



TWELFTH AIR NAVIGATION CONFERENCE

Montréal, 19 to 30 November 2012

Agenda Item 6: Future direction

6.1: Implementation plans and methodologies

ACTION ASSIGNMENT OF INDUSTRY-ACADEME-GOVERNMENT COLLABORATION IN THE COLLABORATIVE ACTIONS FOR RENOVATION OF AIR TRAFFIC SYSTEMS (CARATS) IMPLEMENTATION PHASE AND INTRODUCTION OF THE EXAMPLE OF ACTION TAKEN

(Presented by Japan)

SUMMARY

As part of the awareness of campaign for “Collaborative Actions for Renovation of Air Traffic Systems” (CARATS), the future vision of air traffic system in Japan, Japan has been promoting and strengthening industry-academe-government cooperation. But Japan is facing the difficulty if expanding the size and quality of the community for the engineers or researchers in the domestic and further more in the Asia regions.

Japan would like to contribute to the smooth implementation of future air traffic system in the Asian regions, trying to expand community and improve the quality of community for engineers or researchers through activities such as holding an international workshop with the theme of “future air traffic system”, organized by Electronic Navigation Research Institute (ENRI).

1. INTRODUCTION

1.1 Japan Civil Aviation Bureau (JCAB) in the ministry of Land, Infrastructure and Transport, called a conference with various stakeholders such as airlines, manufacturers and research institutes, that propelled the development of a vision named "CARATS" for the future of air traffic system in Japan and a roadmap for the enforcement of the policy in 2010. JCAB has arranged a meeting with affiliated stakeholders to continue the implementation of the road map, and JCAB is considering the introduction of measures to promote each after 2011. This report introduces the situation and the challenges that JCAB faces in an effort to proceed with its industry-academe-government collaboration activities.

2. INFORMATION

2.1 Background

2.1.1 JCAB has developed a vision named "CARATS" for the innovative changes in the air traffic system and has been pushing forward to achieve the vision by drafting the plan for the Research and Development (R&D) and installation of the new system, by coordinating with industry-academe-government such as Aviation-related businesses (airlines, manufactures, and communication provider, etc), Universities, Japan Aerospace

Exploration Agency (JAXA) and Electronic Navigation Research Institute (ENRI). When JCAB shall have implemented of the roadmap, JCAB will refer to the International Civil Aviation Organization (ICAO) Aviation System Block Upgrades (ASBUs) and will proceed with the plan policy to promote international harmonization of measures such as the introduction of both the contents and timing with NextGEN, which is being implemented in the U.S. and SESAR, which is being implemented in Europe. An important challenge Japan has been emphasizing now to proceed stably these activities for future, is the promotion and strengthening of the cooperation of industry, academe and government.

2.2 Action to promote CARATS, and Issues

2.2.1 This year, because JCAB focuses on coordination and consideration of scheme implementation of R&D by industry-academe-government collaboration and organizing research items obtained on the execution of each measure in particular, JCAB will consider it by establishing a "Research and Development Subcommittee meeting." However, the challenges Japan are facing today is a lack of technical resources, particularly serious is the issue on the size and quality of the community for engineers or researchers in the Asia regions. Specifically the important points are expansion and utilization of the human resources of engineers or researchers by cultivating younger generation, who will play an important role in the international society, and reinforcement of the collaborative relationship with domestic and foreign universities which will be the core research organization.

2.3 Positioning and action of ENRI

2.3.1 ENRI, which is the only research institution in the field of air traffic management in Japan, has been fully supporting CARATS activities. ENRI organized the first ENRI International Workshop on ATM/CNS (EIWAC) in 2009 and will hold the 3rd one (EIWAC2013) in February 2013 (See attachment A), calling for the participation of research institutes, universities and engineers, in Europe, the United States and Asia, in order to contribute to the international exchange and aspire to becoming the core research institutions in the Asian regions and provide a forum for exchange and share of information to promote collaboration of technology community in the future. This approach will contribute to the expansion of human resources of an international technology and strengthening the construction of partnerships with academic institutions both inside and outside as the core research institutions in Japan, such as human resource development of young engineers responsible for the future.

2.4 Example of the research and development issues

2.4.1 ENRI is promoting R&D as one of priority subjects based on CARATS to realize effective navigation using the Global Navigation Satellite System (GNSS) in all flight phases particularly in an approach landing phase and to establish risk management technique by the development of a safe analysis technology and the risk reduction technology. Asia regions, including Japan, located in the low magnetic latitude have a problem to solve the influence of ionospheric phenomena for GNSS R&D. Japan through ENRI advised ICAO to establish a framework for collection, analysis, and sharing the ionosphere data and for the development of Regional Ionospheric Threat Models. After the establishment of Ionospheric Studies Task Force (ISTF) under the APANPIRG CNS/MET subgroup meeting, ENRI is leading in the taskforce for future GNSS technology fields. (List 1).

