



The NAV CANADA Air Navigation System Plan

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S E R V I N G A W O R L D I N M O T I O N



Outline

- About NAV CANADA
- Charting the Future: our Air Navigation System Plan
- Initiatives
- Mapping to ASBU Modules
- Looking ahead

ABOUT NAV CANADA

A photograph of a modern air traffic control tower with a cylindrical observation deck and a concrete base, set against a clear blue sky. The tower is partially obscured by a semi-transparent slide background.

About NAV CANADA

- Private, non-share capital company
- 2nd largest ANSP in the world
- 12 million aircraft movements annually
- 18 million square km of airspace
- Regulated by Federal Government on Safety Performance





Our People

- 4,750 employees across the country
 - Air Traffic Controllers
 - Flight Service Specialists
 - Electronics Technologists
 - Engineering and IM
 - Corporate Functions

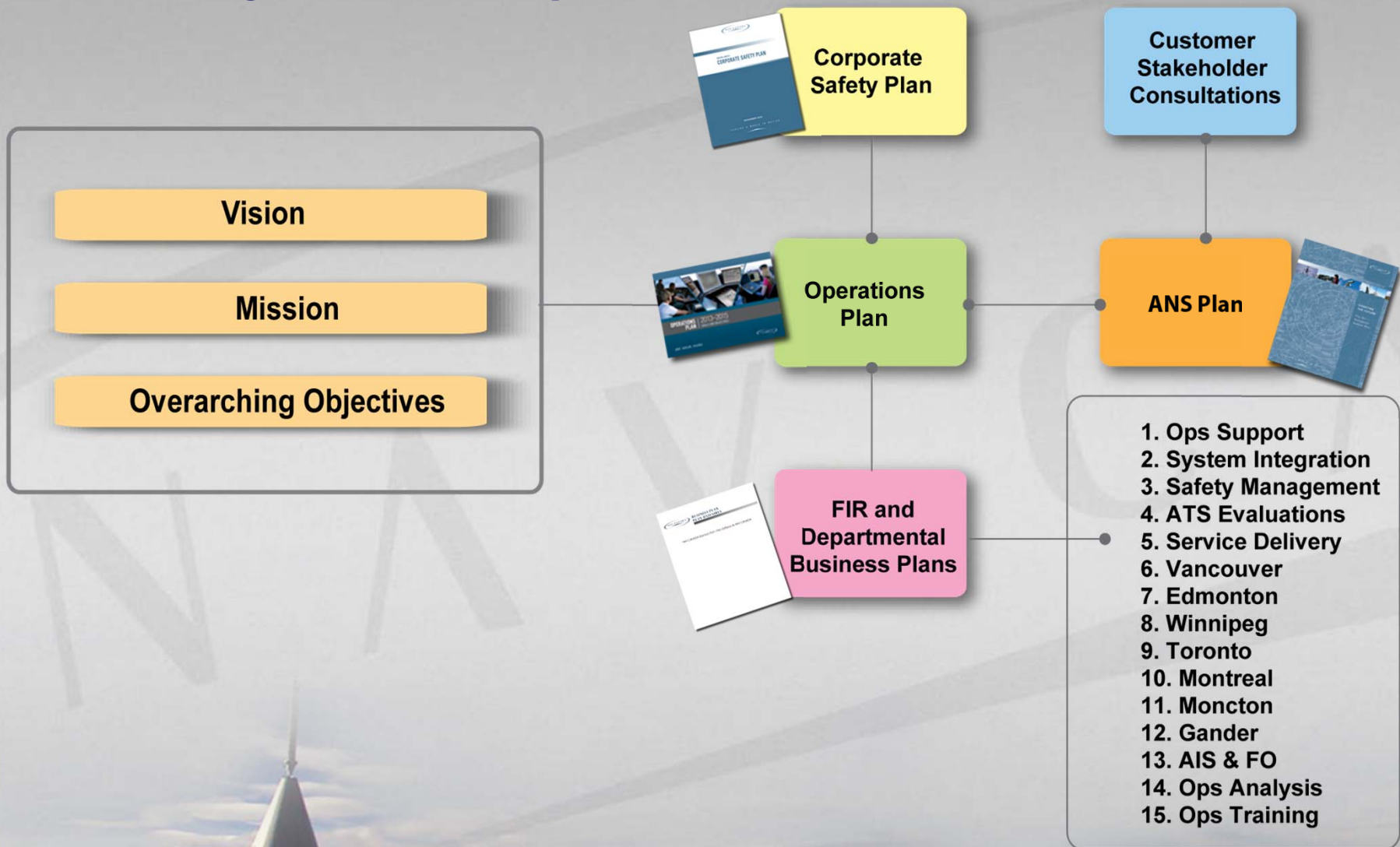
Our Services

- Air Traffic Control
- Flight Information
- Weather Briefings
- Aeronautical Information
- Airport Advisory Services
- Electronic Navigation Aids



