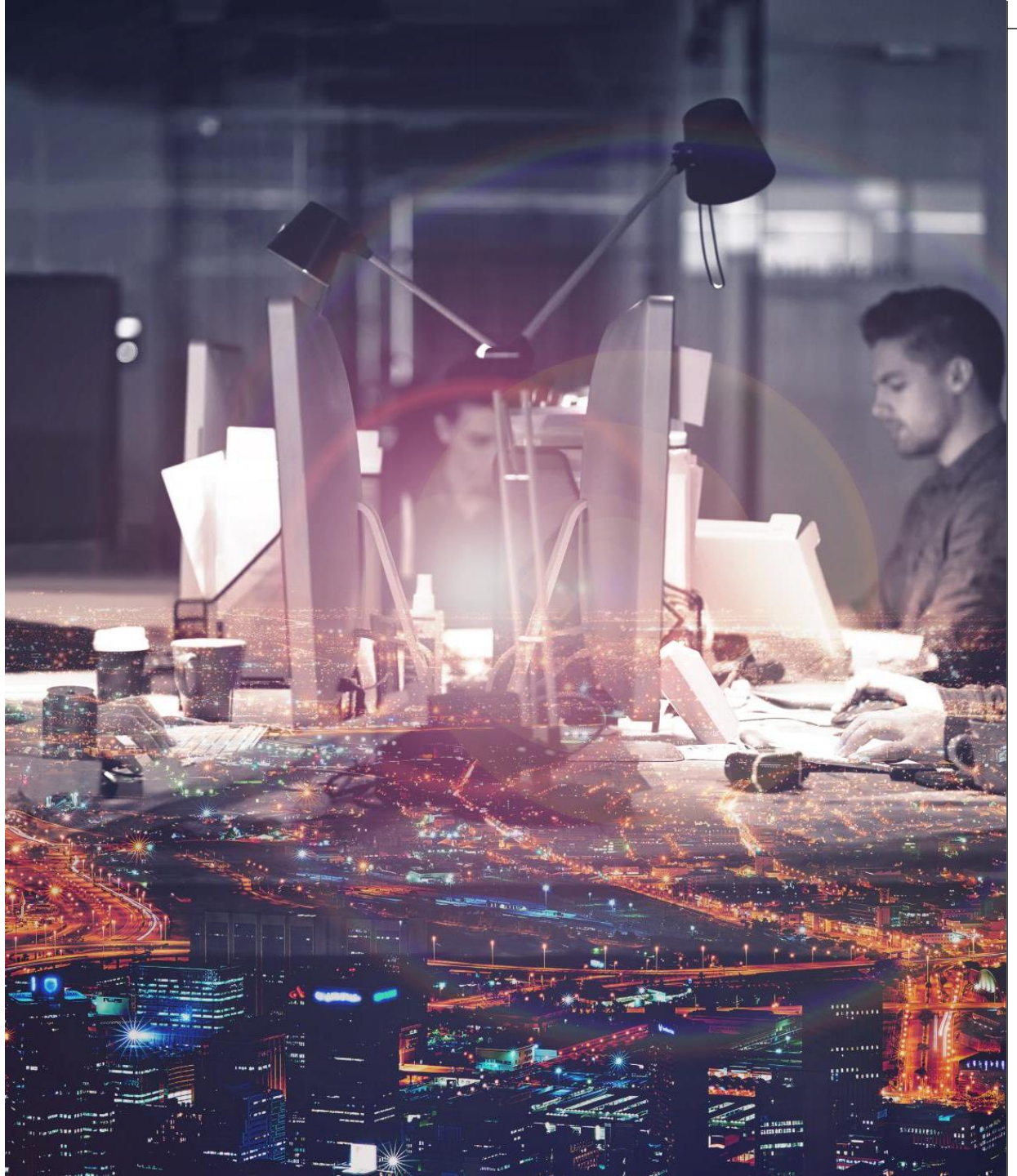
NAV CANADA TECHNOLOGY & TECHNOLOGIST BRIEFING

Insights into advancements in aviation technology systems



PRESENTATION OVERVIEW

Technological Advancements

NAV CANADA has implemented innovative technologies to modernize air traffic services and improve operational efficiency.