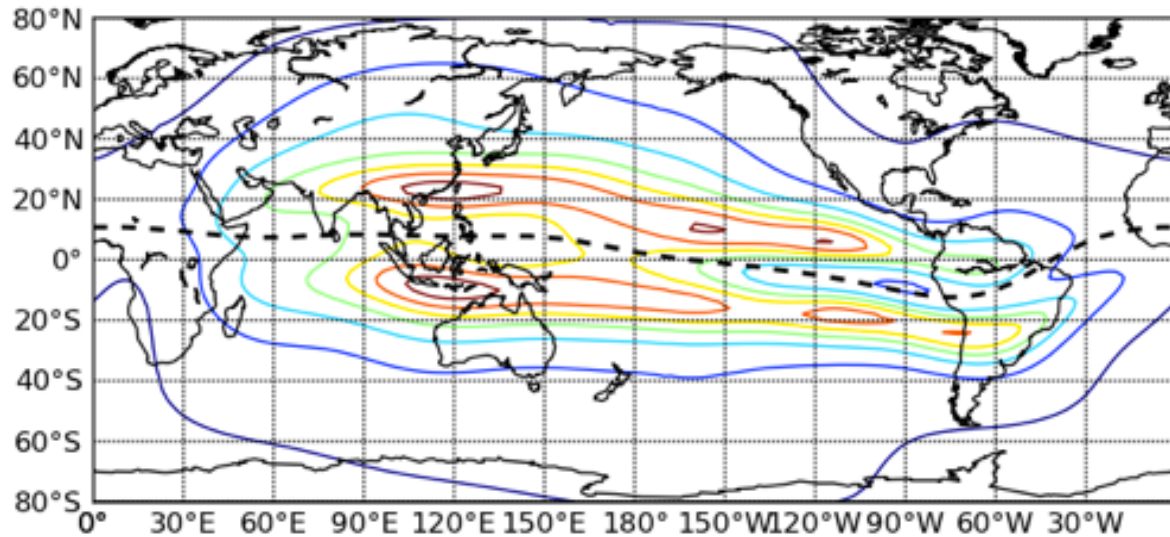


Figure 1. Areas that the possibility of ionosphere disturbance become high (orange and yellow areas)

List 1. Impact of the low latitude ionosphere disturbances on GNSS

✓ Technical issue

In Asia regions, located in low magnetic latitude regions, there is high possibility of ionosphere disturbances compared to Europe and the United States, and the issue is how to conduct the safety analysis from the threat of ionosphere disturbance for the development of Ground Based Augmentation System (GBAS) and Satellite Based Augmentation System (SBAS).

✓ Implementation system

Ionospheric Studies Task Force (ISTF) was established in July, 2011 under the ICAO CNS/MET subgroup. And ENRI is leading and working with member from the Asian region countries to collect and share the ionospheric data and developing the Regional Ionospheric Threat Models for GBAS and SBAS.

2.4.2 In addition ENRI established a research team for 4D trajectory based operation to assist CARATS from engineering point of view and the research results will be presented at EIWAC2013 in February 2013, bi-national conferences, or seminars. Such international contributions by researchers who are well aware of operational environments can promote discussion and collaboration among world engineers who are expected in future. Thus, these activities will be expected to greatly contribute to the advancement of ASBU.

3. CONCLUSION

3.1 Japan would like to contribute to the smooth implementation of future air traffic system in the Asian regions, trying to expand the community and to improve the quality of community for engineers or researchers.

3.2 If you are interested in the 3rd EIWAC and can attend the workshop, please refer to the website at http://www.enri.go.jp/eiwac/2013/eng_2013.html

Reference (websites)

JCAB : [http:// www.mlit.go.jp/koku/15_hf_000020.html](http://www.mlit.go.jp/koku/15_hf_000020.html)

ENRI : http://www.enri.go.jp/eng/index_e.htm

/4D trajectory based operation : <http://www.enri.go.jp/eng/research/kenkyu/operation01.htm>