Charting the Future the Air Navigation System Plan

Planning Relationships



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- The image shows the cover of a report titled "CHARTING THE FUTURE: The Air Navigation System Plan" by NAV CANADA, dated April 2012. The cover features a blue background with a faint, detailed map of Canada's air navigation system, including numerous airports, flight paths, and communication routes. A horizontal strip of four small photographs is positioned across the upper middle of the cover. From left to right, the photos depict: a helicopter in flight, a person working at a control desk, a satellite in orbit, and an airport control tower. The NAV CANADA logo is in the top right corner, and the title and subtitle are prominently displayed in the lower right. The date "April 2012" is also visible.
- NAV CANADA's projected plans for development
 - Initiatives aimed at meeting customers' requirements
 - Mapped to ICAO ASBUs
 - Short term (2012-2014) & near term (2015-2019) plans
 - Generates further stakeholder discussions

Air Navigation System Plan Initiatives

Performance Based Navigation (PBN)

- Short term (2012-2014)
 - PBN approaches in Toronto, Montréal, Ottawa & Quebec City
 - Radius to fix trials in Toronto, Calgary & Vancouver
 - Terminal airspace redesigns
 - Decommission some non-essential ground-based NAVAIDS
 - RNP 10 in northern part of Edmonton FIR
 - Begin transition from CMNPS and RNPC to PBN

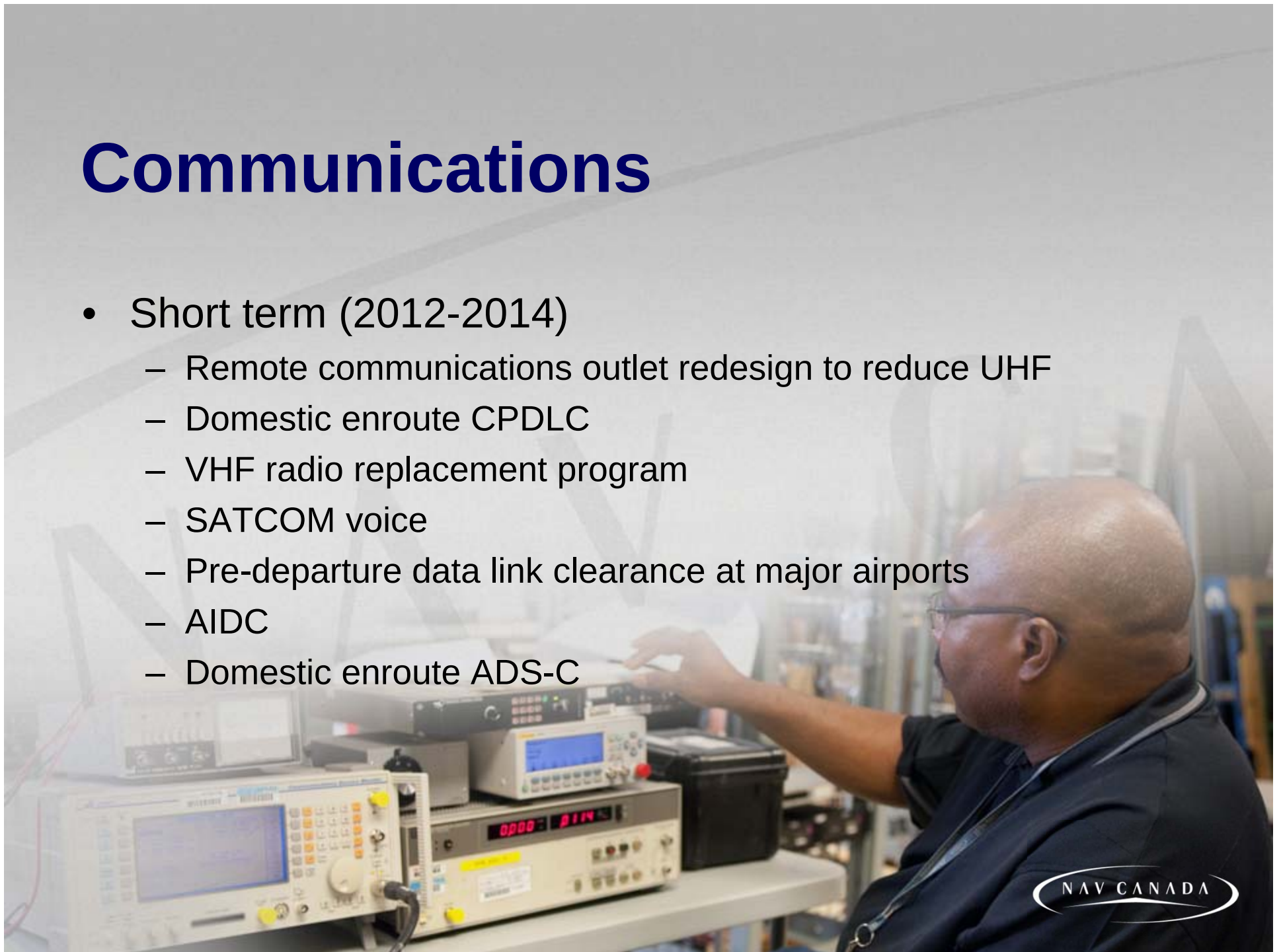
Performance Based Navigation (PBN)

