



I'M SPARTACUS

AN EU-SUPPORTED SYSTEM FOR TRACKING ASSETS DURING CRISES HAS BEEN COMPLETED. CLEMENTE FUGGINI AND IVAN TESFAI EXPLAIN HOW 'SPARTACUS' WORKS AND WHAT THE PLANS ARE FOR ITS FURTHER DEVELOPMENT

The 'satellite-based asset-tracking for supporting emergency management in crisis operations' project known as Spartacus was successfully launched three years ago and concluded in October 2016, having created an integrated system of spatial and terrestrial technologies to manage emergency and disaster scenarios.

The management of emergency services and aid following a disaster is a subject of great interest – one in which the European Commission has taken a strong lead. Following a disaster, local communications networks break down or at best become overstretched, making the management and the delivery of first response and aid extremely complex.

Tracking vehicles is a key consideration. Everyone knows that getting aid and personnel quickly to a disaster can be the difference between life and death for some victims. Spartacus is intended to provide accurate tracking and positioning of target objects, principally vehicles, containers and trucks used by the emergency teams, but also those helping on the ground during emergencies. The biggest challenge is the wide variety of tools, standards and protocols used across what inevitably is an equally wide range of applications.

From a technical standpoint, Spartacus comprises Smart Field Units (SFUs), which are customisations of commercial smart devices. These run applications that specialise in localisation and coordination in the field including indoors (FLARE), the exchange of geo-tagged media

(ASIGN), and the tracking and management of transport assets (TIMISS and CTAT). The Spartacus Communication Units (SComUs) provide the link between on-site and remote site elements using 3G or 4G cellular networks, Wi-Fi or a satellite backhauling link if this is needed.

Tracking data, together with the collection of mission-critical relevant information, is visualised using a mapping portal that includes embedded decision support logics in a GIS. The system continuously tracks and traces time, position and ID for all the units, together with other local data from open services and third-party platforms.

This amalgamation of data from differing location sources and users is a key feature of Spartacus. By linking with each other through a common communication architecture, the system can monitor and manage assets, aid delivery and first responders at the scene.

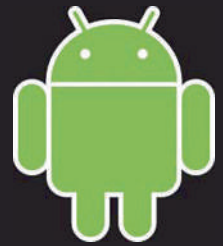
Spartacus in action

The Critical Transport Assets Tracking (CTAT) platform, together with other Spartacus smart-devices, was successfully used as part of a large-scale EU civil protection module exercise (EU ModEX). The exercise was organised on behalf of the European Commission by a consortium led by Spartacus partner Johanniter-Unfall-Hilfe and comprising Ministry of the Interior Austria, Crisis Management Centre Finland, Danish Emergency Management Agency and the Italian Civil Protection Department.

