Report on Resilient PNT Forum, WTC Rotterdam, 14 April 2014 (v01)

Introduction

This Forum was organised by the International Association of Institutes of Navigation (IAIN), the European Group of Institutes of Navigation (EUGIN) and the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA). Attendance was approximately 65, from the maritime, aviation and land transport sectors, as well as timing and finance.

The participants were welcomed to the Forum by the Chair of EUGIN, Prof Krysztof Czaplewski. Statements were given by the President of IAIN and the Deputy Secretary General of IALA. Prof David Last then gave the keynote address on the theme 'Navigation of Navigation', followed by a presentation from Dana Goward, President & Executive Director of the Resilient Navigation and Timing Foundation. The opening session was concluded with an update on the eLoran Plans of the Republic of Korea from Prof Jiwon Seo.

Discussion

Following the presentations in the opening session, Prof Brad Parkinson gave a short introduction to the discussion. He used the US situation to illustrate the difficulty of obtaining political commitment, in spite of the clear technical, economic and safety case for resilient PNT.

The discussion covered the broad topics: What is Resilient PNT? The Need for Resilient PNT, Strategy for Resilient PNT, Plan of Action and Conclusions. The following are notes taken on those discussions.

What is Resilient PNT?

The following elements were discussed and agreed:

- Not relying on a single type of system; use of complementary, dissimilar systems;

- Protection of PNT, signal available to all;

- Recognition of problems; resistance to jamming & spoofing; recovery from disruption.

- Authentication, assured accuracy, continuity & integrity. Adaptability, automatically switching, seamless transition

- Based on user requirements/system requirements – understanding of both, interaction different for different users.

- Openness, accessibility and transparency. Cooperation, interoperability, compatibility, Synchronization

Need for Resilient PNT

Safety of life
Economy
Security
Environment } Silent Utility: Ubiquity - Invisibility

- Surveillance, System Capacity - modes, Relative to
- Reliance, no
- Safety/security insurance) Control

Positioning, Transparent to all user need alternative (Geo-political

<u>Applications:</u>

- e-Navigation, e-Maritime, Motorways of the Sea, Sea Traffic Management

- FANS, SESAR, Train Control, Road Tolling, Container Tracking

- Timing – telecommunications, energy distribution, finance, agriculture, environment, economic (incl. recreation)

Strategy for Resilient PNT

- Government policies – National/Regional/International

- Politicians: Why do I care? Elections, jobs, safety of life.

- Inter-Governmental Organisations: IMO, ICAO, ITU. Non-Governmental Organisations

- Radio-navigation Plans: FRP, ERNP. Spectrum planning: EC, FCC, WRC

- Resourcing, planning & implementation

- Standards, Manufacturers, Users

Plan of action

- Gain national support, NGO support, IGO support

- International agreement, harmonized plan

- Implementation: Industry Resourcing

- Insurance industry:
  Risk Assessment, Economic Assessment

- Awareness & Communication Plan
  Benefits/ the glass is half full – positive message

- Public Education/Media:
  Ain't it awful?
  It could happen to you
  How does it all turn out?
  Dissemination of message

Conclusions

There was a general consensus on the definition of Resilient PNT and the need for it.

There was less agreement on the Strategy and Plan of Action, although it was accepted that the initiative was very important and should continue.

The three sponsor organizations of the Forum confirmed their continued support and would prepare an outline of a strategy and action plan, for discussion at a follow-up event.

Actions

It was agreed that a draft report would be prepared for comment and approval.

An outline Strategy and Action Plan would be drafted by the convenor for consideration by the sponsor organisations and discussion at a follow-up event.

Possible venues for such an event include:

- IALA, St Germain en Laye, date to be decided
- Arab Institute of Navigation Conference in Alexandria, Egypt, 1-3 Sept
- ION GNSS, Tampa, Florida, 15-19 Sept.
- ION ITM, January 2015
- ENC 2015, Bordeaux, France