- Near term (2015-2019)
 - Continued terminal airspace redesigns
 - Re-define low-level airspace structure
 - Continued decommissioning of non-essential ground-based NAVAIDS
 - Transition from CMNPS & RNPC to PBN
 - Continued implementation of RNAV/RNP procedures
 - Basis for future transition to 4D trajectory based operations



Communications

- Short term (2012-2014)
 - Remote communications outlet redesign to reduce UHF
 - Domestic enroute CPDLC
 - VHF radio replacement program
 - SATCOM voice
 - Pre-departure data link clearance at major airports
 - AIDC
 - Domestic enroute ADS-C





Communications

- Near term (2015-2019)
 - Complete VHF radio replacement program
 - New telecom infrastructure
 - HF voice retained as backup for VHF & data link
 - AHMS implemented and AFTN decommissioned

Surveillance

- Short term (2012-2014)
 - Assess PSR requirements
 - Expand WAM & MLAT
 - WAM at Kelowna
 - MLAT at Calgary & Toronto
 - Video surveillance
 - Fusion tracking technology
 - Expand ADS-B



Surveillance

- Near term (2015-2019)
 - Radar replacements
 - Reduce or eliminate surveillance gaps
 - Expand WAM
 - ADSE replacements with ADS-B, MLAT and/or video
 - Assess radar and WAM for conversion to ADS-B
 - LEOS ADS-B



Air Traffic Management (ATM)

- Short term (2012-2014)
 - Full integration of web-based IFR flight planning
 - Web-based flight plan centric pilot briefings
 - Collaborative Flight Planning System mobile app
 - ICAO compliant data exchange interface for weather (WXXM)
 - FPL 2012
 - Improved air traffic controller decision support tools
 - Flight service station modernization project
 - Prepare for Phase 1 implementation of RLatSM
 - RLongSM in domestic airspace

Air Traffic Management (ATM)

- Near term (2015-2019)
 - ICAO compliant data exchange interface for flight data
 - Expanded RLatSM
 - Advanced decision support tools for air traffic flow management
 - Implementation of FF-ICE concepts
 - Continued integration of RPA into the air navigation system
 - Optimize separation & improve safety nets via data fusion



Aeronautical Information Management (AIM)

- Short term (2012-2014)
 - eAIP
 - SNOWTAM to replace NOTAMJ
 - Automated runway friction measurement reporting
 - Expanded electronic publication product line
 - Increased availability of data on portable electronic devices



Aeronautical Information Management (AIM)

- Near term (2015-2019)
 - Conversion to ICAO NOTAM format
 - Digital NOTAM
 - eTOD
 - Automation of land use assessment process
 - Continued evolution away from paper publications



Aviation Weather

- Short term (2012-2014)
 - Collaborative flight planning system geo-referenced data
 - Replacement of legacy weather observation input systems
 - Automated weather observation and limited weather observation systems to be implemented at 16 remote sites
 - Expansion of weather camera systems
 - Conversion of SIGMET and AIRMET to ICAO compliant formats



