

NAV Canada strips away paper; A system of electronic strips developed by the air traffic control agency is making a difference here and airports around the world, writes Jennifer Campbell.

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Byline: Jennifer Campbell

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The NAV CANADA-developed 'integrated information display/extended computer display' increases reliability and efficiency in air traffic control. The system has been sold to air traffic authorities in Britain and Denmark, and discussions continue with officials in the U.S.

All over the world, there are air traffic control operations that manage their aircraft with white paper strips. The strips include all the pertinent information about the crafts that are taking off and landing, and they are manually handed from the ground operator to the in-air controller, and so on.

Sound primitive? It is, a little. But it's the way things have been functioning for years and, the people at **NAV Canada** say it's extremely safe.

But, starting in the 1990s, the **NAV Canada** engineers thought the system could be more efficient and they began developing a technology that uses electronic strips, known as the "integrated information display system/extended computer display system" or IIDS/EXCDS to the engineers.



"It's in most of our towers across Canada," said Robert Ledingham, head of the group of advanced air traffic management engineering. "We file the information and display it nationally."

It's in the Ottawa tower, and in 28 other locations across Canada. Toronto was the first to go paperless, back in 2000.

Kim Troutman, vice-president of engineering at NAV Canada, says the IIDS/EXCDS system is steadily being improved. 'We're always working on making it more efficient. It slowly gets better.'

In addition to tracking aircraft by radar and on a software system that produces the electronic strips with relevant aircraft information, EXCDS has a surveillance radar display that shows controllers the surface movement at an airport.

It also has weather display. Future upgrades will include integrating communications controls such as radios, transmitters, receivers, and phones into the touch-screen technology.

"When they were working with (paper) flight strips, if one guy wanted to say something, he would write up a strip but the other guy wouldn't see it so they used to use hotlines," Mr. Ledingham said.

"Now, we can communicate between positions without hotlines which means fewer errors. When the controller does something, he moves it to the next controller and everyone sees it. People know what's coming at them and it really cuts down on the verbal communication."

The **NAV Canada** engineers stress that the paper-strip system is safe but the new system is more efficient, in the way a PC is more efficient than a typewriter for producing documents.

But developing it wasn't a speedy process.

"It wasn't a flash," said Kim Troutman, vice-president of engineering, taking in a demonstration in the lab at the Technical Systems Centre on Hunt Club Road. "We're always working on making it more efficient. It slowly gets better. What you see in this lab is our efforts to continually improve it."

"We are 99.99999 per cent accurate which means we fail every 50 years," Mr. Ledingham said. And even if the system does fail, it's built with protections and multiple backups. They've been running it in the lab for 10 years and it has yet to fail.

"We don't leave anything to chance. If a system failed, the controller would never know what happened."

Others are convinced. **NAV Canada** has sold the technology to its British equivalent as well as to Denmark and negotiations continue with other countries.

The U.S. Federal Aviation Administration, the world's biggest air navigation provider, is still using paper but Mr. Troutman says they're in discussions.

"We're working on it," he said. "It's a challenge with the FAA. They're a big organization but we've been talking to them for the past two or three years."

While **NAV Canada** does a lot of its own development, but remains a purchaser of equipment such as radars, voice-communication switches, and radios.

"It wouldn't make sense to do a whole bunch of development for, for example, a voice-communications switch when you can go out and buy that technology," Mr. Troutman said. **NAV Canada** was able to purchase such a switch from SolaCom in Gatineau.

"Our philosophy is that we look for the best, most cost-effective approach, not only for the initial development or procurement, but for the long-term," Mr. Troutman said. "People change their cellphones every couple of years but a voice-communications switch (that) a controller uses to talk to a pilot or other controllers (is) expensive and they last for 15-20 years."

It's the software development, such as the EXCDS system, that they've found themselves most efficient at doing themselves.

"We have become one of the technological leaders in the industry," said Ron Singer, manager of media relations. "It brings in additional revenue and saves costs for the overall industry."

NAV Canada operates on a break-even basis so when it brings in additional revenue, the savings are passed on to its customers, the airlines.

"Our philosophy is build once but use twice," Mr. Troutman said. That worked with Britain's National Air Traffic Services, which had the EXCDS system and needed a slight adaptation.

They suggested it and **NAV Canada** came through with a code callsign distribution system replacement that matches the codes transmitted by aircraft with their filed flight plan, making it easier for air traffic controllers to positively identify aircraft on their displays.

"It saved (Britain) a lot of money," Mr. Troutman said. The system, along with EXCDS, is being used at Stansted, Heathrow, Luton and Gatwick airports. "It cut down their development costs and time. And in the end, that benefits our end customer, the airlines."

Another technological victory came when air traffic controllers in Gander, Newfoundland and Labrador, who control the western half of the North Atlantic, got together with air traffic controllers in at Shanwick, the British base that controls the eastern half. It made sense to match the two systems for communication purposes and that resulted in a joint venture based on **NAV Canada** technology.

"This was new," Mr. Troutman said. "Air traffic service providers really didn't get together and share technology on a commercial basis with the ultimate goal of build once, use twice."