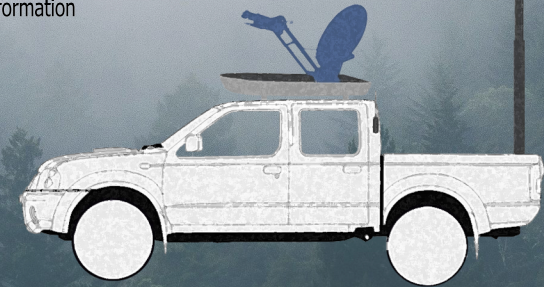




TelecommunicAtion, Localization and real time Environment Detection

TALED demonstrate an innovative integrated TLC/EO/GNSS platform to cope in RT/NRT with all kind of Fire incidents: Forest, Wild, Waste and Hazmat Fires.

Designed to operate from detection to operational response, anywhere and 24/7, TALED originates from the need of institutional operators committed to improve the management of alerts, technical response, rescue and information



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TelecommunicAtion, Localization and real time Environment Detection

<https://business.esa.int/projects/taled>



INTRODUCTION

TALED is an innovative integrated telecommunications and satellite remote sensing platform for fire management to cope in RT/NRT with all kind of Fire incidents: Forest, Wild, Waste and Hazmat Fires, developed within the ARTES 20 Program of the European Space Agency (ESA), by the consortium company ALI, its associate Euro.soft and the start-up IES, in collaboration with the National Fire Brigade and SMA Campania. The system will guarantee better technical and economical performances of the service. TALEL has been integrated in the DSS of Campania Region, operated by SMA, the official service provider and TALEL's team partner.

OBJECTIVES OF THE SERVICE:

TALED demonstrated an innovative integrated TLC/EO/GNSS platform to cope in RT/NRT with all kind of Fire incidents: Forest, Wild, Waste and Hazmat Fires. Designed to operate from detection to operational response, anywhere and 24/7, TALEL originates from the need of institutional operators committed to improve the management of alerts, technical response, rescue and information. SMA Campania is a public company in charge of preparedness, information management and emergency response to all kind of fires. TALEL provides SMA (as, in perspective, public/private/public-private companies with similar characteristics) with the possibility of remotely controlling and managing firefighting operations, in order to improve the workforce, aerial and terrestrial vehicles management. The service includes geographical information, as the tracking of the field operators, early warning of fires, and the prediction of short-term, fire & smoke evolution. Moreover TALEL provides mixed Sat/Local TLC connection in the operation scenario, often not covered by the terrestrial TLC services. TALEL is designed to integrate and improve the current regional remotely accessible DSS, exploited by the various actors involved in firefighting. TALEL target market is based, on one hand, to the actual business of SMA Campania, the service provider of the demonstration project (final customer of the service government of Campania Region), on the other hand to private service companies and public entities, that are in charge of the firefighting in other Italian and European regions.



Ka-SAT antenna

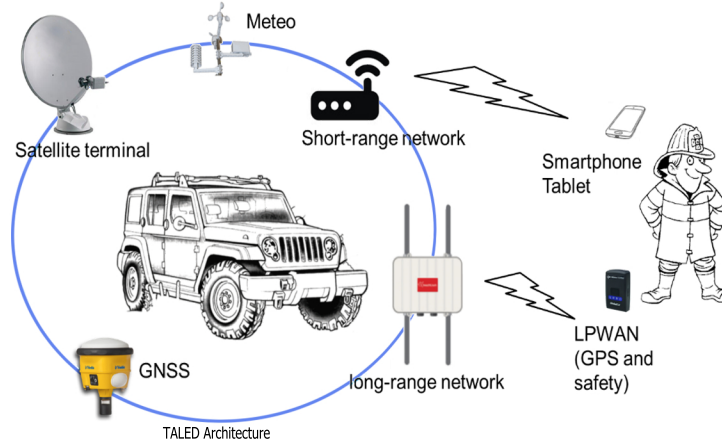
USERS AND THEIR NEEDS:

Three main users/actors, managing fire-alarms and associated emergencies, have been involved during the demonstration:

SMA Campania, a public-owned Campania Region company, manages environmental emergencies within the regional boundaries, including forest and waste fires. SMA is a partner and the main service provider of TALEL. **CNVVF National Firemen Corp**, is in charge of the prevention and the operational response to all kind of fires, both on ground and by fixed wing aircrafts and large helicopters. CNVVF is a partner of, and information provider to TALEL. **Mountain Communities** are in charge of managing local forest resources, including their defence against fires and natural threats. Mounts Lattari Natural Park is an interested user and potential customer.