Aviation Weather

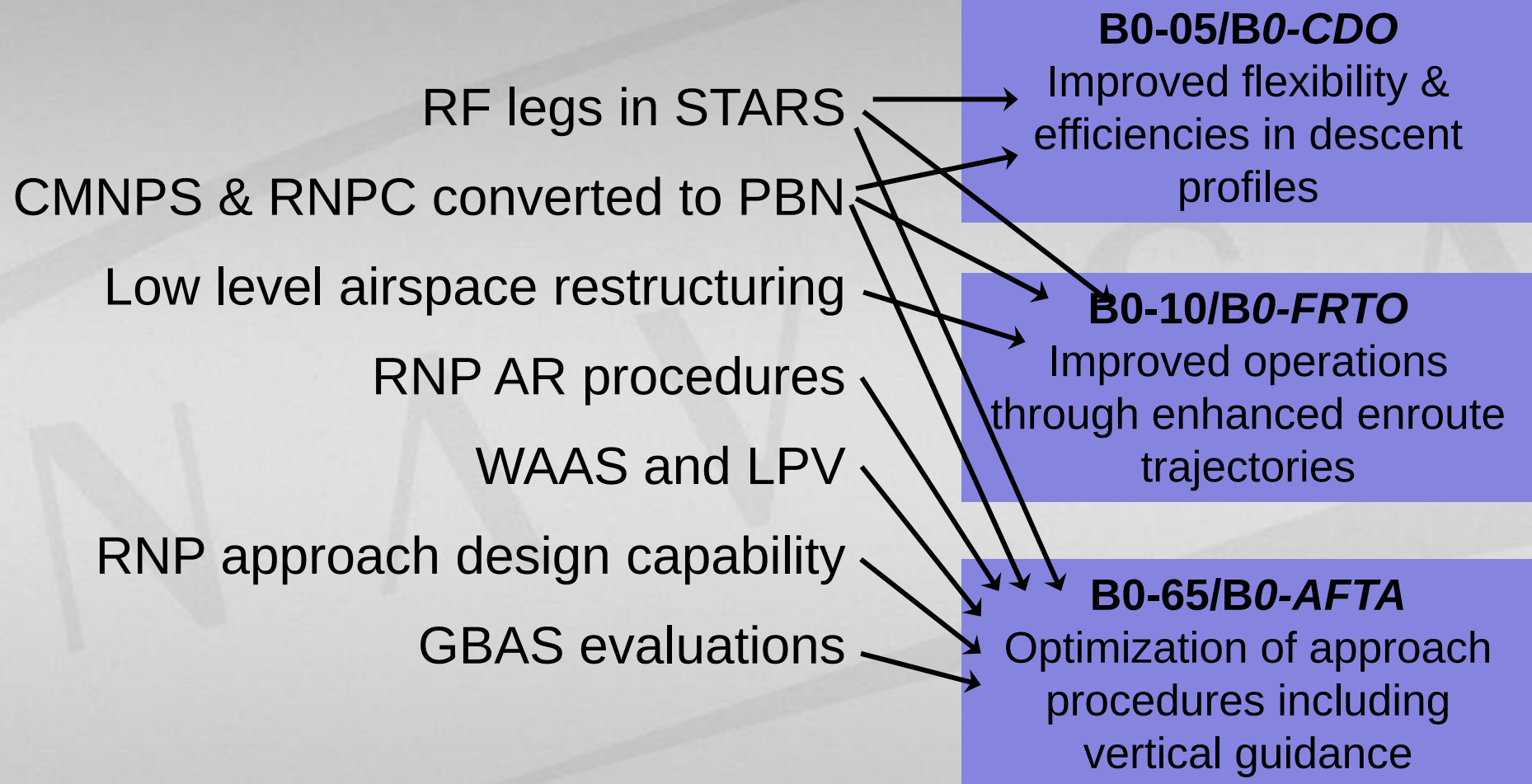
- Near term (2015-2019)
 - Continued enhancements to collaborative flight planning system
 - Increased mobile access for information and updates
 - Semi-automated TAFs
 - Enhanced automated weather observation systems
 - Improved weather camera systems
 - Increased automatic sensor inputs to weather observations
 - Increased minute-to-minute update capabilities

