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The Effect of Space Visualization Tools in Commercial Markets (3)

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FIREWATCH - SPACE VISUALIZATION TOOL FOR EARLY SMOKE DETECTION

Abstract

Introduction. Fires are a global threat and destroy more than 30 mio hectares of forest every year. This causes 25

Methodology. Innovative DLR space camera technology finds unusual terrestrial smoke detection applications. This technology transfer from a high resolution CCD camera with a highly sensitive electronics package was proposed from DLR specialists to the German IQ wireless company (SME). The key to this dual usage is the high resolution (1024*1024 pixels), special band pass filters and the more than 16,000 grey tones of the sensor that enables the system to detect smallest variations in light intensity in connection with smoke generated by forest fires. Raised above the tree tops, the camera monitors the landscape and captures panoramic views of the surrounding woodlands. The digital images are sent via optical glass fibre cables to a PC for system control and real time image processing. The image processing software allows a complex analysis of typical smoke features (dynamical and structural characteristics, brightness). If smoke is detected, the computer gives automatically an alert and immediately transfers compressed image data and additional information (time, fire co-ordinates) over a mobile network (wired or wireless IP link) to a head office, where they are displayed on a local map. The system detects smoke plums ¿10 m up to a distance of 30 km within 6 min of daylight and 12 min at night. Using the camera's fine grey tone gradation, it is possible to analyze the smallest of changes in the atmosphere and landscape panorama.

Results. DLR has collected experiences in fire monitoring from different platforms with different sensors. FireWatch (updated and produced by IQ wireless) became a highly specialized tower based detection tool that monitors ¿ 80