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CIVIL SECURITY AND CRISIS RESPONSE FROM SPACE

Abstract

Europe is facing increasingly significant challenges to cope with humanitarian crises, climate change, cybercrime, and geopolitical instability. There is a need to provide means to act swiftly for European citizens safety and prosperity. With this in mind, ESA together with ESA Member states have elaborated on a need for a European flagship programme for ‘Civil Security from Space’ (CSS).

Civil security and crisis events require a fast and resilient response, when seconds matter in events such as floods or fires and when availability, reliability, integrity and confidentiality are essential for trusted information and communications, (e.g., civil protection, emergency response, humanitarian relief etc). In times of crisis, users, be they civil security, health professionals, security, emergency or economic actors, commonly operate in areas where the ground-based infrastructures are not accessible or have been damaged by the crisis. Those users rely on space assets in anticipating action prior to events, assessing the situation during crisis, communicating and positioning in the field. Access to actionable information is key for effective prevention and intervention, to act quickly and resolve the crisis and minimise its impact.

CSS objectives are to:

- **Deliver a faster response** – Ubiquitous data availability anywhere and in real-time, through global space-ground integrated state of the art communication systems
- **Ensure resilient and reliable data** – Trusted data with implicit confidentiality and availability, offered through secure networking and reliable cloud computing
- **Generate actionable information** – Smart gathering and intelligent processing of data from a multiplicity of sources in space and on ground for a holistic situation awareness in times of crisis, enabled via distributed and networked AI-based edge computing offering data fusion capabilities
- **Take action** – Autonomous and pro-active response to crisis events for the mitigation, support and resolution of unfolding events, enabled through the seamless integration and orchestration of crisis response systems and services.

The benefits of swift action are broad reaching and offer a high return, while the cost of slow action, or worse, no action, presents far-reaching implications, including a diminished ability to protect life and critical assets which are the backbone of our sustainable prosperity.

The programme is reliant on integrated applications, interoperability and federation of systems, and will leverage disruptive technologies, including artificial intelligence, cloud processing, high performance computing, smart networks, advanced EO and IoT sensors, cyber security and secure quantum technologies.