



**University of
Nottingham**

Nottingham Geospatial Institute



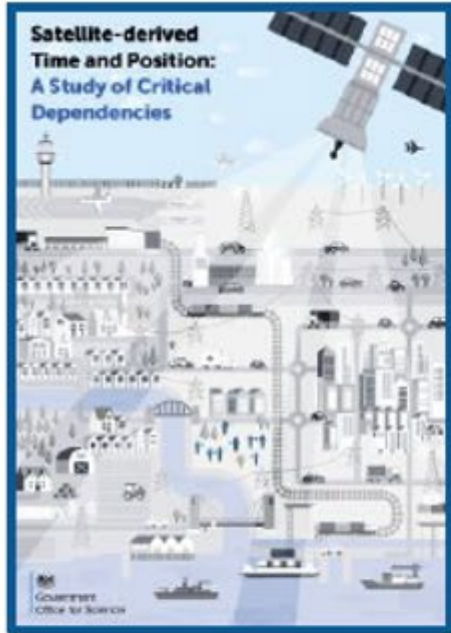
**28th Meeting of the
US Space-Based PNT Advisory Board**

United Kingdom PNT Update

Professor Terry Moore OBE

**Emeritus Professor
University of Nottingham**

Royal Institute of Navigation



**Blackett Report on
global navigation
(2018)**



**Space Based PNT
Programme
(2020)**



**Draft Cabinet
Office Strategy
(2021)**



**UK Integrated
Review
(2021)**



**National Space
Strategy
(2021)**



House of Commons
Science and Technology
Committee

UK space strategy and UK satellite infrastructure

Second Report of Session 2022–23

*Report, together with formal minutes relating
to the report*

*Ordered by the House of Commons
to be printed 26 October 2022*

HC 100
Published on 4 November 2022
by authority of the House of Commons



House of Commons
Defence Committee

Defence Space: through adversity to the stars?

Third Report of Session 2022–23

*Report, together with formal minutes relating
to the report*

*Ordered by the House of Commons
to be printed 11 October 2022*

HC 182
Published on 19 October 2022
by authority of the House of Commons

X-HMG PNT Team

X-HMG team to bring together all the evidence and synthesise into PNT policy

Core Challenge

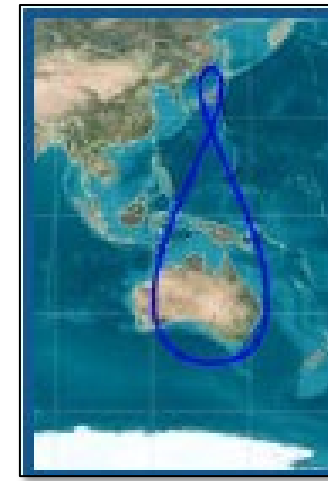
Develop policy options to mitigate the risks from the loss of PNT

Key Components



All this work will call upon all the existing work undertaken since the Blackett Review.

- Critical National Infrastructure : PNT Use Cases
- GNSS-based PNT Risks & Threats assessed
- Impact of Losing GNSS-based PNT assessed
- Many PNT Technologies were considered



Goal to bring together individuals and organisations interested in Position Navigation and Timing (PNT) technology, policy, funding, collaboration, and research



Its scope covers all aspects of PNT from vision-based navigation to quantum sensing and space systems.

Taking input from all aspects of the PNT “world” in areas such as policy and strategy development, technology development, economics, standards development and regulation, resilience, and security, plus liaising with equivalent groups around the world.



It will build on the existing body of knowledge by addressing aspects such as use cases, depth of analysis and independent positions.

It aims to provide a neutral place for the “PNT sector” under the banner of a Learned Society and without bias or favour, to share knowledge and develop positions on key issues and opportunities, and to provide expert-led advice.



RIN UK PNT Advisory Group Activities and Timeline



March 1st at Inmarsat in London

Approx 100 people from users,
equipment and service providers
and Government

Debate on the technical, value
chain, resilience, and business
model challenges of providing
PNT services from large
constellations of LEO satellites





The points of “who is willing to pay for PNT from LEO” and “what is the value (£/\$) of resilience” are still unanswered



The technical challenges are known but not solved



Target markets likely to be professional markets and CNI



PNT From LEO is not hype and will happen – opportunities are there

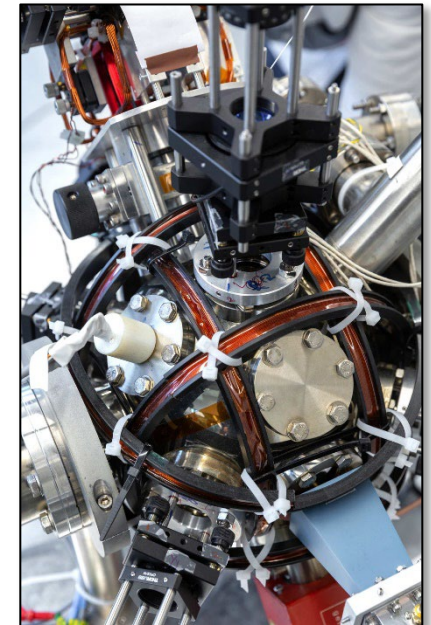


Combining communications and PNT is an interesting approach but suffers from dilution which may impact a business case

- Building on UK experience within IEEE P1952 committee
RIN is looking at the need for standards/guidance in the UK on PNT resilience
- Adopting a step wise approach
To highlight any current issues with standards coverage
- Will publish discussion paper soon



- UK National Quantum Strategy published
Focus on quantum computing and PNT (specifically timing)
- UK has announced funding of \$40m in Quantum Technology for PNT in 2023
- RIN made inputs to the scope of the competitions
- Projects and activities yet to be finalised/announced
- Announcement of more funding to come (~\$3bn over 10 years)
 - Not just for PNT, across all Quantum Technologies
- RIN focussing on supporting commercialisation activities



RIN UK PNT Advisory Group Activities and Timeline

