Aerial sketchmapping - A new tool for fire managers

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Aerial sketchmapping is the geo-locating of features that are seen on the ground below the aircraft, and the subsequent recording of these features. Historically aerial sketchmapping method requires hand-sketching on hardcopy maps or photos, and the translation of that information to a digital file. In 1999 USDA Forest Service embarked on a project to develop a digital aerial sketchmapping (D-ASM) system to replace or augment the current system. Recent advances in microprocessor speed and PC system performance now make possible the use of portable computers to aid with aerial sketchmapping. The USDA Forest Service Remote Sensing Applications Center and Forest Health and Technology Enterprise Team (FHTET) worked with a software vendor, to develop a product that will meet the need of aerial surveyors. Several hardware and software options were investigated. Advantages to the D-ASM system include automatic tracking of the aircraft's position on the map base through a link to a GPS receiver and reduction on the time spent digitizing data into a GIS.

The D-ASM has been widely accepted in the sketchmapping community with over sixty systems in service with federal and state forest health professionals. Soon after the initial development, a D-ASM system was shown to Air Attack crews who liked the idea but wanted the equipment to be smaller and a way of getting the information off the aircraft in real-time. Two technological developments solve both issues; commercially available touch-screen pen tablet computers and a long range high speed data link RIPCom.

The Remote Internet Protocol Communications System (RIPCom) project represents a successful two-year collaboration between NASA-Goddard and RSAC to develop a cost-effective, multi-task communications solution for the Forest Service based on NASA research and technology. RIPCom consists of commercial off-the-shelf components that were each chosen because of their unique performance characteristics. The 2003-2004 field tests demonstrated that that RIPCom would deliver the required through-put (1 Mbps) up to a range of 20 miles. ConnectVia Incorporated (Fort Worth, Texas) is constructing the second generation RIPCom systems incorporating the lessons learned from flight testing and operational deployments. The new RIPCom system will be housed in two small packing cases, one containing the computer, modem, and radio, and the other containing the antenna and its mast, and two cables, one for power and the other to connect the electronics contained in the first case to the antenna.

The integration of the D-ASM and RIPCom systems would enable fire fighting experts to collect information about an incident and rapidly disseminate it through the incident's GIS or directly to fire fighters on the ground through wireless devices. Possible users include Air Attack, Helitack, Situation Unit Leaders, Operations Chiefs and Incident Commanders.