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Briefing on the need for a European Radio Navigation Plan

Background

A European Radionavigation Plan (ERNP) has long been on the European Commission's agenda as a legal instrument to define the pan-European radionavigation system mix as a coherent, trans-European Network (TEN).

Satellite navigation – principally the global positioning system (GPS) – with its trans-national and cross-sectoral nature was the main driver for the EC's interest. With the availability and widespread use of GPS, the national approach to the governance and provision of navigation systems was no longer valid.

The onset of satellite navigation required a fundamental reappraisal of the traditional approaches to the control, operation and ownership of radionavigation systems. Satellite navigation is international in nature, not being restricted by national boundaries. From the transport perspective, it is truly multi-modal, bringing benefits to all classes of users. Furthermore, it is a multi-sectoral system and is finding use in many application areas, as diverse as precise timing and agriculture. From the European perspective, radionavigation aids intended for world-wide use by a multiplicity of nations and diverse users cannot be left to the control of any one particular State, particularly one outside the EU (the United States in the case of GPS) or be strongly influenced by any one particular user group, perhaps to the detriment of others. This led to the creation of the European satellite navigation programme, first through EGNOS and then through Galileo, as well as the creation of the associated pan-European institutional structures.

In addition, the EC saw the need for an ERNP, along the lines of the Federal Radionavigation Plan (FRP) published periodically in the United States. Originally the ERNP was envisaged as a tool to assist in achieving the goal of common, co-ordinated and harmonised radionavigation systems for Europe. The ERNP was intended to provide information and guidance to industry regarding the intention to provide a coordinated pan-European infrastructure for transport.

Continuing Need for an ERNP

The ERNP is a critical policy instrument that should form the basis of the future European positioning, navigation and timing infrastructure. In this context it may be better to view ERNP as a European PNT Plan.

The economic impact of PNT on transport to, from and within the EU is already huge and will become crucial as Intelligent Transportation Systems (ITS) come into widespread use. ITS cannot function without reliable PNT and ITS is fundamental to EU plans across all sectors.

It is expected that implementation of a coordinated plan for PNT in Europe would enhance resilience, leading to (i) additional efficiencies across all sectors, (ii) enhanced effectiveness of PNT, and (iii) new opportunities for European industry.

One of the drivers for the ERNP is GNSS vulnerability or lack of resilience. With Galileo, rejuvenated GLONASS, Beidou, etc, adding to GPS, all eggs are now definitely in one basket, since all suffer from the same vulnerability to interference. The message of the need for resilient PNT is being heard but there is little or no agreement on the complementary (to GNSS) systems that can provide that resilience. Without a top-down plan the majority of

States (not only European but world-wide within, for example, the context of IMO), are not willing to make a commitment one way or another to any particular system. This reticence is both in the context of international obligations and within national interests, such as timing for telecommunications backbones. Aviation is the principal exception, where traditional systems are being retained, possibly at the expense of the realisation of benefits that could be delivered by more modern systems.

Without policy commitment, industry is, quite understandably, reluctant to invest heavily in the development of complementary (to GNSS) systems and the PNT community is in a state of planning blight.

In the worst case, this could mean a major event resulting from a GNSS outage causing disruption of critical infrastructure across a wide geographical area and many safety-business- and socially-critical industries. Previous work on this type of scenario has shown the magnitude of the potential impact of such events including loss of life, environmental damage and massive negative business impact. The social dimension must not be neglected as, for example, power distribution networks depend on precise time synchronisation.

In the best case, the result will be a patchwork of barely compatible back-up systems organised in a very uneconomic way, impeding the free flow of people and goods.

Thus an ERNP is needed urgently to ensure that Europe develops and operates a robust, resilient and economic PNT infrastructure to the benefit of the very wide range of industry sectors that routinely uses PNT either commercially or to deliver socially important services. The ERNP will be a catalyst and framework for Member States to make informed decisions in areas where they have statutory or moral obligations and will facilitate decisions within industry concerning investment and innovation.

ERNP is essentially a political project and requires political drive and support from all directions. It must have EU wide participation and support if it is to succeed.

Key strategic points

If a further attempt to produce an ERNP is to be successful, it will need to address the following key strategic points:

- ERNP must not undermine Galileo, indeed it should be clear that it supports Galileo
- the reasons/arguments for the development of the ERNP must be system-neutral and not suppose any specific solution, but should be predicated on resilient European PNT for all
- ERNP must be truly pan-European and multi-sectoral, since no transport sector or infrastructure organisation can provide its own systems. The approach to facilitating the ERNP must also be pan-European (coordinated and coherent) and multi-sectoral
- progress will need strong high-level political support for anything to happen. Without this support it is just one of many EC projects competing for scarce resources. Given previous examples (e.g. Single European Sky), a High Level Group seems an efficient way of doing this but would need sponsorship at Commissioner level
- it is necessary to recognise that the maritime and aviation sectors are bound by international conventions. IMO and ICAO plans must be fully taken into account
- support should not be limited to transport - other sectors must be involved, e.g. telecommunications, law enforcement, power generation and distribution, commerce and finance

Conclusion

Without an ERNP, European PNT will not be resilient and will be built as a patchwork of barely compatible, diverse systems constructed and operated inefficiently. If this situation continues, the EU (and EC) will have failed in its primary role of facilitating cooperation, in one of the most crucial areas to the economic and social well-being of its citizens and member states.

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