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Live Out of the Box

Jonathan Higgins

A decade ago, during coverage of the First Gulf War, television viewers began to witness the fruits of numerous advances in satellite newsgathering (SNG) technologies and the use of those technologies by the global news media. These developments gave audiences a taste of live events from the battlefield for the first time and fuelled an increasing appetite for immediate news, rather than days-old reports.

The technology that enables newscasters to report events live was developed throughout the 1980s and is based on the SNG "uplink." An SNG uplink is a transportable satellite ground terminal that can transmit material from remote locations, either live or from tape. The uplink can be packaged in either "flyaway" form for deployment by air or integrated into a truck for predominantly metropolitan use. Though "transportable," the flyaway version of the SNG uplink consists of thirty to forty cases of equipment, includes a one to two meter diameter antenna, weighs up to 1,500 kilograms, and requires one or two highly-skilled

Jonathan Higgins is Managing Director of Beacon-Seek Ltd., a company he founded in 2000. Prior to that, he managed the British Broadcast Corporation's News Location Facilities Unit, the newsgathering engineering unit of BBC News. He is the author of *Satellite Newsgathering*.

technicians to assemble and operate. Thus, the logistics of transporting a flyaway around the world was, and continues to be, no mean feat. Apart from logistics, broadcasters had to manage additional challenges, such as the need to secure permission from sovereign nations to import and use the equipment, and the task of organizing a satellite route through which the transmission could be sent.

In addition to the SNG flyaway, other less cumbersome live reporting tools have emerged over the past decade, and though they are not replacing the SNG flyaway, they are proving complementary to the existing armory of newsgathering tools at the disposal of reporters and executive news editors. These new tools are primarily based on the use of satellite telephones or "satphones" in the global Inmarsat satellite system.

Originally designed for maritime communication, the Inmarsat satellite system has now expanded to other market sectors, including newsgathering. The Inmarsat system consists of four geostationary satellites, with one above each of the major ocean regions, resulting in coverage across most of the Earth's surface—except for the polar regions. A call from an Inmarsat mobile terminal can be either a standard voice or a high speed data call, and is sent directly to the closest overhead satellite. From there it is routed back down to a “gateway” station on the ground, which then transfers the call to the public phone network.

Other factors have also driven the development of newsgathering technology to ever-smaller equipment. There has been the rapid development of PC technology through the 1990s, the falling cost and size of storage technology, and the burgeoning spread of the Internet—from an obscure instrument used by universities and military research organizations, to a universal tool that is highly accessible in the developed world and increasingly accessible in a number of developing countries.

Running in parallel with these advances was the development of digital video compression, which began in the early 1990s in Europe and, by 1994, led to the introduction of highly-portable digital SNG systems. These digital systems, using a dedicated PC unit working in “store and forward mode” and antennas that were just nine-tenths of a meter, could store and then stream stories over the relatively low-bandwidth connection of an Inmarsat satellite phone, but not in real time. The principle of store and forward technology is that very large video and audio signals can be played from either a tape or directly from a camera

into a computer's hard disk, where it is digitally sampled and stored. Once stored as a digital file, it can then be fed at a much slower rate over the low-speed connection of an Inmarsat data link. The file is then received at the studio on a corresponding unit, which can replay the piece in its entirety.

The store and forward process was first used by the BBC to cover the activities of the Taliban in Kabul, Afghanistan in October 1996. The BBC used a new rugged and compact store and forward unit manufactured by Toko of Japan in combination with an Inmarsat “B” satellite telephone. These two pieces of equipment together enabled BBC journalists to send reports from virtually any location in the world and work unaided in the field without experienced satellite uplink technicians; however, live broadcasts were still not possible. While several other manufacturers produced store and forward units, the rapid development of twenty-four hour news channels around the world created an increasingly competitive need to come live from virtually anywhere, for any story.

This next step in the evolution of mobile satellite newsgathering technology came in 1998, when the BBC and 7E Communications, a United Kingdom-based technology company deeply involved in Inmarsat technology, conceived the videophone, which led to the production of the “Talking Head” videophone in early 2000. The Talking Head was designed for use with the Inmarsat GAN compact satellite phone to provide a “two-box” solution for live newsgathering. The Inmarsat GAN weighs about three kilograms and is the size of a laptop; the Talking Head videophone weighs less than five kilograms is about the size of a large lunch box. Both units are battery

powered, and can be used literally anywhere that has clear sight of a satellite.

The videophone was first used for a live interview with the Dalai Lama from his home in Tibet through the BBC News Online website in February 2000. The BBC continued to use the Talking Head unit throughout 2000 and other organizations, such as CNN, also began to buy units. However, the Talking Head was still relatively unknown until April 2001, when CNN used one to cover the return of 24 captured crewmembers of a U.S. Navy EP-3 reconnaissance plane on Hainan Island, China. Following this report, the Talking Head videophones rapidly became a "must-have" item for all U.S. networks, as well as television news agencies such as Reuters and the Associated Press Television News.

The latter part of the 1990s also saw the rapid development of high-quality, low-cost domestic camcorders. These camcorders can produce excellent pictures at a fraction of the cost of broadcast television cameras. Reporters can be easily trained to produce good quality videos that can be further enhanced with inexpensive, off-the-shelf editing software installed on a laptop PC. Together, this powerful combination of inexpensive camcorders, laptops, videophones, and satellite phones, as well as the spread of the Internet, has meant that compressed video and audio files can be sent from almost anywhere.

Accompanying the relatively rapid reduction in size of newsgathering equipment has been the reduction in cost, a phenomenon epitomized by New Delhi

TV (NDTV), which won an "innovative use of technology" industry award in 2002. The station showed how a reporter with an hour of training, a \$3,000 camcorder, a \$2,000 dollar laptop running a \$100 video editing package, a shareware video compression program, and access to a cyber-caf, was able to provide news reports tailored for NDTV's audience from the 2001 World Trade Organization conference in Qatar.

The latest developments in newsgathering technology include the introduction by Inmarsat in November 2002 of the BGAN terminal, which is a regional service that offers a fast, "always-on" internet connection from a tiny terminal. Though it is not suitable for live use, this \$1,500 notebook-sized unit is set to reawaken interest in store and forward technology. Furthermore, a Swedish company called SWE-DISH has also produced a 35 kilogram suitcase-sized unit that can achieve high-speed (2 Mbps) connections via conventional satellites.

How do news editors regard all of these developments? Clearly, advances in low-cost, efficient newsgathering equipment have greatly extended editorial capabilities for first-response coverage. But perhaps even more important is that the number of staff now needed to be sent to dangerous locations, and the associated costs, has been significantly reduced. Yet, even with all of these advances, one still finds that for periods of sustained coverage, the traditional flyaway is still the primary choice of news editors. This is mainly due to the fact that viewers will only tolerate lesser-quality videophone images for so long, when they expect high quality flyaway images.