Mapping to ASBU Modules

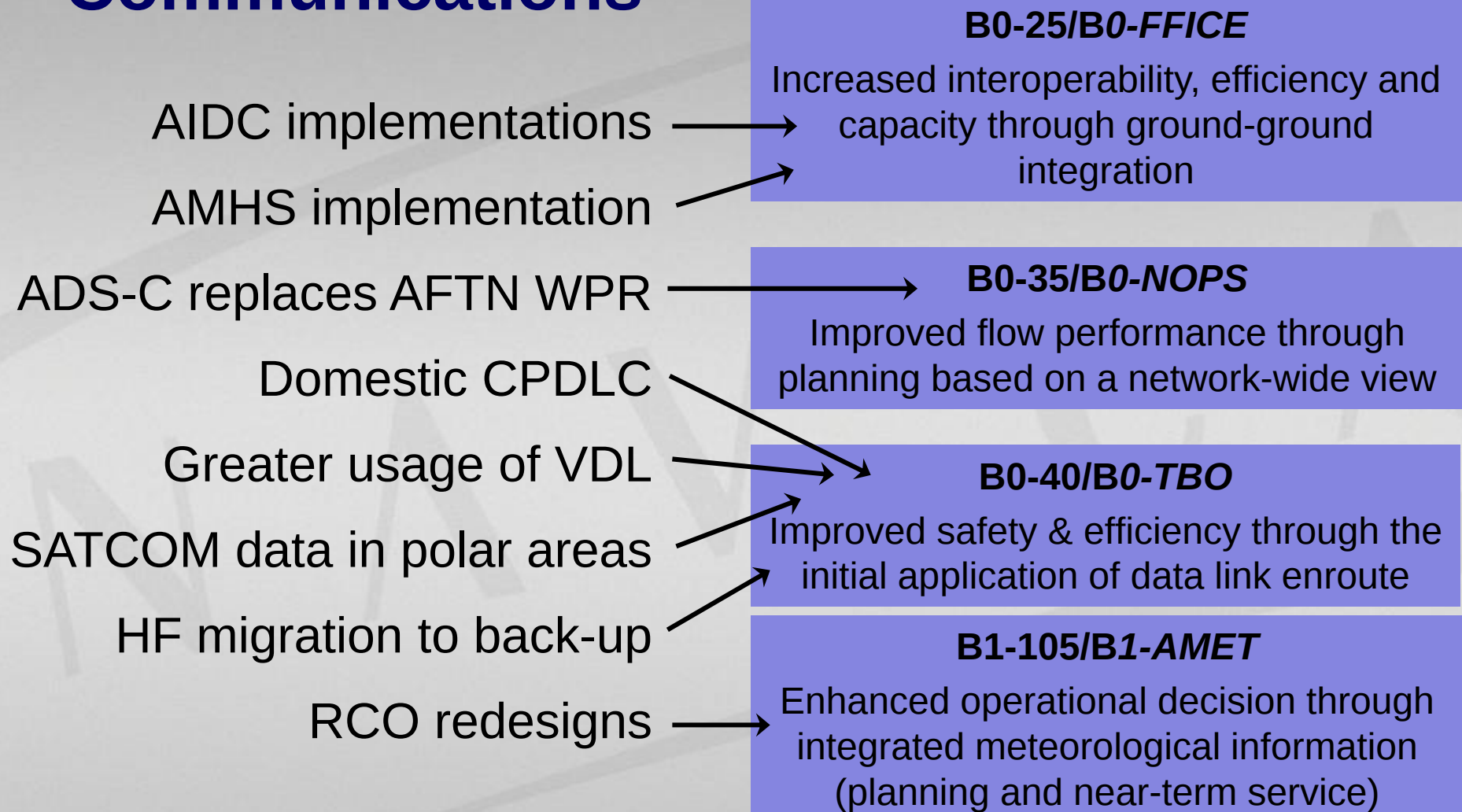
Activities supporting
NAV CANADA's
Air Navigation System
Plan initiatives have
been mapped to ICAO's
ASBU modules