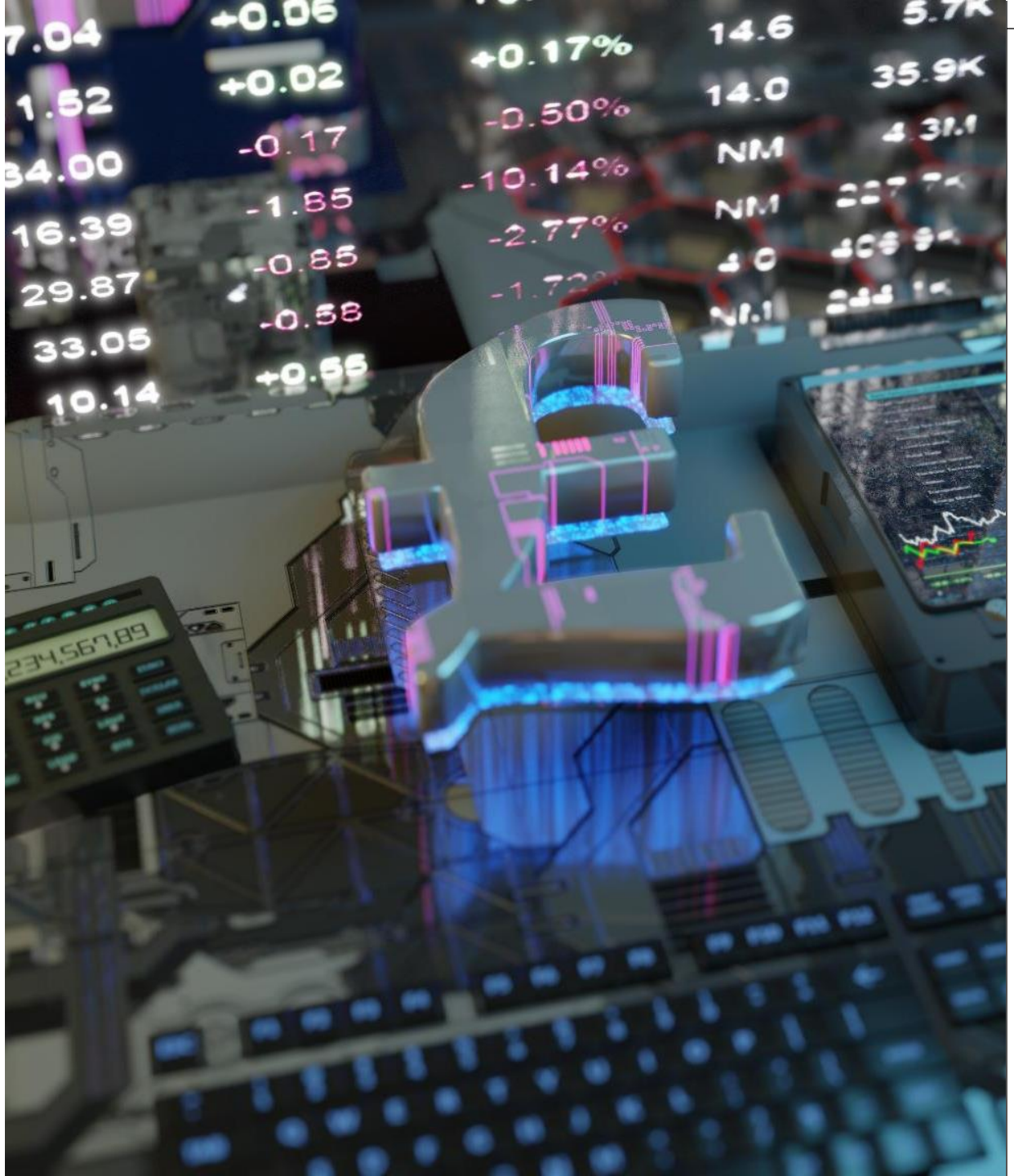
Drone Integration

Strategic initiatives include integrating drone operations safely into existing airspace management.

Workforce Optimization

Digital transformation and automation are optimizing workforce capabilities and enhancing productivity within NAV CANADA.

STRATEGIC INITIATIVES



STRATEGIC OVERVIEW

Digital Transformation

NAV CANADA is modernizing air traffic services through advanced digital technologies to improve safety and efficiency.