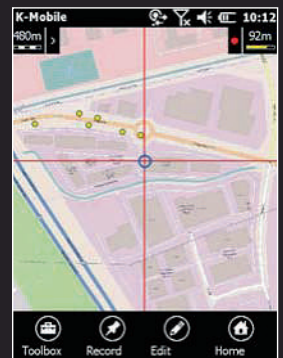
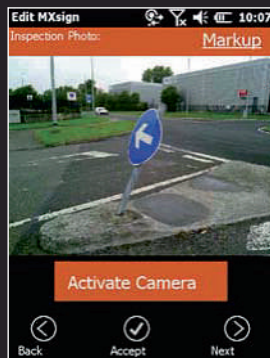
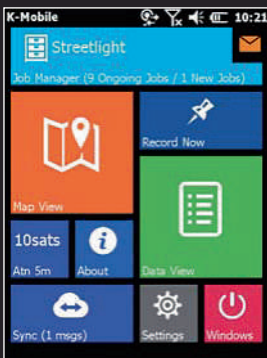
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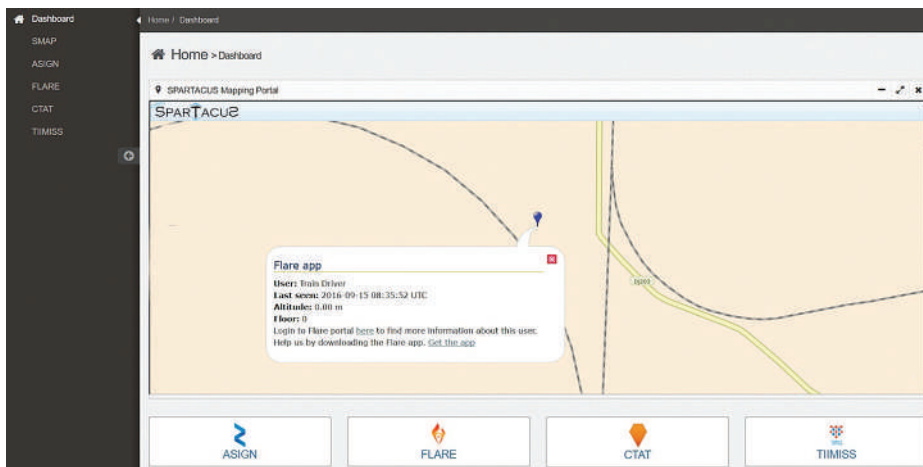
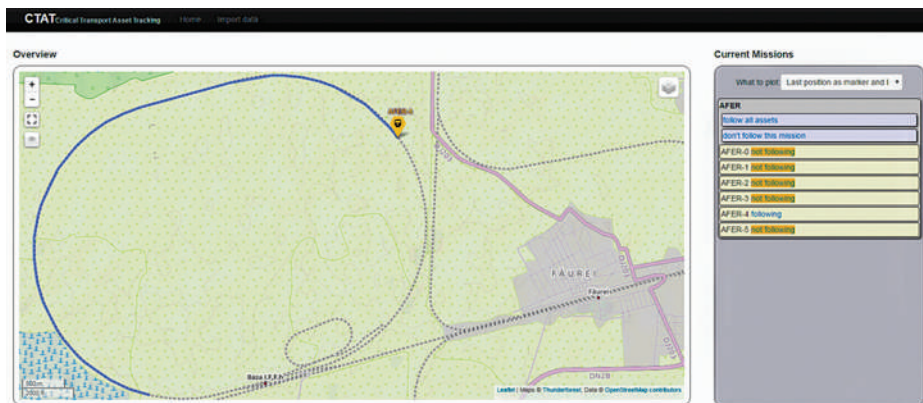
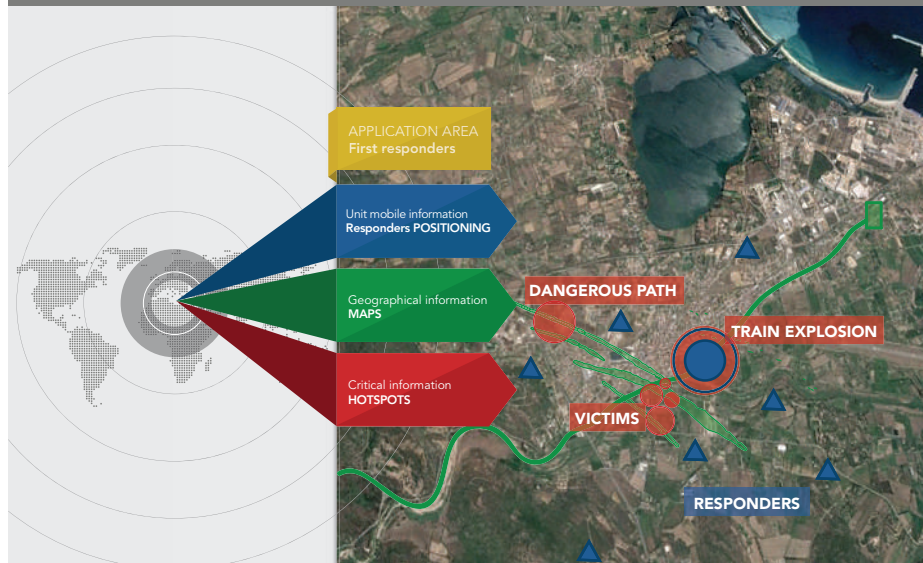
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Vehicle tracking using Spartacus: CTAT view (top); Mapping Portal View (bottom)

The full proof of concept test of Spartacus took place on the 15 September at the Romanian Railway Authority Testing Centre in Faurei (Romania). A specific emergency scenario – a train accident – was designed to demonstrate Spartacus’s support capabilities during the operational management of a crisis involving critical transport assets and first responders. The test was an outstanding success and proved that the integrated system worked faultlessly.

However, the integrated software applications still require a high level of training and experience, including the technical support of IT teams. The challenge now is to re-engineer the software interface and operations to become more user-friendly, so that Spartacus can be operated by the real users.

Some of the system apps were also presented at the Insarag (International search and rescue advisory group) Urban Search and Rescue Team Leaders meeting held in

Tokyo, Japan, between 7 and 9 September. Insarag is a global network of more than 80 countries and organisations under the umbrella of the United Nations. The meetings provide a forum to discuss technical issues relating to operations and training, based on best practices and lessons learnt, and to give input and advice to improve the operational capabilities of international response.

Further developments

Development activity continues, with the focus the seamless integration of FLARE and CTAT. The tracking of vehicles and personnel must be tightly integrated into one app if Spartacus is to become a commercial prospect that can be pitched as an all-in-one solutions to organisations involved in the high-level management of crisis and disasters. Spartacus project co-ordinator D’Appolonia, part of the RINA group, and the Institute Mihajlo Pupin are working closely together to make this happen, combining the positional information of all field assets into one unified solution.

Spartacus has generated considerable interest at a local, European and international level, with many international aid agencies testing and evaluating the system. The Italian Red Cross, through the unit managing its UAVs, is looking forward to the future development of the Spartacus system for the management of daily operations, combined with the use of UAVs and rapid mapping services. It says: “Both the smartphone and hardware solutions are really interesting because they are able to increase our capabilities to localise personnel and victims in the field.”

It is anticipated that other customers would include NGOs, as well as private and public sector organisations. Moreover, the modular configuration of Spartacus means its transport monitoring capabilities could be of significant interest to logistics companies for managing the movement of critical and high-value goods.

Going forward, D’Appolonia will act as the application configurator of the Spartacus system, which will be provided as a service to customers. In that role, we will liaise with those companies providing each of the individual components in order to provide a world-class integrated emergency or commercial asset tracking and communication platform, based on open data and cloud services.

THE SYSTEM CAN MONITOR AND MANAGE ASSETS, AID DELIVERY AND FIRST RESPONDERS AT THE SCENE

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