

Pilot Project / New flight-control system could make friendly skies a lot safer

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WHAT IF THE PILOT of your plane was murdered by terrorists or incapacitated by a heart attack?

And what if ground controllers could turn on video cameras by remote control to view the incident, automatically take over control of the plane, lock the cabin doors, dump fuel and make an emergency landing?

Sounds implausible?

Well, aviation experts are interested in just such a plan - and its code name is TOMCAT.

Raymond Joao, an inventor who is also a lawyer and former engineer for the old Sperry Corp. in Lake Success, has been awarded a patent for a system that could control planes, trucks or boats by remote control to prevent terrorist acts or other accidents right at the start.

The invention could greatly enhance flight security, according to aviation experts, who say there is no such security system remotely comparable. And while there are many issues to be resolved, from building a prototype to gaining the acceptance of pilots, some experts see promise.

Mary Schiavo, former inspector general of the U.S. Department of Transportation, said, "It's an interesting patent and a great idea ... There's no operational system right now that does all of that."

As an inventor, Joao, 41, has been awarded 14 patents and has 90 pending. He has worked on designs of electronic warfare and strategic defense systems and software for Sperry in Lake Success and Loral Electronics. He worked on an underwater submarine project for the British navy and on a guided missile frigate for the U.S. Navy.

He was head of the Intellectual Property Rights/ Technology group at the Mineola-based law firm of Meltzer, Lippe, Goldstein & Schissel. Joao, who lives in Westchester, has since left the firm.

He began thinking about such a remote-control safety system in the early 1990s when carjackings were a concern.

Now, his plans have been adapted to face the new kind of threats evident since the terrorist attacks of Sept. 11.

Joao's invention would begin with onboard surveillance to detect hijacking attempts. Under plans filed with the patent office, his system would be able to turn on video cameras and listening devices within the cockpit and cabin of an airliner, and dead-bolt cockpit doors, disable controls, take over control of the plane itself, and then land it - all from a ground control center, basically using the Internet. It could even deploy a parachute to ease the landing.

The ground control would be operated over dedicated phone lines (much like the Kremlin-White House emergency "hot line") making it nearly impossible for anyone to break through the communication system.

The ground-control center would also monitor the plane's pressurization and oxygen systems and detect whether the craft is off-course, and headed for the White House, the Pentagon, cities or areas with large populations.

Contact with the crew would then be attempted. If no contact is accomplished, and if it is determined that the crew has been disabled or under distress, then the plane would be taken over by ground control, its course changed and the plane landed.

There has been major concern that terrorists could also take over barges and small boats, loaded with explosives, and crash them into bridges. The system is designed to work on boats, as well, taking over the controls and steering.

Because of the Sept. 11 terrorist attacks by hijacked airliners, President George W. Bush has called for research on new technologies, including a system that would use remote control to land a plane (as is possible in Joao's patented system).

The proposal is likely to take some time to prototype, test and deploy. John Mazor, a spokesman for the Air Line Pilots Association, was unsure about whether the system would guarantee the safety of passengers. He said "the problems are vastly complicated" in setting up a system to take over control and land a plane.

A spokesman for the Federal Aviation Administration declined to comment.

But there is growing interest in this kind of technology in the aviation field. Remote-controlled drones such as Predator, made by General Atomics Aeronautical Systems in San Diego, are playing a key role in the war in Afghanistan.

And Boeing has been developing a robotic, pilotless strike aircraft called the X-45, which is supposed to have a test flight later this year.

Meanwhile, Joao plans to develop his system on Long Island - and to perhaps build a new industry.

"There are certain things we need to develop, like software, and many other things that go into the system, and the fact that we have the patent for those puts us in a good spot," he said.

"I intend to forge partnerships and strategic alliances with many of the Long Island technology companies and Internet technology firms as well. We're in the formative stage right now, but I intend to locate on Long Island because of the technology expertise already here.

"The defense industry was once major on Long Island," he said. "But now, what I see is the ability to take this information technology and put it into a military application. You can utilize Internet technology and you can apply that now to a defense industry," he said.

"It may help Long Island to become a military contractor again in this new era, using information technology. We own the critical intellectual property."

Joao added, "We want to get Stony Brook University involved. Stony Brook is one of leading engineering schools in the country."

He has met with Yacov Shamash, the dean of the College of Engineering and Applied Sciences and the Harriman School for Management and Policy at SUNY Stony Brook, to discuss the project. Shamash is also the vice president for economic development.

Shamash said, "There are things we can work on with a lot of companies. They have ideas and they want to try them out. They may not have the manpower to do it, so they would essentially work with the university and let the university help them develop it."

Some elements of Joao's system are currently available, such as auto-pilot and the video surveillance.

But none of the elements had been invented when Joao first started to work on his invention years ago, but technology caught up to his idea. For example, Internet television cameras developed during that time. "Before I develop one now, I could buy one or partner with some company that makes them and have them make it adaptable for use in the system."

An important element in Joao's system is the ability to also keep track of the critical in-flight black box information. There would be a steady stream of such information, both technical and voice information, recorded at a remote area away from the aircraft. In case of an accident, or other incident, information would always be quickly available, and there would be no need to ever again search for the black box. (The black boxes of the planes that struck the World Trade Center buildings have yet to be found.)

Schiavo, also a professor of aviation, said that the government has concerns about air safety, other than with hijacked airliners. She added, "I know he's [Joao's] thinking big planes and saving people's lives, but my personal opinion is where we're going to have the next round of problems - and the industry and the government have absolutely no idea what to do about it - is with smaller [private] planes.

"You could simply pack a tiny jet with explosives and fly it through the Capitol and you could do as much damage as a 767," Schiavo said. If you put such an override capability on smaller planes, then you've solved a huge problem, because we have no idea what to do about private planes."

Joao's system is designed to do just that. His override system could divert the small plane away from certain areas and land it safely.

Joao's interest in such a system was sparked by the 1999 crash of the chartered Learjet which killed pro golfer Payne Stewart and five others on board.

Stewart and the others were incapacitated by the loss of cabin pressure and failure to obtain oxygen. Military pilots sent to observe the unresponsive craft reported that the cockpit windows were iced up, but there was nothing they could do. Joao's system could have monitored the pressure and oxygen levels in the cabin and deployed oxygen before and then even land the plane.

A remote system might have also been useful in the case of EgyptAir 990, which crashed into the sea 60 miles south of Nantucket Island. The National Transportation Safety Board recently concluded that a co-pilot's "manipulation of the controls" caused the crash that killed 216 people.

Schiavo said that federal agencies tried to implement certain systems years ago, such as video surveillance, but encountered strong opposition from pilots.

"I have been a big proponent of video in the cockpit for some time," she said, "because the National Transportation [Safety] Board has been a proponent ever since EgyptAir. Had we had it, we probably could have saved one or possibly two of the 9/11 planes because we would have known what was going on."

[Illustration]

Caption: Newsday Photo / Tony Jerome - Raymond Joao, a lawyer, inventor and former engineer, has patented a system to thwart; Ground Control. Raymond Joao has dreamed up hijackers' worst nightmare a device that thwarts them from the tower. Newsday Photo / Tony Jerome - Raymond Joao

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Newsday Photo / Tony Jerome - Raymond Joao, a lawyer, inventor and former engineer, has patented a system to thwart; Ground Control. Raymond Joao has dreamed up hijackers' worst nightmare a device that thwarts them from the tower. Newsday Photo / Tony Jerome - Raymond Joao

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