



# Innovate UK

## Knowledge Transfer Network

## News Release

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### Securing Positioning, Navigation & Timing: 14 June 2018 Event Report

19 June 2018, London

The recently published Blakett report “Satellite-Derived Time and Position: A Study of Critical Dependencies” concludes “we must take steps to increase the resilience of our critical services in the event of Global Navigation Satellite System (GNSS) disruption, including by “adopting potential back-up systems where necessary”.

Implementation of the Blakett recommendations is being overseen by a UK Cabinet Office Blakett Review Implementation Team (BRIG). The technical aspects of implementing the recommendations are being led by a Positioning, Navigation and Timing Technical Group (PNTTG), reporting to the BRIG.

Three organisations represented on PNTTG – Innovate UK Knowledge Transfer Network (KTN), Royal Institute of Navigation (RIN) and The General Lighthouse Authorities – hosted a seminar on 14 June 2018 to review user needs and the status of two possible RF back-up options to GNSS mentioned in the London Economics report on the economic impact of a GNSS disruption.

The event attracted strong interest, with more than 100 delegates, including representation from user communities requiring assured and accurate position or time. Presenter organisations included UK Space Agency, RIN, Spirent, Imperial College Institute for Security Science and Technology, Ursanav and Orolia. Nick Lambert of NLA International facilitated and chaired the event.

The status of two possible RF back-up systems was presented and discussed: enhanced Loran (eLoran) by Chuck Schue, CEO Ursanav, and Satellite Time and Location (STL) by John Fischer, CTO Orolia. Orolia also demonstrated a static STL system as a back-up to GNSS, generating considerable interest amongst delegates.

STL, which is operational and undergoing user trials and evaluation at present, uses the existing Iridium global satellite constellation’s paging channel to enable a positioning and timing capability on a global basis. Power levels are 1000x (30dB) higher than GNSS, meaning that use indoors becomes possible. STL is currently being evaluated for provision of precise time to financial and government institutions in USA, UK, Italy and Japan. The system uses a narrow-band signal just above the GNSS L-band frequencies. As the signals are encrypted it is practically impossible to spoof STL. The higher power level also offers potential resiliency advantages to GNSS.

eLoran is a ground-based system for time and position, operating in internationally protected frequency bands. The combination of high power and low frequency enables wider coverage than GNSS including indoors and even limited capability under water. eLoran stations are operational to enable precise time in USA (East Coast) and UK. Positioning from eLoran would require additional stations to be made live, noting however that each ground station offers very broad geographic coverage. As well as the USA and UK, other regions offering or considering eLoran type services include Russia, Asia (4 countries including China), Middle East (3 countries) and Australia.

As well as the possibility to consider back-up systems to GNSS on a discrete basis, Orolia and STL shared a white paper on the benefits of an holistic approach to resilient GNSS. The link is provided below.

The seminar concluded by considering some key questions, including how to set up a single UK point of contact for industry and users to increase awareness, share insights and knowledge, and develop a roadmap towards standards and accreditation for resilient systems. This work is being further considered by the organisers, who will report to the next BRIG and PNTTG meetings. Comments and views are invited, please contact RIN or KTN.

Links to referenced documents:

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/619544/17.3254\\_Economic\\_impact\\_to\\_UK\\_of\\_a\\_disruption\\_to\\_GNSS\\_-\\_Full\\_Report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/619544/17.3254_Economic_impact_to_UK_of_a_disruption_to_GNSS_-_Full_Report.pdf)

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/676675/satellite-derived-time-and-position-blackett-review.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/676675/satellite-derived-time-and-position-blackett-review.pdf)

<https://spectracom.com/sites/default/files/document-files/Holistic-Approach-to-Trusted-Resilient-PNT.pdf>

Image from 14 June Seminar: Securing Positioning, Navigation and Timing, Trinity House, London



### About the Royal Institute of Navigation:

The Royal Institute of Navigation connects interested parties to promote knowledge and share insights between those interested in all aspects of positioning, navigation and timing.

The use of position and timing information is increasing, for example with autonomy and smart devices. The security and resilience of the information is often as important as its accuracy.

Developments are moving at such a pace that often the regulatory, ethical, legal and user acceptance aspects are complex and sometimes lagging the technology.

The Royal Institute of Navigation provides a forum for knowledge, discussion and information to all stakeholders, from core technology to users and practical navigators.

[www.rin.org.uk](http://www.rin.org.uk)

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