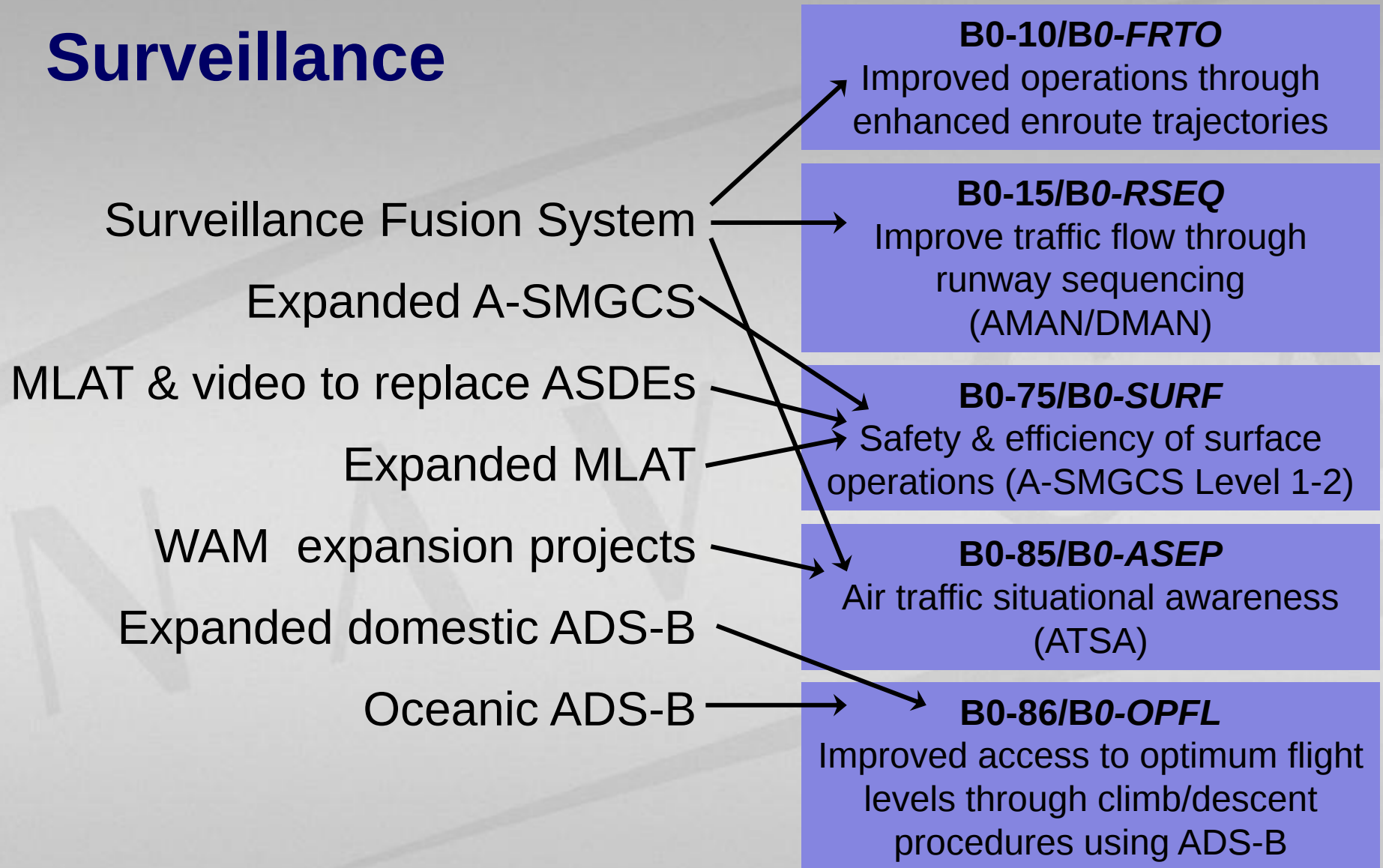
Performance Based Navigation (PBN)



Communications



Surveillance



ATM

B0-10/B0-FRTO
Improved operations
through enhanced
enroute trajectories

RLatSM

Upgraded ADS-C

RLongSM, NAT & domestic

Decision support integration

Decision support tools

FPL2012

CFPS

FSS upgrades

ADS-B/GAATS integration

B0-86/B0-OPFL
Improved access to optimum flight
levels through climb/descent
procedures using ADS-B

B0-15/B0-RSEQ
Improve traffic flow through runway
sequencing (AMAN/DMAN)

B0-25/B0-FICE
Increased interoperability, efficiency
and capacity through ground-ground
integration

