordinated European Responsive Space initiative for crisis management. The main objectives of the study are (i) the definition of the perimeter and the identification of the European needs regarding operational responsive space through the assistance of a Users’ Representative Group, (ii) the description of European related available tools, technologies and assets, and (iii) the assessment of these existing capabilities leading to the identification of capability gaps. The study will also provide an indication regarding the potential architectural solutions and related technological development roadmaps.