Users express the needs to get:

- better and more effective coordination in alarm collection and dissemination.
 - better and more effective on-field coordination during emergencies
 - better safety of field operators
 - improved efficiency of water bombing
 - in-house capacity for mapping burnt areas
- TALED answer those needs providing:
- geographic RT/NRT information: EO based maps and info's coming from other existing early warning systems,
 - connectivity to the field teams, even in absence of terrestrial network coverage,
 - localization and safety devices to the field operators, even when operating far from the satellite link mobile station.



SERVICE/ SYSTEM CONCEPT:

TALED System is composed by a Services Center and a number of "relocatable" stations on vehicles.

The **Service Center** has the following features:

- is an accessible system, having security filters, from WEB through browser. Is connected to Operation Center and several Relocatable stations.
- is an hub of heterogeneous data coming from different types of sources (SAT EO DATA, User and Fire operators Signalling, weather and CAP Data)
- Includes data fusion algorithms and simulation
- Is integrated in a decision support system (DSS)

The EDXL interface module allows interfacing with external systems, using Common Alerting Protocol (CAP). The DSS is designed to manage the information coming from the field (real-time) and those based on the EO data, and to be integrated with pre-existing DSS responsible for emergency management.

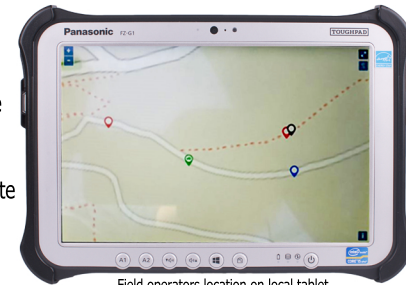
The Data Fusion module has the aim to influence and normalize different kinds of data in order to make them usable by the calculation modules to predict the evolution of the fire and smoke.

Each **Fireline Relocatable Station**, is equipped with a satellite telecommunication system for real-time communication with the center. The field operators are connected via a multi-channel terrestrial gateway, in order to send their position and transmit/receive alarm messages in case of danger.

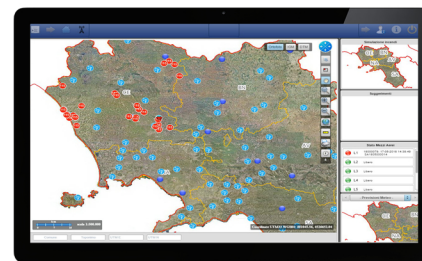
SPACE ADDED VALUE:

TALED System is composed by a Services Center and a number of "relocatable" stations. TALEL deployed a SATCOM infrastructure allowing on site incident response teams to communicate with the Service Centre, considering that they operate "on demand" in emergency situations and have no time for on-site assessments to verify the radio-mobile coverage.

The analysis of the terrestrial networks coverage, and the real operations performed during the fire season 2018 (in mountain areas of Campania region, Italy) shows that the use of the Satellite Communication is needed.



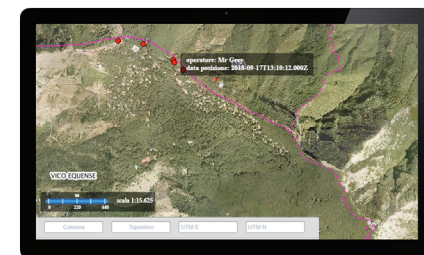
Field operators location on local tablet



DSS - Regional Emergency Room



Relocatable Unit Station Component



Field-Operator locations



LPWAN device