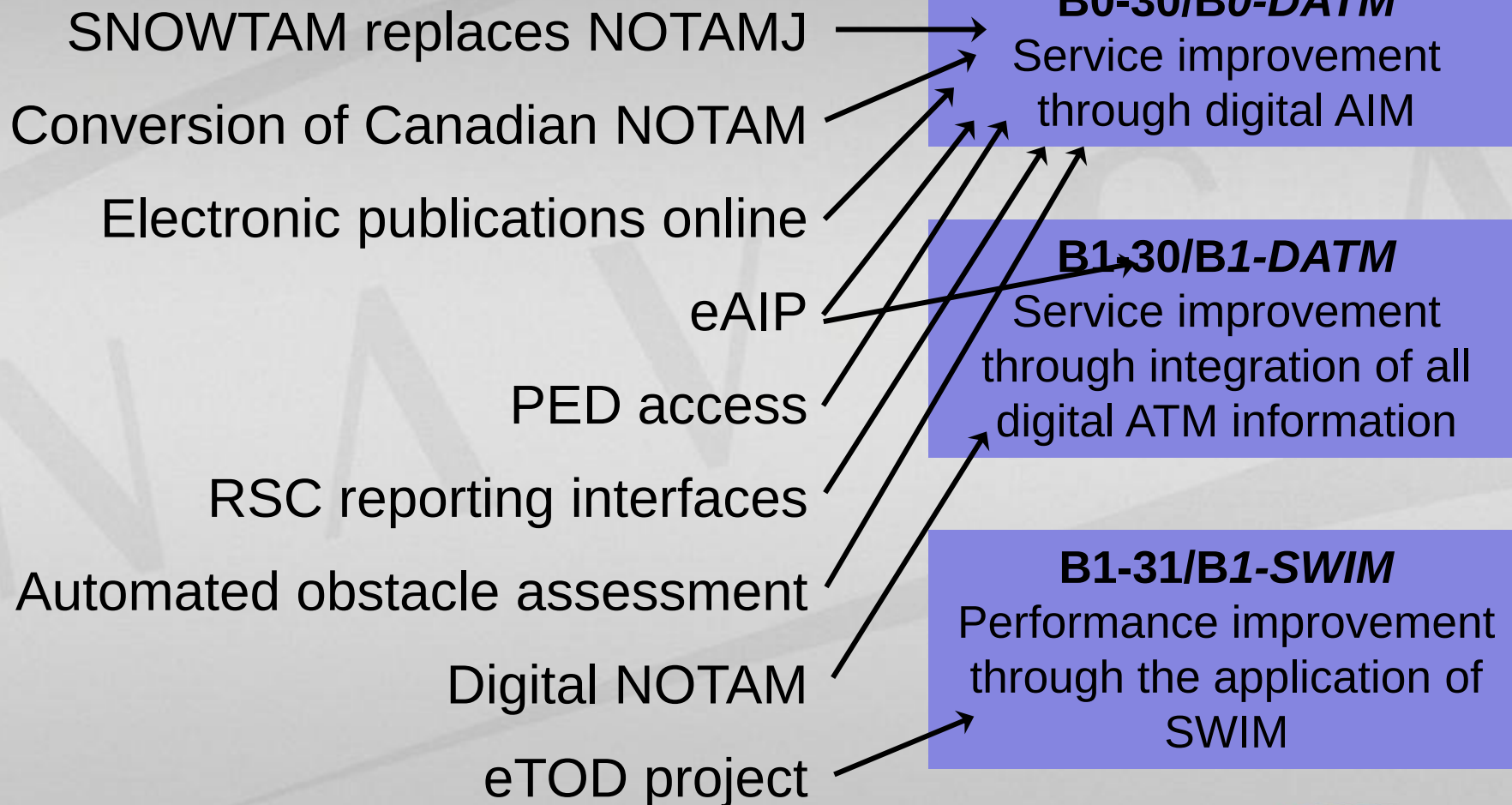
B0-30/B0-DATM
Service improvement through digital
AIM

B0-35/B0-NOPS
Improved flow performance through
planning based on a network-wide
view

