

Telecommunications Reports presents....

Selected Articles from **TR Daily**

October 31, 2011

Courtesy [Paul Kirby](#) and others, [TR Daily](#)

INDUSTRY, PUBLIC SAFETY REPS CONCERNED ABOUT INTERFERENCE FROM AERIAL COMMUNICATIONS

While a deployable aerial communications architecture (DACA) could help meet the needs of first responders and others when terrestrial communications are knocked out during disasters such as earthquakes, hurricanes, and wild fires, the FCC and other stakeholders should proceed carefully to ensure that such operations don't interfere with commercial and public safety communications on the ground, industry and public safety representatives and others said today. FCC Commissioners will consider by the end of this year whether to adopt a notice of inquiry to explore various DACA issues, FCC Chairman Julius Genachowski said at an FCC DACA workshop.

The NOI was one recommendation of a white paper released last month by the staff of the FCC's Public Safety and Homeland Security Bureau (TRDaily, Sept. 22). The white paper said the FCC should also (1) host a DACA workshop by the end of this year, (2) share its findings with other federal agencies, including the Federal Emergency Management Agency and Federal Aviation Administration, "to initiate discussions regarding next steps for possible pilot programs and implementation," and (3) work with the State Department and other agencies to assess whether there are any international implications to DACA deployment.

The paper said that among the platforms that are available for DACA are small unmanned aerial vehicles, weather balloons, high-altitude long distance unmanned vehicles, and deployable suitcase systems, which can be placed on low-flying aircraft and used as repeaters.

In response to a public notice issued in January (TRDaily, Jan. 28), commercial and public safety wireless entities urged caution in deploying DACA solutions, noting the potential for interference to other systems and logistical concerns, but companies involved in the deployment of such platforms touted their viability (TRDaily, March 1). A number of those concerns and opportunities were discussed at today's event.

In brief remarks, Mr. Genachowski stressed the potential of DACA applications. "As you know, communications capabilities may be limited during and immediately after a disaster, when the terrestrial communications infrastructure may be damaged [and] become unavailable for a period of time," he said. "In the first 12 to 18 hours after a catastrophic event, deployable aerial communications architecture has the ability to temporarily restore critical communications, including emergency communications and 911 calling. For example, deployable architecture would have been useful in situations such as Hurricane Katrina, when 38 911 call centers became inoperable and over three million customers lost telephone services. Implementing deployable aerial communications architecture would ensure the restoration of such emergency communication services during similar disasters. These kinds of capabilities are not science fiction. They are already being used by the by the U.S. military for localized communications and to provide enhanced coverage areas."

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Mr. Genachowski noted that the issues regarding DACA include "how to protect terrestrial uses from harmful interference as they are restored, how best to coordinate such use, and the most efficient method to authorize such uses during an emergency."

Wireless industry and public safety speakers also stressed the importance of planning to avoid any interference to terrestrial networks that are being restored after an emergency or that remain running.

"Obviously aerial deployment can have benefits, but the coordination and planning is key," said Jim Bugel, assistant vice president-public safety and homeland security for AT&T, Inc.

He said that wireless carriers must be part of any DACA planning and that DACA must accommodate all terrestrial wireless air interfaces. He suggested that the FCC, in cooperation with FEMA and other federal and state agencies, could oversee implementation and coordination of DACA. Like other speakers, Mr. Bugel also said that the availability of backhaul was crucial to any successful DACA deployment. And he also said he worries that people might think that an aerial communications network can replace terrestrial systems. "It doesn't even come close," he said. "It's a drop in the bucket."

Brian Josef, AVP-regulatory affairs for CTIA, also urged caution. He agreed with panelists about the need to preposition equipment before emergencies and ensure that there is coordination, including in real-time, with wireless carriers, which he noted use various technologies to restore service after emergencies. After Hurricane Katrina, for example, carriers deployed 427 cells-on-wheels (COWs), he said.

Mr. Josef expressed concern that aerial communications could make it more difficult for wireless providers to get service up and running, saying, "There's a wide recognition of the interference potential." He echoed other speakers' observation that the capacity of a DACA deployment would be limited by its access to backhaul and power sources.

David Buchanan, chair of the National Public Safety Telecommunications Council's Spectrum Management Committee, said that DACA "gives us another option" in meeting the needs of first responders during emergencies. "I would just caution that we carefully plan it out ... and make sure that we don't cause more problems than we solve," he added.

Mr. Buchanan noted that channels used by part 90 public safety agencies are extensively shared and reused. "It's going to require some very good frequency pre-planning," he said of a DACA deployment. "The height is very critical on this stuff. ... It doesn't take much when you get up high to interfere over a wide area."

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As a result, the FCC should impose height, as well as power, limitations on DACA, Mr. Buchanan said. He also said the Commission should consider limiting the use of aerial communications to 700 megahertz band interoperability channels, although equipment would need to be available. He said paired VHF interoperability channels could also be used, although he said there aren't many channels available. The federal government should also involve regional planning committees and state interoperability executive committees, he said. The government should also require a plan to be in place before aerial communications are deployed after an emergency, he said. Mr. Buchanan also cited the cost of deploying an aerial communications network and who would pay for it.

Daniel Devasirvatham chief technology officer-Applied Technology Division, Defense and Maritime Solutions at Science Applications International Corp., suggested that limiting aerial communications to between 1,000 and 10,000 feet could keep their radius, and thus interference potential, down while still providing a reasonable coverage area. However, regulators need to decide how to define coverage and what harmful interference is before a system is deployed, he said. The answers to those questions "can make or break this whole thing," he said. "The engineering problem's very simple if the parameters are known," he said. Like other speakers, Mr. Devasirvatham stressed the need for close collaboration among the FCC, FEMA, and FAA. "A bunch of people have to talk to each other," he said.

Al Johnson, director-integrated information and communications technology support for the chief information officer at the Department of Defense, agreed that decisions have to be made up front about what DACA is attempting to accomplish - including how much geography it will cover and who is the network supposed to enable communications between. "There are just huge issues on the spectrum side of the house that have to be thought through," he said.

Mr. Johnson and others also stressed the importance any network being flexible. Mr. Johnson said it must be able to "change on the fly" as conditions change, and he said it should have sensing capability in order to use unoccupied channels. Mr. Johnson said that while the FCC and FAA must collaborate on the effort, he believes the Department of Homeland Security should be the agency to oversee it.

During earlier sessions at today's event, federal and state government officials and company executives detailed the use of aerial communications so far and discussed the promise for the future.

Vincent (Tex) Boyer, emergency communications coordinator for FEMA's Region IV, said his agency has used airborne repeaters mounted on Civil Air Patrol aircraft in various emergencies, including fires in Florida and Texas, an ice storm in Kentucky, and last summer's East Coast earthquake. "The cost is very, very reasonable," he said, while adding that it can still be difficult to sell the idea on some managers. Like others, he stressed the importance of advance preparation.

Capt. James Cash, chief-C4IT and sensor capability for the U.S. Coast Guard, called aerial communications "very intriguing," saying it would help with restoration efforts during emergencies and

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provide first responders the confidence that they will have communications when they need it. He said many aircraft were used during the cleanup of the Deepwater Horizon oil spill in the Gulf of Mexico last year, but that "very few" planes were able to transmit much-needed real-time video.

Edwin (Ted) David, leader-Advanced System Concepts Group at the Massachusetts Institute of Technology's Lincoln Laboratory, said aerial communications could enable more coordinated relief efforts after disasters rather than a "piecemeal" terrestrial-based approach. Aerial communications also can be deployed quickly and provide greater scale than terrestrial solutions, he said.

Gerald Knoblach, cofounder, chairman, and chief executive officer of Space Data Corp., touted the benefits of the balloon-borne platforms it sells, noting they have been used by the U.S. military, including in Afghanistan, and the oil industry. He said it takes about 15 minutes to prepare and launch a balloon.

Ted Wierzbowski, director-UAS airspace integration for AeroVironment, Inc., talked up the company's hand-launched, battery-powered small unmanned aerial systems, which take minutes to launch and fly below 500 feet. The company also has developed a higher-altitude, longer-endurance vehicle. Among the technical issues to be considered with aerial communications are spectrum, size, weight, and power, he said.

But Bob Buckle, CEO of Intelcomm Ltd., suggested that various airborne systems discussed at the workshop take too long to deploy. His company markets a self-contained "autonomous radio network" that is enabled by a tiny box with a range of 100 meters to 30 kilometers and that can allow communications involving 40 to 50 people. The system reaches back to LEO (long earth-orbit) satellites, he said, adding that makes more sense than waiting for VSAT (very small aperture terminal) devices to deploy in emergencies.

Mr. Buckle said aircraft- or balloon-borne communications would result in interference to terrestrial systems, which he said wouldn't occur with his system. Also, he said users can be preregistered on his system to avoid congestion. He also said it has broadcast capabilities. Mr. Buckle said the FCC could allow the technology to be deployed immediately. - Paul Kirby, paul.kirby@wolterskluwer.com