/GBAS : <http://www.enri.go.jp/eng/research/kenkyu/airports07.htm>

/ionosphere database construction :

http://www.bangkok.icao.int/cns/meeting.do?method=MeetingDetail&meeting_id=117

/EIWAC2013 : http://www.enri.go.jp/eiwac/2013/eng_2013.html

— — — — —

APPENDIX

Important Dates Jul. 31, 2012: Submission of abstract Aug. 31, 2012: Submission of abstract (extended) Sep. 15, 2012: Notification of acceptance Nov. 15, 2012: Submission of full paper Feb. 19, 2013: Invited session+ Panel discussion Feb. 20-21, 2013: Technical sessions Feb. 22, 2013: Technical Tour Registration The workshop attendance will be free, including the coffee breaks. For organizational purpose, a registration is required. Please refer to the workshop page http://www.enri.go.jp/eiwac/2013/ for registration instructions. For all other information, please contact: Electronic Navigation Research Institute 7-42-23, Jindaiji-Higashi-machi, Chofu 182-0012 Tokyo, Japan Tel: +81-422-41-3165 Fax: +81-422-70-8952 Mail: contact_eiwac2013@enri.go.jp www.enri.go.jp/eiwac/2013/	Event Venue Miraikan (National Museum of Emerging Science and Innovation) 2-3-6 Aomi, Koto-ku, Tokyo 135-0064, Japan http://www.miraikan.jst.go.jp/en/ Access (by foot) Fune-no Kagakukan 5 min Telecom Center 4 min Tokyo Teleport 15 min www.enri.go.jp/eiwac/2013/	Organized by In cooperation with The third ENRI International Workshop on ATM/CNS EIWAC 2013 February 19-22, 2013 Tokyo, Japan
---	---	--

Workshop Description After successful meetings in 2009 and 2010, we are pleased to announce ENRI's third International Workshop on ATM/CNS (EIWAC 2013). The theme is: "Drafting future sky". There is worldwide activity in research and development of modern air traffic management (ATM) and its enabling technology in Communication, Navigation and Surveillance (CNS). In the Asian countries, too, pioneering work is necessary to contribute to the global harmonization of all air-transportation services. At this workshop, leading experts from research, industry and academia will meet to share their ideas and their approaches. Topics The workshop will focus on new concepts and developments in the following areas: • ATM Modeling and Performance • Trajectory Management • Airport Management • Communication/Navigation/Surveillance • Safety • Human Factors • Avionics • Traffic Capacity & Congestion Management • GNSS and related topics • Performance-based Operations • UAV/UAS • Aviation Weather www.enri.go.jp/eiwac/2013/	Contributions Written contributions to the earlier mentioned topics or similar ones are sought. Papers with innovative ideas or technical progress will be preferred by the local program committee. Students can expect preferential treatment in the review process of the abstracts. Please submit your abstract (one A4 page) to submit_eiwac2013@enri.go.jp The deadline for the submission of abstract is July 31, 2012 August 31, 2012 (extended). The committee notifies the preferred contributors of the acceptance not later than Sep. 15, 2012. The accepted contributors are expected to submit full papers not later than Nov. 15, 2012. The standard length of manuscripts is 4-8 pages. The templates of the abstracts and manuscripts are available at http://www.enri.go.jp/eiwac/2013/ Program The workshop contains invited speeches from research, industry and academia, technical sessions and a panel discussion. Students sessions are also planned. A technical tour will be organized for interested visitors. The workshop language is English. Japanese translation will be provided on occasion. For an up-to-date program, please refer to the workshop page: http://www.enri.go.jp/eiwac/2013/ www.enri.go.jp/eiwac/2013/	Organization Organizing Committee (ENRI) Kazushige Daiki Kazuo Yamamoto Takuya Otsuyama Yasuyuki Kakubari Kakuichi Shiomi Hiromi Miyazaki Izumi Yamada Takao Ueki Masanobu Sato Jyuuzo Niinuma Program Committee Shigeru Ozeki (ENRI) Jean Marc Loscos (DSNA) Dong Min Kim (KARI) Masatoshi Harigae (JAXA) Takeshi Tsuchiya (Univ. of Tokyo) Ken Ito (ENRI) Masato Fujita (ENRI) Supporters The workshop is kindly supported by the following organizations: • Japan Civil Aviation Bureau (JCAB, expected) • Japan Society for Aeronautical and Space Science (JSASS) • The Institute of Electronics, Information and Communication Engineers (IEICE) • The Japan Institute of Navigation (JIN) • The Institute of Positioning, Navigation and Timing (IPNTJ) • Japan Aerospace Exploration Agency (JAXA, expected) www.enri.go.jp/eiwac/2013/
--	--	---