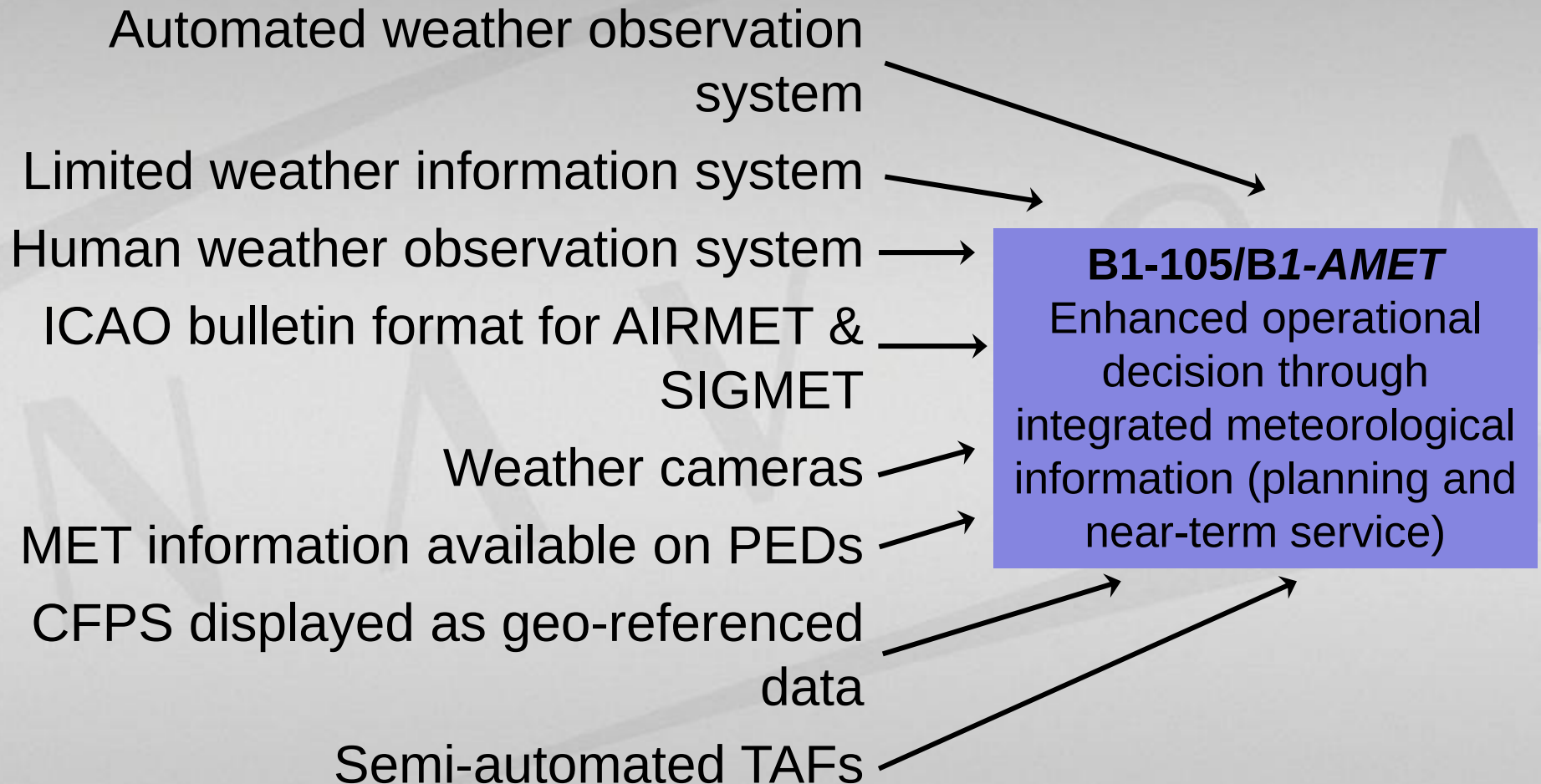
B0-70/B0-WAKE
Increased runway throughput
through optimized wake turbulence
separation

B0-85/B0-ASEP
Air traffic situational awareness
(ATSA)

Aeronautical Information Management (AIM)



Aviation Weather



Looking Ahead

Air Navigation System Plan update

- Doc 9750 and the ASBUS will be updated
- LEOS ADS-B is a game changing initiative
- Update one year early
- Updates to Operations Plan & FIR and departmental plans will follow





**Thank you
Questions?
Discussion?**

The logo features the text "NAV CANADA" in a white, serif, all-caps font. The text is centered within a white, stylized swoosh that resembles a wing or a stylized letter 'C'. The swoosh has a sharp point at the bottom center and curves upwards at both ends. The entire logo is set against a dark blue background.

NAV CANADA