Drone and Autonomous Integration

The organization integrates drones and autonomous systems to adapt to new aviation challenges and enhance airspace management.

Workforce Optimization

AI and predictive tools are used to optimize workforce performance and ensure adaptability in the aviation sector.

DRONE INTEGRATION

NAV DRONE APP UPDATE

App Update and Regulations

The NAV Drone app update aligns with new Transport Canada rules enhancing drone operation capabilities.

Advanced Drone Operations

New features support (Beyond Visual Line-of-Sight) BVLOS, (Extended Visual Line-of-Sight) EVLOS with observers, and medium drone operations for commercial use.

Commercial Applications

Applications include precision agriculture and infrastructure inspection using drones between 25 and 150 kg.

RTM Initiative Goals

The RTM initiative ensures safe drone integration into airspace while unlocking economic opportunities.

Drone Incursion & No direct ATSEP involvement

Still no solution for drone incursion for controlled airspace. No direct consultation NAV CANADA Technologist (ATSEP).

DIGITAL AIR TRAFFIC FACILITY

KINGSTON PILOT PROJECT

Digital Air Traffic Facility

Kingston hosts Canada's first digital air traffic facility to validate advanced aviation technologies. Currently 2 ATSEPs staffed at site.

Remote Airport Management

The facility will enable remote management of up to 20 airports through Digital Aerodrome Air Traffic Services hubs.

Enhanced Operational Capabilities

Integration of high-resolution sensors and secure networks improve situational awareness and operational efficiency.

Aviation Innovation Milestone

This pilot project marks a key step in evolving air navigation services in line with global aviation trends.

New Site Announced

Hamilton Tower Selected as Second Digital Facilities Site.

TECHNOLOGIST WORKFORCE

CURRENT CHALLENGES

Air Traffic Management

ATM technologists maintain radar displays, flight tracking systems, and network infrastructure to ensure safe air traffic control. Currently severe staff shortages at some sites. Difficult time retaining staff.

Communications Navigation Surveillance

CNS technologists support radar systems, landing aids, and radio communications, often in remote and challenging locations. Lack of training plaquing staff.

Technical Deployment

Installation team of technologists led by project leads; relies on ATM and CNS staff for support; significant backlog of installation projects currently in progress.

CURRENT CNS UPGRADES

Intelcan DME

Deploying Intelcan DME nationwide to replace aging infrastructure with SKY NAV SERIES N9000.

Thales VOR

Rolling out Thales DVOR 532 across Canada to replace outdated systems.

Raytheon Secondary Radar

ngoing deployment of Raytheon Condor Mk 3 as secondary radar at multiple locations across Canada.

TRAJECTORY-BASED OPERATIONS

TBO TRANSITION

Trajectory-Based Operations

TBO focuses on predictive routing and improves fuel efficiency while reducing air traffic controller workload through automation.

System Modernization Partnership

NAV CANADA collaborates with technology partners to replace legacy systems with advanced flight data processors and traffic flow tools.

Enhanced Air Traffic Management

The transition supports safer, more efficient, and responsive air traffic management aligned with global aviation standards.

Target site Edmonton ACC.

DIGITAL OPTIMIZATION

DIGITAL TWIN TECHNOLOGY DEPLOYMENT

AI-Powered Airspace Simulation

The Digital Twin tool uses AI to simulate airspace operations based on historical data for accurate predictive insights.

Advanced Flight and Task Forecasting

DT-SPO forecasts flight schedules, controller tasks, and sector configurations up to 30 hours ahead to enhance planning.

Optimized Resource and Coverage Planning

Integrating flight data with employee scheduling optimizes coverage and service delivery for operational efficiency.

Enhanced Efficiency and Resilience

Deployment of DT-SPO builds operational resilience and supports proactive resource management in air traffic control.

CONCLUSION

SUMMARY AND NEXT STEPS

Commitment to Safety and Innovation

NAV CANADA prioritizes safety and innovation in its technology roadmap to enhance air navigation services.

Digital Tower Pilot Monitoring

Ongoing evaluation of the Kingston digital tower pilot to improve remote air traffic management.

Drone Integration Expansion

Expanding capabilities to integrate drones safely into controlled airspace.

AI-Driven Airspace Optimization

Using AI technology to optimize airspace operations and improve efficiency.