

HighTower

Fire Management Information System



Terra-Vista



WHEN RESPONSE TIME IS ESSENTIAL

Wildland fires are among the most dynamic and destructive of natural or man-made calamities. To date, the process of dealing with wildfires has been more reactive than proactive. In other words, fires ignite, are often influenced by atmospheric conditions and winds, and spread rapidly as time progresses until counter measures are applied. Any fire fighter will readily acknowledge that time to respond to a fire is the key variable in their suppression.

What if you could see the fire from above, at the moment of ignition, and could take decisive action immediately before the fire surged out of control?

Likewise, once a fire has begun to spread, knowing where and how fast it is spreading is critical. Presently, fighting a wildland fire is similar in many respects to fighting a military battle – the fog of fire could easily be substituted for the fog of war.

Terra-Vista has created a suite of capabilities, known as **HighTower™**, designed to lift the fog, building on complementary technology developed over the last decade for the military. Exploiting major trends in computer and communications technology, these systems are designed to be affordable, effective and reliable.

DATA ACQUISITION

Because wildland fires occur in remote locations — frequently beyond the view of emergency response personnel — the most logical way to detect these fires is from the air.



Likewise, generating intelligence requires the creation of data in near real-time. Fire bosses need to know where the fire is located in rugged terrain in order to deploy their aerial tankers and ground teams. All of this information is changing minute-by-minute and frequently is difficult to gather because of smoke obscuration.

As a component of the **HighTower** system, Terra-Vista will customize existing or integrate a new aircraft or RPV based system designed to acquire digital imagery from a variety of sensors – for example, a thermal imaging device that can accurately define the moving boundaries of a forest fire.

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In a high altitude surveillance mode, patrol aircraft or RPV's, properly configured with sensors and communications, can detect early ignition of a fire. In a tactical mode, the raw imagery generated by these sensors is converted into a digital photomap in near real-time. That information can then be combined with a variety of other data such as road networks, location of known hazards, aerial tanker attack plans, and real time meteorology overlays to generate a complete intelligence database.

◆ INTELLIGENCE CREATION

A core component of the **HighTower** system, known as *Global Command*, is a subsystem that includes the integration of advanced digital mapping technology with equally cutting-edge communications technology. Building on the military concept of C4I (command, control, communications, computers, and intelligence), *Global Command* offers its users the ability to visualize the location of all assets and personnel during the firefighting process.

The communications element of *Global Command* starts with highly mobile and autonomous satellite systems that can be easily transported to any location and can be connected via broadband links to aircraft and RPV's. Using WiFi as a primary communications interface, the satellite package is linked to ruggedized notebook and tablet computers – as well as highly portable PDA's – that can be accessed and/or relay information from any remote location to a centralized command center.

Integrated into this communications network is a digital mapping system that can instantly display the location of vital resources or track the movements of key personnel.

The mapping subsystem also seamlessly allows the integration of the digital photomaps generated by airborne resources. Ultimately, the raw imagery is processed into information that becomes intelligence when analyzed by knowledgeable interpreters. In this enhanced and simplified form, the intelligence can then be distributed to field personnel accompanied by an action plan developed by field commanders.



The *Global Command* subsystem leverages the standards of the most advanced database spatial technology including XML protocols as well as supercomputer equivalent processing to deliver results in near real-time.

Global Command provides an environment that can bring together information from a variety of sources to deliver complete intelligence to decision makers in the field or in a centralized headquarters location.

◆ INTELLIGENCE DISSEMINATION

Intelligence is of little use unless it can be readily disseminated to field personnel. **HighTower** incorporates a subsystem known as *Global Reach*, which combines cutting-edge mobile satellite communications with a

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tightly integrated GPS mapping system. Not only do you know where you are, but your home base can constantly track your location, warning you of local hazards.

In addition to voice communications, field personnel also have reliable and seamless bi-directional email and text messaging capabilities as well as the ability to transmit digital photographs.

The *Global Reach* wireless component of **HighTower** is composed of a satellite phone interconnected to a PDA or sub-notebook computer seamlessly integrated with a GPS navigation system. All elements are packaged in a ruggedized case or backpack with padding for protection of electronics. The backpack provides easy access to phone and

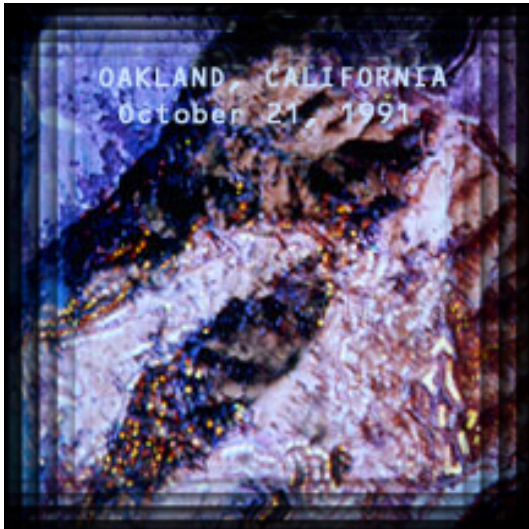
computer components while in motion.

Recognizing that operations may extend well beyond a base camp, the *Global Reach* subsystem includes expanded battery power for long-duration operations with an optional solar-powered charging subsystem.

The customized mapping system comes packaged with regional digitized topographic maps, which are instantly displayable on either the notebook computer or PDA. These maps provide the ability to establish your location and to uplink this information to the *Global Command* server via periodic satellite communications. Maps can be edited and relayed for viewing by any PC having authorized access to the *Global Command* server.

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*Thermal infrared imagery over the devastating Oakland Hills Fire showing individual burning structures visible through smoke obscuration was the early inspiration for the development of the Terra-Vista **HighTower** system.*

All data elements are both constantly and automatically backed up to non-volatile memory ensuring the viability and autonomy of the *Global Reach* information subsystem in the field. Anticipating the hostile environment of wildland fires, Terra-Vista has engineered *Global Reach* for the most demanding conditions.

THE TOTAL SOLUTION

The combination of all the integrated subsystems of Terra-Vista's comprehensive **HighTower** service provides a unique opportunity for fire bosses to get the "big picture" and to rapidly respond to new threats in the field with instantaneous access to intelligence.

Likewise fire bosses can direct operations in the field in a manner, which allows field crews to have only the information they require when they need it.

Every **HighTower** system is carefully customized based upon the requirements and existing capabilities of a fire fighting organization. The first phase in creating an operational **HighTower** system includes an

extensive needs analysis so that only the elements that are deemed necessary are provided by Terra-Vista and are built around the unique requirements of each customer.

If your organization is ready to advance to the next stage of fire information management, which incorporates the best elements of military command and control, contact Terra-Vista today to obtain more details and to discuss a specific system configuration.

For additional information, consult the Terra-Vista web page at www.terra-vista.com or send an email to:

customerservice@terra-vista.com



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