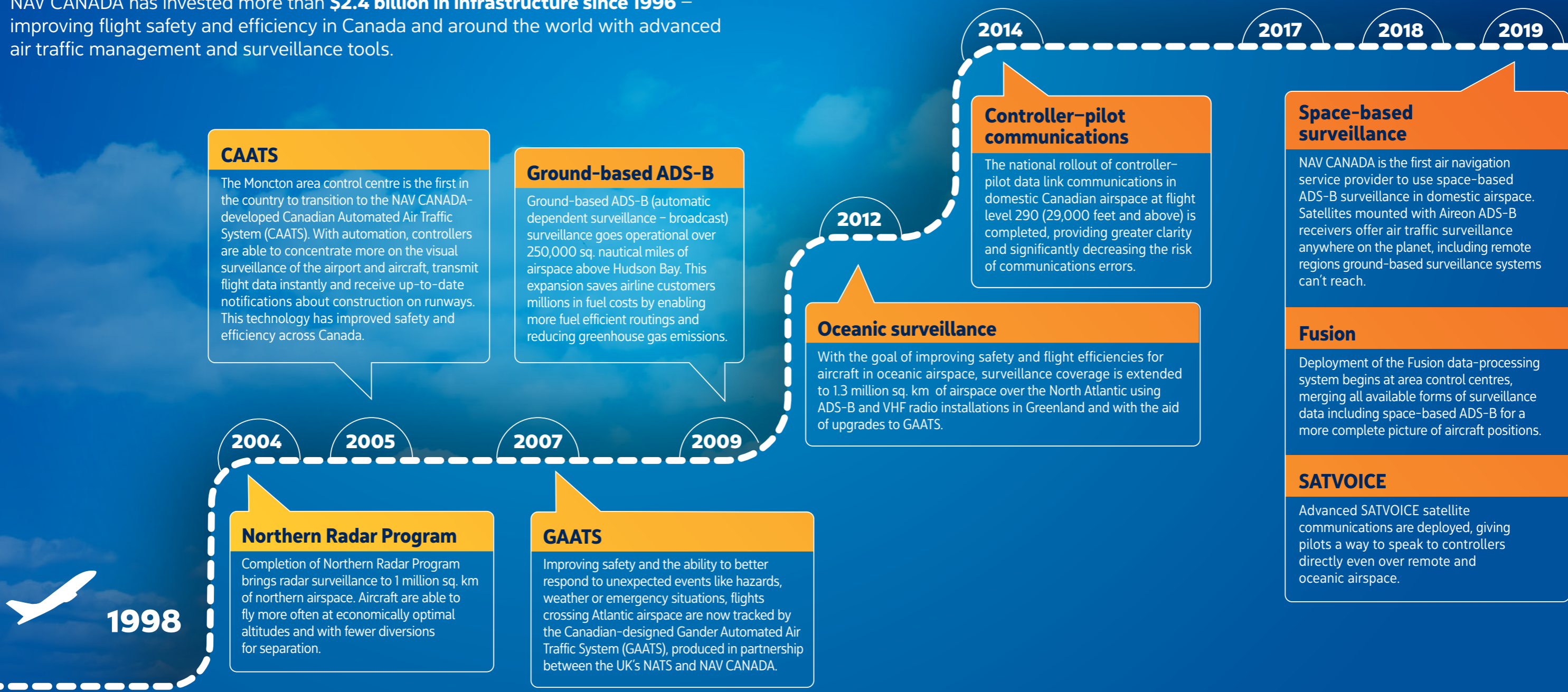


A LEGACY OF AIR NAVIGATION INNOVATION

NAV CANADA has invested more than **\$2.4 billion in infrastructure since 1996** – improving flight safety and efficiency in Canada and around the world with advanced air traffic management and surveillance tools.



CAATS
The Moncton area control centre is the first in the country to transition to the NAV CANADA-developed Canadian Automated Air Traffic System (CAATS). With automation, controllers are able to concentrate more on the visual surveillance of the airport and aircraft, transmit flight data instantly and receive up-to-date notifications about construction on runways. This technology has improved safety and efficiency across Canada.

Ground-based ADS-B
Ground-based ADS-B (automatic dependent surveillance – broadcast) surveillance goes operational over 250,000 sq. nautical miles of airspace above Hudson Bay. This expansion saves airline customers millions in fuel costs by enabling more fuel efficient routings and reducing greenhouse gas emissions.

2004
Northern Radar Program
Completion of Northern Radar Program brings radar surveillance to 1 million sq. km of northern airspace. Aircraft are able to fly more often at economically optimal altitudes and with fewer diversions for separation.

2005
2007
2009
GAATS
Improving safety and the ability to better respond to unexpected events like hazards, weather or emergency situations, flights crossing Atlantic airspace are now tracked by the Canadian-designed Gander Automated Air Traffic System (GAATS), produced in partnership between the UK's NATS and NAV CANADA.

2012
Oceanic surveillance
With the goal of improving safety and flight efficiencies for aircraft in oceanic airspace, surveillance coverage is extended to 1.3 million sq. km of airspace over the North Atlantic using ADS-B and VHF radio installations in Greenland and with the aid of upgrades to GAATS.

2014
Controller-pilot communications
The national rollout of controller-pilot data link communications in domestic Canadian airspace at flight level 290 (29,000 feet and above) is completed, providing greater clarity and significantly decreasing the risk of communications errors.

Common hardware integration platform
Implementation of the common hardware integration platform (CHIP) standardizes air traffic management system hosting and provides the foundation for shifting much of NAV CANADA's air traffic management technology to the cloud.

Established on RNP-AR (EoR)
The new International Civil Aviation Organization (ICAO) standard for enabling simultaneous arrivals on parallel runways while reducing aircraft noise and emissions is first implemented by NAV CANADA at Calgary International Airport.

2017
2018
2019

Space-based surveillance
NAV CANADA is the first air navigation service provider to use space-based ADS-B surveillance in domestic airspace. Satellites mounted with Aireon ADS-B receivers offer air traffic surveillance anywhere on the planet, including remote regions ground-based surveillance systems can't reach.

Fusion
Deployment of the Fusion data-processing system begins at area control centres, merging all available forms of surveillance data including space-based ADS-B for a more complete picture of aircraft positions.

SATVOICE
Advanced SATVOICE satellite communications are deployed, giving pilots a way to speak to controllers directly even over remote and oceanic airspace.

EXCDS
The Extended Computer Display System (EXCDS) developed by NAV CANADA engineers is installed in Toronto. For the first time in air navigation history, paper-based flight data strips are replaced with electronic strips accessible through touchscreens. Most commonly known today as NAVCANstrips, this technology provides fast and reliable access to airport, tower and terminal ATC information.

