



EU-Japan Centre
for Industrial Cooperation

日欧産業協力センター

Seminar Report

“Unmanned Maritime Systems and GNSS”

Tokyo, 11 November 2016

In the afternoon of 11 November 2016, about 80 participants gathered at the Delegation of the European Union to Japan in Tokyo to take part in the policy seminar on “Unmanned Maritime Systems and GNSS” organised by the EU- Japan Centre for Industrial Cooperation (“EU-Japan Centre”).

The reason for selecting the topic was neatly introduced by Dr. Fabrizio Mura, Deputy General Manager of the EU- Japan Centre. He highlighted the context of EU – Japan developments, particularly in the field of GNSS and the increasing relevance of unmanned systems generally.

Attending the seminar were participants from business associations, academia, law firms, government departments and private industry sector. The broad and technical audience, allowed for an interesting panel discussion as questions were sent ahead of time of the seminar.

Prof. Yasuo Arai, President of the International Association of the Institutes of Navigation (IAIN) and Professor Emeritus, Maritime Technical College delivered his keynote speech with a resounding message and that was - the importance of communication. He made great efforts to remind us of this simple, yet crucial concept, particularly in the development and use of GNSS and with regards to unmanned maritime systems.

By providing the history and background to the work of the IAIN, we can see how influential and important IAIN is to promoting and addressing technical standards within international organisations such as the International Maritime Organization (IMO), International Civil Aviation Organization (ICAO) and the International Committee on Global Navigation Satellite Systems (ICG).

Prof. Arai also presented to the audience, the importance of resilient Positioning, Navigation and Timing (PNT) and also potential challenges in relation to spoofing and jamming in the use of technology. Prof. Arai asked an important question as to why autonomous integrity was essential and further questioned whether autonomous control is necessary for unmanned control. These questions set back the backdrop for the other speakers to build upon.

Dr. Hiroshi Yoshida, Director of Marine Technology Development Department, Maritime Technology and Engineering Centre (MARITEC) of the Japan Agency for Marine- Earth Science and Technology (JAMSTEC), provided an overview of the state-of-the-art developments within Japan and also internationally.

By providing images, with short technical descriptions, the audience could see recent designs and were invited by Dr. Yoshida to consider the question of anti-collision and avoidance technology. Dr. Yoshida showed some useful diagrams as to how GNSS could operate on unmanned maritime systems and how communications could development between such technologies. His emphasis was on the importance of communicating presently and in precise moments, which one could appreciate in potential collision-avoidance scenarios.

Moving into an even more technical presentation, Dr. Takuo Kashiwa, Department General Manager, Technology Development & Researching Laboratory of Furuno Electric Co, Ltd, provided a thoroughly interesting and thought provoking presentation. Dr. Kashiwa summarised present GNSS applications, latest developments in technologies for sensing around vessels, track control systems, maritime equipment for communication and technologies to avoid collision.

In presenting a few formulas elaborating on the possibilities of overestimations of risk and challenges in terms of timing, the audience was invited to see how the development of GNSS in unmanned maritime systems was as much of a science as an art to minimizing collision risk. His comments provided food for thought as to how the technological developments could sit alongside standards developments - locally and internationally.

Finally, Ms. Helen Tung, Barrister, HT Chambers/PhD researcher on Maritime Security and International Law, University of Greenwich provided an overview on the legal perspectives of unmanned maritime vessels and GNSS systems, drawing mainly upon western projects and concepts and also comparing it with Japanese law. Ms. Tung joined the seminar as a visiting researcher of the EU-Japan Centre (“Step-in Japan” project). Areas of broad interest include issues related to data protection, collision avoidance as under the International Regulations for Preventing Collisions at Sea (COLREGS), potential conflicts of laws and liability issues. In her presentation, she specifically posed more questions than answers, as this is a field where technology is developing much faster than legislation.

In the panel discussion, the speakers were asked many interesting questions, including how GNSS technology could be developed to become even more accurate, what businesses in this field ought to consider in their business models and what potential there may be for future collaboration between European and Japanese businesses.

The feedback was particularly encouraging, with much interest expressed on both the developments of law and technology in the field of unmanned maritime systems and GNSS. Many participants felt the seminar was very useful and look forward to future seminars related to this topic.

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