

The Fifth Workshop on Transport Logistics

Representative: Eiichi Taniguchi

Date: December 14th, 2011

Place: Centre for Maritime Studies, National University of Singapore, Singapore

Organized by Kyoto University Global COE Program "Global Center for Education and Research on Human Security Engineering for Asian Megacities", GCOE, KU - CMS, NUS "Transport Logistics Joint Research Center"

Speakers: Prof. Eiichi Taniguchi (Kyoto University), Prof. Bernard Tan (National University of Singapore), Prof. Tien Fang Fwa (National University of Singapore), Prof. Qiang Meng (National University of Singapore), Dr. Raymond Ghim Ping Ong (National University of Singapore), Dr. Rojee Pradhananga (Kyoto University), Mr. Joel Sze Teo (Kyoto University), Mr. Masami Yanagihara (Kyoto University), Dr. Sun Zhuo (National University of Singapore), Mr. Liu Zhiyuan (National University of Singapore), Dr. Weng Jinxian (National University of Singapore), Mr. Wang Shuaian (National University of Singapore), Mr. Qu Xiaobo (National University of Singapore)

Number of Participants: 31

Purpose

As a follow up to the previous workshops on Transport Logistics, "The Fifth Workshop on Transport Logistics" was held in Center for Maritime Studies, National University of Singapore, Singapore on 14th December 2011. The workshop covered several topics in urban transportation and logistics with a main focus on issues relating to human safety and security. The main objective is to share the ongoing research works carried out by academics and researchers from the two GCOE collaborative research groups in National University of Singapore and in Kyoto University.

Achievement and Results

The workshop began with a warm welcome address from Prof. Bernard Tan, followed by opening addresses from Prof. Tien Fang Fwa and Prof. Eiichi Taniguchi. Professors and researchers from National University of Singapore and Kyoto University discussed several topics in transportation and logistics where concept of human security was directly addressed. Humanitarian Logistics, Hazardous Material Logistics, Transportation Networks, Accident Analysis, Urban Road Pricing are among the topics discussed.

A total of 9 presentations were made each followed by a vibrant question and answer session. The workshop served as a platform to discuss several issues of urban transportation and logistics and emphasized several new research problems in the field. Considering effectiveness of the workshop to exchange new research ideas and progresses between the two collaborative groups, the event concluded emphasizing the need of future organization of such events.



Opening address by Prof. Bernard Tan



Prof. Eiichi Taniguchi presenting in the workshop

第5回交通ロジスティクスに関するワークショップ会議

代表者： 谷口 栄一

開催日時： 2011年12月14日

開催場所： Centre for Maritime Studies, National University of Singapore, Singapore

主催： 京都大学グローバル COE プログラム「アジア・メガシティの人間安全保障工学拠点」GCOE, KU - GMS, NUS 交通ロジスティクス共同研究センター

講演者： 谷口栄一（教授，京都大学），Bernard Tan（教授，シンガポール国立大学），Tien Fang Fwa（教授，シンガポール国立大学），Qiang Meng（准教授，シンガポール国立大学），Raymond Ghim Ping Ong（講師，シンガポール国立大学），Rojee Pradhananga（特定研究員，京都大学），Joel Sze Teo（学生，京都大学），柳原正実（学生，京都大学），Sun Zhuo（研究員，シンガポール国立大学），Liu Zhiyuan（シンガポール国立大学），Weng Jinxian（研究員，シンガポール国立大学），Wang Shuaian（シンガポール国立大学），Qu Xiaobo（シンガポール国立大学）

参加人数： 31名

目的・概要

前回までのワークショップに引き続き、「第5回交通ロジスティクスに関するワークショップ会議」をシンガポール国立大学の Centre for Maritime Studies にて2011年12月14日に開催した。本ワークショップでは、人間安全保障工学に関連した問題を中心に焦点を当てながら、都市交通とロジスティクスについて多岐にわたり議論した。本ワークショップの主な目的は、京都大学とシンガポール国立大学の GCOE の研究グループにて継続している研究課題について情報共有することである。

シンポジウムの様子・得られた成果

ワークショップは、Bernard Tan 教授による温かい歓迎のスピーチをいただき、Tien Fang Fwa 教授と谷口栄一教授からの開会挨拶に続いた。シンガポール国立大学と京都大学の教授や研究者が人間安全保障を目指し、交通やロジスティクスに関して議論した。ヒューマニタリアンロジスティクス、危険物輸送、交通ネットワーク解析、危機的状況分析、都市ロードプライシングなどについて議論した。

活発な質疑応答とともに、9つの発表がなされた。本ワークショップは、都市交通とロジスティクスの数々の問題を議論する共通の基盤としての役割を果たし、新たな問題を引き出してくれる。こうしたワークショップが、双方の研究グループにとって、新しい研究テーマや研究の進捗の交流のために非常に効率的であり、こうした機会の今後の必要性が際立つものであった。



Wang Shuaian 氏による発表の様子



質疑応答の様子

The Fifth Workshop On Transport Logistics: An Overview

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Key Words: Logistics, Transportation

Introduction

The Fifth Workshop on Transport Logistics was held successfully with active participation of academics and researchers from the two host institutions, the National University of Singapore, Singapore and the Kyoto University, Japan. A total of 31 delegates attended the workshop. The workshop covered several topics of transportation and logistics in the form of presentations and discussions. The focus was issues relating to human security. Four main sessions were held, composing of a total of nine presentations. Each thirty minute presentation was followed by a vibrant question-and-answer session.

Presentations

Presentation 1: "Humanitarian Logistics in the Great Tohoku Disasters 2011" by Prof. Eiichi Taniguchi (Kyoto University)

Demonstrating the actual difficulties that arose during relief distribution after "The Great East Japan Earthquake and Tsunami Disaster" in Tohoku region Japan, the presentation shows how the humanitarian logistics differ from commercial logistics system. It addresses some key logistics issues in case of disaster based on the interviews performed at the affected area and highlights some essential points that can result the relief distribution more smooth.

Presentation 2: "MICROCITY-based Transport Network Analysis" by Dr. Sun Zhuo (National University of Singapore)

Considering the drawbacks of previous software package most of which are closed source and therefore cannot be evaluated under uniform standard, the presentation introduce a Microcity-based urban spatial analysis and simulation framework. The framework allows layering of three softwares, which provides flexibilities in developing various types of transportation analysis models. Moreover, it benefits practitioners and planners with integrated efficiency solutions while keeping the modeling efforts to low.

Presentation 3: "Evaluation of Urban Freight Road Pricing with Multi-Agent Modelling Approach" by Mr. Joel Sze TEO (Kyoto University)

This presentation proposed a multi-agent model to evaluate Government-driven City Logistics scheme like urban freight road pricing on rising trend of home delivery. The proposed model incorporates decision making behavior for major stakeholders. Test results of interaction between carriers administrator and shippers were presented on a virtual network with 16 customers 4 carriers 5 shippers and 1 administrator.

Presentation 4: "Nonlinear Congestion Pricing – Model Development and Distributed Algorithm Design" by Mr. Liu Zhiyuan (National University of Singapore)

The presentation started with a review of existing congestion

pricing schemes. Considering possible efficient implementation of the distance-based toll charge method with the aid of global positioning system (GPS), an in-vehicle unit integrating a GPS receiver, a digital map and a general packet radio service (GPRS) communication device, a Mathematical Programming with Equilibrium Constraints (MPEC) distance based toll design model was presented. The objective of the model was to maximize the total societal benefit was formulated and was solved using distributed genetic algorithm.

Presentation 5: "Path Risk in Hazardous Material Logistics" by Rojee Pradhananga (Kyoto University)

A procedure to determine threshold distance λ for risk analysis in routing and scheduling of hazardous material was discussed during the presentation. In addition to the material type, the procedure takes into account the geographic and meteorological condition of the area where the hazardous material is being transported. A demonstration to the procedure was presented considering logistics of Liquefied Petroleum Gas (LPG) in Osaka, Japan. The demonstration resulted a λ value of 275 meters in all direction corresponding to worst case accident scenario of Boiling Liquid Expanding Vapor Explosion (BLEVE).

Presentation 6: "An Ensemble Tree Approach for Work Zone Capacity Estimation" by Dr Weng Jinxian (National University of Singapore)

The presentation highlighted the importance of accurate estimation of work zone capacity as being an essential component in estimating work zone delays and planning work zone implementation. An ensemble tree approach was proposed for accurate estimation of the work zone capacity. The approach uses a set of decision trees whose individual outputs are combined using a weight method to reproduce the estimates for new examples.

Presentation 7: "Large-Scale Intermodal Liner Shipping Network Design" by Mr. Wang Shuaian (National University of Singapore)

Starting with literature review of decision problems at tactical level of decision making in liner shipping, the presentation introduced a practical large-scale intermodal liner shipping network design. Intermodal transportation, multi-type containers, origin-to-destination transit time, account for the initial network, global shipping network were the key features considered.

Presentation 8: "Analyses and Implications of the Accidents in the Singapore Strait" by Mr Qu Xiaobo (National University of Singapore)

Underreporting of accidents being a subject of great concern to maritime and port authorities, an underreporting analyses of databases of accident in the Singapore strait was discussed during the presentation.



Presenters of "The Fifth Workshop on Transport Logistics"

Presentation 9: "Integrated Driving Behavior Model Considering the Driver's Latent Intention" by Mr. Masami Yanagihara (Kyoto University)

A driving behavior model considering driver's intention during transition was presented. The model deals with driver's speed regulation and lane changing behaviors in an integrated framework. Numerical analysis was performed on vehicle trajectory data from video image of Hanshin Expressway, Japan.

Conclusions

The workshop served as a platform to discuss several issues of transportation and logistics with special concern to Asian Mega-Cities. New ideas and new horizons to counteract human security issues were addressed.

Finally the event was concluded with a members' discussion on textbook publication and future collaboration.