

Advanced Situation Awareness (ASA)



Overall Goal

BRIDGE Advanced Situation Awareness (ASA) assists first responders on scene in increasing situational awareness by supplying real-time visual and other information on the extent of the disaster and its consequences.

Main Functionality

BRIDGE ASA consists of the following three components: Hexacopter, Expert System, and Modelling Module.

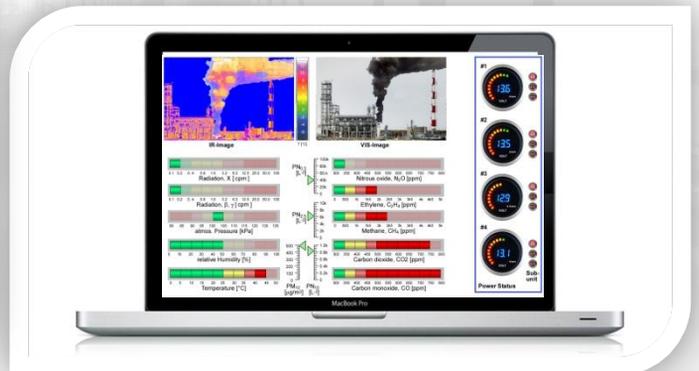
The *Hexacopter* is an unmanned aerial vehicle (UAV) system, which consists of

- Flying platform with six motors;
- Global Positioning System (GPS) and radar;
- Video and infrared cameras;
- On-board computer;
- Environmental sensors; and
- Ground control station.

The Hexacopter provides a live video from a bird's-eye-view perspective, a parallel infrared video, and real-time environmental sampling data, which help assess the magnitude of destruction, fires and health hazards to first responders and affected population. The UAV can be controlled manually or put into a pre-programmed automatic flight modus.



Unmanned Aerial Vehicle

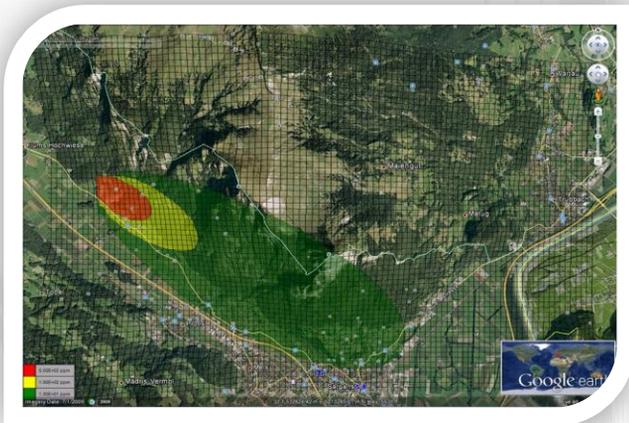


Ground Control Station

The *Expert System* is a software, used to automatically analyse the incoming environmental measurements data supplied by the Hexacopter to the Ground Station. The data is compared against national and international standards, and combined with expert recommendations. The aim of the Expert System is to help the incident commander interpret the obtained environmental data and ease the decision-making in a complex emergency.



Expert System



Plume Dispersion Model

The *Modelling Module* is used to create computer models of the incident site and of plumes in case of an uncontrolled release. It can draw on the pre-programmed generic models of reality-based structures contained in the BRIDGE Critical Infrastructure Library. This module enables the user to assess the physical damage to buildings, estimate the number of victims, and predict the dispersion of hazardous plumes based on metrological data.

Integration with Other Concept Cases

The different components of BRIDGE ASA assist in providing an accurate, real-time update on the incident, strengthening the capabilities of BRIDGE Risk Analyser and BRIDGE SWARM concept cases.

Features Visible in Demo III

The following components of the BRIDGE ASA will be demonstrated:

- Hexacopter: Recorded video demonstration of the flying UAV with live digital and infrared video transmission; UAV;
- Expert System: Safety recommendations applicable to first responders;
- Modelling Module: Estimates of plume dispersion and damages due to explosives.

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