Increasing threat to global infrastructure due to criminal jamming of GPS signal

London 23rd February: Technology experts say that critical infrastructure including air traffic communications, electricity transmission, telecoms networks and emergency services fleet management are all under threat from the increasing availability of GPS "jammers".

The research was presented at a global symposium organised by the Digital Systems Knowledge Transfer Network (KTN), a Technology Strategy Board programme designed to foster innovation in the new digital society. Jamming devices, available illegally for under £100, are able to interfere with the GPS signal that enables many critical services.

"The strength of a GPS signal is about as strong as viewing a 25 watt light bulb shining down from a satellite 10,000 miles away," says Bob Cockshott, a director of the Digital Systems KTN. "It's no surprise then that GPS signals are vulnerable to natural and, increasingly, criminal interruptions."

Professor David Last, a past President of the Royal Institute of Navigation and now a GPS consultant and expert witness to government and law enforcement agencies believes that the potential for serious disruption is a "clear and present danger".

"A portable jammer in a tall building like the gherkin could cover most of London and planes approaching its airports," he says.

The implications of GPS vulnerability are being investigated by the Technology Strategy Board grant funded GAARDIAN project that brings together industry and academia. Charles Curry, Managing Director of Chronos Technology Ltd, is leading the consortium that is investigating the problem. He believes deployment of back up systems is crucial.

"Our project creates a network of sensors deployed at sites in the vicinity of applications that rely on the GPS signal. We are then able to monitor any change in the signal due to natural or criminal activity. We can also monitor complementary signals and systems such as the ground based signal eLoran."

Adding its voice to calls for a backup to GPS is the Royal Institute of Navigation (RIN) who stressed the importance of developing a ground based solution for positioning and timing applications in the following statement:

"Global navigation satellite systems (GNSS) currently provide highly accurate navigation and timing information under normal operating conditions. However, they have recognised

vulnerabilities which could at times lead to local or regional failures. There is, therefore, a fundamental necessity, worldwide, for robust, terrestrial based systems to provide a concurrent, independent source of position and time information to ensure navigational safety and environmental protection ashore, afloat and in the air. Such alternative systems could also bring concomitant benefits by providing the essential time and frequency data which support financial, telecommunications, power distribution and other critical commercial and governmental activities."

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Notes to editors

About the Digital Systems Knowledge Transfer Network

Digital Systems KTN (DSKTN) which brings together expertise in scalable computing, location & timing and cyber security in order to drive the development of a digitally-enabled Britain. Combined innovation in these technologies has the power to solve emerging challenges that inhibit the UK 's development to a fully digital society in which data can be acquired and accessed, anytime and anywhere.

The Digital Systems KTN is the focal point for new ideas that create wealth in the new digital society; our events and networking activities are stimulating innovation between industry, government and academia. It is a Technology Strategy Board programme.

About the Royal Institute of Navigation

The Royal Institute of Navigation is the UK 's leading learned society covering all aspects of navigation as it applies on land, in the air, in the water and in space. The RIN aims to unite all those with a professional or personal interest in any aspect of navigation in one unique body, to further the development of navigation in every sphere, and to increase public awareness of the art and science of navigation.

About GAARDIAN

GAARDIAN is the acronym for “GNSS Availability, Accuracy, Reliability anD Integrity Assessment for Timing and Navigation” and the Consortium includes Chronos Technology, the University of Bath , General Lighthouse Authorities, BT, Ordnance Survey, National Physical Laboratory, and Imperial College London.

The project will create a mesh of remote PNT (Positioning, Navigation & Timing) interference detection & mitigation sensors (IDMs) which will be deployed in the vicinity of PNT dependent infrastructure & applications. These probes will monitor the integrity, reliability, continuity and accuracy of the locally received GPS (or other GNSS) and eLoran signals on a 24x7 basis and report back to a central server. The user will be alerted in real time to any anomalous behaviour in either of the two PNT signals.