Established in 2011, the Canadian PNT Board serves as a central point of contact for the coordination of civilian and federal PNT issues.

The PNT Board also acts as a centralized point of contact for the exchange of information with foreign governments and organizations on civilian PNT matters.

We are currently exploring other approaches to focus on broader engagement outside of the Government of Canada and to address PNT resiliency.

Activity Highlights

Update on Recent Initiatives
Maritime Navigation
Lead: Canadian Coast Guard (CCG)

The future of the CCG Differential Global Positioning System (DGPS)

• Due to its age and the needs for replacement, the CCG conducted an options analysis for the future of the CCG DGPS service.

• CCG will be discontinuing the Canadian DGPS by the end of 2022. All 19 sites will be shut down simultaneously.

• Between now and Fall of 2022, CCG will continue to inform stakeholders and communicate in preparation for the shutdown date.

Evaluation of the Wide Area Augmentation System (WAAS)

• An evaluation of WAAS performance in Canadian waters, including the Arctic was completed with 10 test locations. (performed by Serco)

• Testing showed good coverage and accuracy for maritime navigation in Canada, including parts of the Arctic.

• Contributing to International Electrotechnical Commission (IEC TC 80) work for SBAS receiver standards

Assessment of maritime PNT solutions for Canada

- The study is considering PNT requirements both south and north of 60 degrees North, including the Arctic.
- Assessment includes alternative solutions independent of GNSS.
- The final report will include recommendations on short term and long term strategies.
- CCG continues to work collaboratively with Germany on testing Ranging Mode (R-Mode) in Canada.

Jammer Risk Management

- Although prohibited by Canadian law, the use of and sale (online) of jammers continues to proliferate, creating cases of interference in GNSS bands.
- Federal departments and NAV CANADA have partnered to develop a multi-agency Jammer Risk Management Framework with work ongoing in both a technical and policy stream.
- February 2020 workshop with Federal GC helped identify areas of responsibility, power of authorities and initial concepts for the policy stream work.

Canadian Risk Assessment and Risk Mitigation Assessment

- This project sought to:
  - Understand Canadian civilian Critical Infrastructure Sector risks associated with GNSS-based PNT information
  - Recommend actions to improve PNT resiliency
  - Strengthen relationships with Canadian Critical Infrastructure sectors
- Some initial ideas are emerging:
  - Canadian GNSS and PNT key stakeholders benefit when brought together to share knowledge and advance PNT resiliency initiatives.
  - Improving awareness of PNT threats and vulnerabilities is key to ongoing management of PNT risks.
  - A multi-layered approach to address PNT resiliency will likely be needed.
Connected and Automated Vehicles (CAV)

Lead: Transport Canada (TC)

- There is a need to characterize how PNT can enable higher levels of automation across various modes of transportation.

- A workshop with key PNT and CAV stakeholders was held in June 2019 to discuss PNT infrastructure, associated requirements and Canada’s readiness to enable CAV deployments.

  For more information, see: https://tcdocs.ingeniumcanada.org/sites/default/files/2019-10/Report-Sunil%20Bisnath-PNT-Workshop-for-CAVS.PDF

- In late fall 2020, TC launched a project/study: “Next Generation Positioning, Navigation and Timing Infrastructure Requirements for Automation in the Transportation System: An Overview”. A workshop will be held in late Fall 2021 to share and discuss findings and recommendations.

  For more information, see: https://buyandsell.gc.ca/procurement-data/tender-notice/PW-20-00932768

- Other PNT related initiatives include:
  - Automated Shuttle System testing
  - Cooperative Truck Platooning System testing and research
  - Connected Vehicles (V2V/V2X/V2I) research including signal resiliency and performance
Modernization is ongoing to meet today’s economic and scientific requirements.

The Canadian Geodetic Survey is working closely with the United States National Geodetic Survey to modernize its reference frame in parallel (NATRF).

Budget 2021 facilitates the addition of active GNSS stations.

NRCan’s PPP services are used extensively by users all over the world.

PPP services (absolute) have been enhanced to resolve ambiguities resulting in quicker convergence & higher accuracy.
Opportunities

• A study contracted by Natural Resources Canada looked at the economic valuation of advanced precision GNSS services.

Examples uses
- Geo-fencing
- Proximity detection systems
- Machine control
- Autonomous platooning

Source: NRCan

Economic Benefits Over a 20-year Period
- Road transport, $687m
- Construction, $998m
- Mining, $647m
- Agriculture, $760m
- Forestry, $194m

Source: Study contracted by NRCan

• Another study contracted by Natural Resources Canada is looking at the global competitiveness of advanced precision GNSS services.
International Activities

• Bi-lateral and multi-lateral dialogues have taken place to exchange information on areas of mutual interest and focus on cross-government issues.

• United States: Civil GNSS meeting held virtually in early September 2021 with a focus on PNT Resiliency.
Conclusion

• The Canadian PNT Board will continue to foster a coordinated approach and a platform to share information.

• We continue to see the PNT landscape evolving, affecting PNT use in Canada.

• We will need to be strategic in managing the PNT dependencies, investments and risks.
Thank You

For more information, please contact the Canadian PNT Office

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For more information on the Canadian PNT Board, please visit our website: