

Final Program

Time	Activity
8:00 – 9:00 AM	Registration
9:22 – 9:29 AM	Opening Program <ul style="list-style-type: none"> National Anthem Welcome Remarks Dr. Ricardo G. Sigua, President, TSSP
9:29 – 10:46 AM	Session 1 <ol style="list-style-type: none"> 1) Data Analytics for Research and Education (DARE) Program - Dr. May T. Lim (UPD) <ol style="list-style-type: none"> a) Data Analytics for Research and Education (DARE) Project 1: Technical design & system deployment - Dr. Larry A. Vea (Mapua) b) Data Analytics for Research and Education (DARE) Project 2: Design and analysis of algorithms - Dr. May T. Lim (UPD) c) Data Analytics for Research and Education (DARE) Project 3: Public Transport Information Exchange Platform - Dr. Noriel Christopher C. Tiglao (UPD) 2) MTNN: Big Data Analytics and Applications - Dr. Alex M. Fillone (DLSU) 3) Development of a Customized Local Traffic Simulator (LOCALSIM) - Dr. Hilario Sean O. Palmiano (UPD) 4) IntElecT: Intelligent Electric Transportation System - Dr. Lew Andrew R. Tria (UPD) 5) Design and Development of UP Bike Share System - Dr. Nestor Michael C. Tiglao (UPD)
10:46 – 11:04 AM	Open Forum for Session 1
11:04 – 11:27 AM	Break
11:27 AM – 12:39 PM	Session 2 <ol style="list-style-type: none"> 6) CATCH-ALL: Intelligent Traffic Management Towards A Smart City - Dr. Elmer P. Dadios (DLSU) 7) Detection and Identification of Legitimate Public Utility Vehicles (PUVs) Along various road net Works (DILAW) - Dr. Wilson M. Tan (UPD) 8) Hardware-Accelerated Vehicle Detection for Smart Traffic Signalling - Dr. Nestor Michael C. Tiglao (UPD) 9) The Cyber Physical Transportation Systems (CPTS) project - Dr. Adrian Roy L. Valdez (UPD) 10) DRIVERS: Data for Road Incident Visualization Evaluation and Reporting System - Mr. Miguel Enrico C. Paala III (WB) 11) Maritime Transportation Information System (MARIS) - Dr. John Justine S. Villar (UPD) 12) Development of A Local Automatic Identification System (AIS) for Ship Tracking and Monitoring - Mr. Febus Reidj G. Cruz (Mapua)
12:47 – 1:28 PM	Panel Discussion Theme: <i>Towards Development of an ITS Framework in the Philippines</i> Presentation: ITS: Global Context, Dr. Ricardo G. Sigua, President, TSSP Panelists: Dr. Enrico C. Paringit, Executive Director, DOST-PCIEERD Engr. Francisco Pesino, Chief, Traffic Signal Operation & Maintenance Division, MMDA Mr. Rommel R. Natividad, Project Adviser, Office of the Asst. Sec., Digital Philippines, DICT Moderator: Dr. Ricardo G. Sigua (President, TSSP)

Proceedings

Opening Program

The Intelligent Transportation Systems Forum started with the registration of participants and formally began with Dr. Jose Regin Regidor (TSSP Secretary), as the moderator of the Opening Program and Session 1, announcing the start of the program and the playing of the National Anthem.

After which, Dr. Ricardo G. Sigua, the President of the TSSP, delivered his opening remarks. He recognized all those involved in making the ITS Forum possible and welcomed the participants. He recalled past forums, such as the ITS forum in 2017 held in De La Salle University, and the small forums that were conducted at UP NCTS. He introduced the concept behind ITS, which has the potential to improve factors of safety and environment in transportation and how it affects lives positively. He also introduced the objectives of the forum: (1) sharing information on ITS and (2) identification of needs in developing an ITS framework in the Philippines. Dr. Sigua continued by explaining that ITS aims to complement the government's plan in building infrastructure; following the Build, Build, Build Program. He also highlighted how planning with ITS is important. He also informed the audience that recently, there was an 26th ITS World Congress in Singapore; and that he has been attending and presenting in the past ITS congresses, both regionally and internationally. He said that the country is lagging in the area of ITS, compared to the other ASEAN countries. But also, he highlighted that one of the recipients of the awards in the ITS World Congress in Melbourne was from the Philippines and is now currently affiliated with the Department of Transportation. Lastly, he understood how costly it is to go to international forums and how that could hinder one's attendance. Hopefully through the free registration of this forum, he hopes that the students would learn much from the topics.

After Dr. Sigua's welcome remarks, Dr. Regidor introduced the Transportation Science Society of the Philippines by giving a brief history, set of goals, and the organization's affiliation with the Eastern Asian Society for Transportation Studies; which recently held its conference in Colombo, Sri Lanka. He explained the two sessions of the ITS Forum.

Session 1

Data Analytics for Research and Education (DARE) Program

Dr. May T. Lim

National Institute of Physics

University of the Philippines, Diliman

Dr. May T. Lim of the University of the Philippines Diliman gave a quick overview of the **Data Analytics for Research and Education (DARE) Program**. A CHED-funded program, Dr. Lim highlights the several high-level goals of the program which are to build capacities for students and infrastructure, create a sustainable environment for research through collaboration, interaction with stakeholders, and primarily design an end-to-end workflow. She also introduced the collaborators of the project: Dr. Francis Uy, from the Mapua University, herself, Dr. Noriel Tiglao, from the UP NCPAG, and Alexandre Bayen, a US investigator from Berkeley. She explains that this collaboration brings out specific strengths and leverages; which, for example, in Project 3 which is led by Dr. Tiglao, focuses on making a platform for building the stakeholders.

Data Analytics for Research and Education (DARE) Project 1: Technical Design & System Deployment

Dr. Larry A. Vea
School of Information Technology
Mapua University, Manila

Dr. Larry A. Vea of Mapua University presented the first project of the DARE program namely: **Data Analytics for Research and Education (DARE) Project 1: Technical Design & System Deployment**. He started with presenting the four components which was set-up in MAPUA: (1) Data gathering platform; (2) data processing platform; (3) transportation modeling platform, and; (4) analytics and organization platform. The project gathered transportation data from different government agencies. Dr. Vea introduced 'TRIPKO' in their data gathering; which was an alternative to the pen and paper alternative. TRIPKO has survey tools such as License Plate Survey, Boarding and Alighting Survey, Classified Traffic Volume Count, Passenger Load Count, and Road Inventory. TRIPKO would then provide a summary reporting after gathering said data. Another way that they gathered data was through a video-based vehicle classification and counting wherein from CCTV footages, vehicles would be classified into motorcycles, tricycles, cars, trucks, etc. He explained that this process has two variants: (1) vehicle counter for flow measurement for the performance evaluation, and (2) vehicle counter for smart map. Another way of gathering data is through a video-based tracking the speed and estimation system. Dr. Vea also presented a sample smart map wherein different inputted scenarios would draw results in a color-coded fashion. Lastly, he also presented a data hub; or a collection of data from different sources which organizes the distribution, sharing, and subsetting of the said data.

Data Analytics for Research and Education (DARE) Project 2: Design and Analysis of Algorithms

Dr. May T. Lim
National Institute of Physics
University of the Philippines, Diliman

Dr. May T. Lim of the University of the Philippines Diliman presented the **Data Analytics for Research and Education (DARE) Project 2: Design and Analysis of Algorithms**. She began with introducing their approach, which can be summarized in four points: (1) using data to build models, (2) studying the interplay of behavior and system using microscopic traffic models, (3) performing scalable modeling using mesoscopic traffic models, and (4) creating tools when data is not available. She presented her team and their computing platform, which is currently at the National Institute of Physics in UP Diliman, and how they had built it and that it is operating 24/7. She presented the first point in using the evaluation of access using school location and enrolment as an example; and how O-D inference can be used to produce results by using the said data that was available. She also noted how hard it was to produce the results when there is a lack of data. In explaining the next point, she used a previous research entitled 'Agent-based modeling of lane discipline in heterogeneous traffic'. She then introduced a new study deriving from that which explained the concept of why people are swerving lanes. They had also based their observations on the data of the relation of buses and pedestrians and u-turn models (in front of UP Town Center). She also introduced Open Traffic Models which aimed to create open source tools for transport planners and have a mesoscopic plan for cities. They also looked at traffic controllers and the feasibility of smart controllers. They also aimed to create tools when data is not available to gauge the difficulty of moving around; one approach being the sampling of position, health, and environment tracking tools. It aims to look at the "commuter experience", and in this scenario, of students of UP Diliman. Lastly, she highlighted the DoTr workshop on transport data exploration and visualization using Python.

Data Analytics for Research and Education (DARE) Project 3: Public Transport Information Exchange Platform

Dr. Noriel Christopher C. Tiglao
National College of Public Administration and Governance
University of the Philippines Diliman

Dr. Noriel Christopher C. Tiglao of the University of the Philippines Diliman presented the **Data Analytics for Research and Education (DARE) Project 3: Public Transport Information Exchange Platform**. He said that Project 3 was the youngest project in the DARE Program and was brought with the realization of presenting the data to the people for it to have value. He presented the multi-disciplinary research team housed at the UP National College of Public Administration and Governance (NCPAG). They aim to coordinate with all the stakeholders and following the huge number of the commuting public, this was where the public governance concept comes in. Their key activities involve conducting workshops, data collection, data analysis and modelling, and institutional capacity assessment of partner agencies. The design thinking framework of project was presented which starts with understanding, defining, diverging, deciding, prototyping, and validating. In understanding, for example, data surrounding the UP Ikot and Toki jeepneys was also presented as a sample, with UP students as a subset. The project aimed to improve the public transport quality of service with technology, data analytics, user feedback, and partnerships. One output was presented through the 'How Might We' Rankings to further understand the transportation systems at place. The Pasig City case, which focuses on bus systems, was also investigated as part of their partnerships with the government to figure out solutions and remedy problems in the bus transport system. This goes hand-in-hand with the aim to monitor various aspects in buses such as speed, consumption, etc. Another case was the UP case on the possible RFID installation on jeepneys to determine the round trips done to estimate revenues. Finally, the challenges such as procurement, integration of systems and design making process, staff capacities, technology investments, and system feasibility.

Metro Manila Transportation Network: Big Data Analytics and Applications

Dr. Alex M. Fillone
Civil Engineering Department
De La Salle University Manila

Dr. Alex M. Fillone of De La Salle University presented **Metro Manila Transportation Network: Big Data Analytics and Applications**. The primary objective of the project is to model and assess the existing transportation network and transport-related facilities of Metro Manila as well as planned transport infrastructure projects through existing data and development of transport database systems. The OD Matrix was used as a tool to gather the data and super computers were used to process the data. Socio-economic analysis was also gathered in support of the OD Matrix. They produced the data in terms of volume and travel time. They have also partnered with the DPWH in presenting this data for a better planning system for infrastructure. A mesoscopic simulation model was done to map out the data of metro manila; this was used in assessing the proposed road interchange projects in the NCR region. A 24-hour model can also be produced given the gathering of data. This project can also be used in presenting proposals for future planned infrastructure. The program also modelled the possibility of one-way EDSA. Lastly, the collaborators of the project were also mentioned specifically, DoTr, DPWH, and DOST.

Development of a Customized Local Traffic Simulator (LOCALSIM)

Dr. Hilario Sean O. Palmiano
Institute of Civil Engineering / National Center for Transportation Studies
University of the Philippines Diliman

Dr. Hilario Sean O. Palmiano of the University of the Philippines Diliman presented the project **Development of a Customized Local Traffic Simulator (LOCALSIM)**. A DOST-PCIEERD funded project, this project aims to be used by transport planners to perform social experiments, plan out roads and figure out solutions regarding congestion. As stated, LocalSIM is a microscopic traffic

simulation software designed to be used by road and traffic engineers of LGUs as a decision support system for traffic management. This technology will enable support planners in analyzing and visualizing traffic through simulations. This program replicates a road network using a road map using the road geometry and inputs different vehicles; a sample of EDSA was presented to further visualize LocalSIM to the audience. A signal was placed that repeats a cycle in the simulation. This plots out an undesirable delay for the vehicles that produce congestion. The LocalSim plots out solutions and alternatives that was seen in the example. It replicates the local road user of Filipinos, such as swerving and other factors. Students, professors, and planners were invited to also use the program for its development.

IntElecT: Intelligent Electric Transportation System

Dr. Lew Andrew R. Tria

Electrical and Electronics Engineering Institute
University of the Philippines Diliman

Dr. Lew Andrew R. Tria of the University of the Philippines Diliman presented the program **IntElecT: Intelligent Electric Transportation System**. A DOST-PCIEERD funded project, IntElecT is a smart network of energy aware electric vehicles and charging infrastructure. It is also a community-based EV ride-sharing platform. The system overview was presented which consisted of the charging station, users, driver, and the cloud connected program and infrastructure. Instrumentation, such as data loggers, and plans on the solar-powered charging station were presented. Solar power was used to remove the dependency on the grid. The system components were the ride-sharing monitoring and guidance system, data harvesting system, and ride-sharing mobile apps. The program is divided into two projects: Emocion, which handles the hardware, and Advice, which handles the software. The project was launched in UP Diliman, the project aims to cover the staff and admin personnel of the campus, and Cagayan Regional Center; each receiving 5 units. This system aims to help admin personnel in their day-to-day routes of paperwork. Lastly the e-trike ride-hailing service app, 'HATID', was introduced which lets a user book rides very much like a TNVS.

Design and Development of UP Bike Share System

Dr. Nestor Michael C. Tiglao

Electrical and Electronics Engineering Institute
University of the Philippines Diliman

Dr. Nestor Michael C. Tiglao of the University of the Philippines Diliman presented the project **Design and Development of UP Bike Share System**. The presentation began with introducing the project as an environmentally friendly transport alternative and the differences of the road space used in comparison of cars, a bus, and bikes. It was also presented that Filipinos spend 16 days in traffic and PhP100,000 in income. Bike sharing was done in Metro Manila, but several challenges arose such as tracking the bikes, infrastructure, and security. The presented problem was focused in designing and implementing a smarter bike sharing system. UP Bike Share presents itself as a solution. The concept behind the program was presented in a video presentation and that the benefits of the project was that it was environmentally friendly, healthy, convenient, and promotes cycling culture. Positive testimonials, ranging from health to therapeutic advantages, from students were also presented and the vision of the program is to influence bike-sharing cities. The next step for the program is the commercialization of the technology, offering the solution to LGUs and private companies, and looking for adopters and partners.

Open Forum for Session 1

Dr. Regidor then called on the previous presenters for the Question and Answer session. Questions revolved primarily on dealing with the congestion problem in EDSA, acquiring the software mentioned, viability of the implementation of the Bike Share in their current community, and research prospects. A short break for the participants was done after the Question and Answer of the previous speakers and the forum was rejoined after a few minutes.

Question 1: I would like to ask the speakers, given the technology, for [the] solutions on the problem of EDSA

Dr. Lim: It's not technology that could end the problem, it's understanding the problem. As for EDSA for example, one of the things, given all the commuting I've done, I've seen solutions that worked and solutions that haven't. And EDSA is one of those problems that has a variety of small solutions that could work and small solutions that could not work. And I like to share solutions that have worked... Passing thru Megamall, you can expect you'd be stuck for 15 minutes... same with SM North... You'd have to get-off at a restaurant nearby since you can't alight directly at the mall... SM recognized that they were part of the problem... The mall invested not just on technology and in design. They placed the terminals inside the mall causing the traffic to be inside the mall... There are still some problems in the queuing inside the mall, but it was removed from the outside... In understanding the problem, they figured out a solution not just based on technology but also design...

Part of the problem is not having a fundamental understanding for making a way for commuters to shift from one mode to another outside EDSA. It needs to get addressed. It is understanding the problem. If you are seeing a chokepoint, you have to figure out why there is a chokepoint. It's not the technology alone that will solve the problem.

Another problem is the bus design. Buses, are for example, not designed for the commute, but for tourist buses. Only a few people can alight and come in. Problems of different scales that need to be addressed and understood for the solutions; not to dump it in technology alone.

Dr. Noriel Tiglao: From our data, not all problems are in EDSA. You have to spread out the routes. Improve the connection and put high capacity buses. You can solve the problem there.

Dr. Nestor Tiglao: You need people to solve the problem. And institution capacities in technology. We also need policies and governance and communicating the solutions across agencies. I don't think it's on regulations.

Question 2: To Dr. [Nestor] Tiglao, I would like to know how you have set-up the system for bike sharing...

Dr. Tiglao: We have the hardware and software and we will be deploying it in UP Diliman, and we can discuss how you can implement it in your locality or university. And a part of that is knowing the experiences of the people since we have to have a grasp of how people will use it and be sustainable in the long run. We can share our experiences and we also taught some users how to bike.

Question 3: To Dr. Palmiano... or to anyone who can answer it, how can we avail of the software for our students?

Dr. Valdez: You can go to our ITS Laboratory at the NCTS and sign the required paperwork and the LOCALSim was intended for educational use so we can share it.

Question 4: For Dr. Veal, from the data presented and the videos presented in mapping, may we ask if we may use the program and ask for the data, and if yes, may we use it in our license plate survey using CCTV footages?

Dr. Veal: In our case, if you are doing a survey on public vehicles, you can get the characteristics of the vehicle through our program and footages.

Question 5: From the research perspective, how do you think can the government help you facilitate or improve your researches?

Dr. Noriel Tiglao: There needs to be a faster access to the data and investing in a literature laboratory so stakeholders can search for the data.

Dr. Nestor Tiglao: There should also be collaborations between different fields for our research to be improved.

Session 2

After the short break, the moderator, Dr. Karl B. N. Vergel (TSSP Vice-President) called on the participants to settle down for the next line of presenters. He then called on the first presenter for Session 2.

CATCH-ALL: Intelligent Traffic Management Towards A Smart City

Dr. Elmer P. Dadios

Manufacturing Engineering and Management Department

De La Salle University Manila

Dr. Elmer P. Dadios of De La Salle University presented the project **CATCH-ALL: Intelligent Traffic Management Towards A Smart City**. The presentation began with mapping out accidents, traffic due to accidents, and the increased traffic volume. The program aims to solve problems in traffic with artificial intelligence and technology. The problem was that heavy traffic is a major impediment that affects the economy, environment and human life and the goal was to make a smart city that integrates technology in everyday activities to improve quality of life. CATCH-ALL is a traffic management and analytics system based on computer vision and artificial intelligence. Samples of the program was presented through a video and image capturing of the artificial intelligence. This also is used in the operator traffic apprehension report; which a sample ticket report was displayed in an apprehended vehicle. The license plate is also recognized per character in the system. This system is proposed to be marketed to the MMDA, Tollways/CBDs, and LGUs and proposed prices for the installation of the hardware was also provided. Finally, the presentation showed the needs namely, partners, camera suppliers, and advisers.

Detection and Identification of Legitimate Public Utility Vehicles (PUVs) Along various road net Works (DILAW)

Dr. Wilson M. Tan

Department of Computer Science

University of the Philippines Diliman

Dr. Wilson M. Tan of the University of the Philippines Diliman presented the **Detection and Identification of Legitimate Public Utility Vehicles (PUVs) Along various road net Works (DILAW)**. The motivations, system architecture, system performance tests, conclusions, and summary were the outline of the presentation. The motivations for the project was on the colorum problem, which plagues the Philippine transportation sector and causes problems such as traffic, safety and travel of commuters, and lower the income of legal PUV operators. The solutions such as RFID systems costs too much infrastructure and sensor-bases systems were never fully realized. Operations, on the other hand, causes a nuisance for commuters. The DILAW system is that it enables contactless detection of legal PUVs through a device carried by the PUVs and a base station carried by the traffic officer; and through this, illegal PUVs can be singled out. The advantages of the system are that it is contactless, tamper-proof, and infuses accountability. The design of the Base Station and PUV Node were presented and the workings of the installation and tamper-proof designs were also introduced. An ETA system, commuter app, and a dispatch system was also presented for the commuter and operator side of the PUVs. The tests of the system were done in UP Diliman and yielded positive results. The recommendations of the program were adding an integrated layout for the PUV Node, a more compact platform for the base station, testing the new radio technologies, and an automated DILAW system. In conclusion, the DILAW project was able to design, produce and test a complete end-to-end system which enables the detection and identification of legal PUVs; it takes

into account processes such as registration, data uploading, special trips, and situations such as slow or no internet connections; has been extensively tested to be functional and provide enough reaction time for the officers to hail or flag down vehicles that may be colorum, and; has produced derivative systems like an ETA-system and GPS-based systems.

Hardware-Accelerated Vehicle Detection for Smart Traffic Signaling

Dr. Nestor Michael C. Tiglao
Electrical and Electronics Engineering Institute
University of the Philippines, Diliman

Dr. Nestor Michael C. Tiglao of the University of the Philippines Diliman presented the project **Hardware-Accelerated Vehicle Detection for Smart Traffic Signaling**. The project is an innovation intended to improve the current system. The objective is to develop a dynamic, closed loop traffic management system covering two intersections and measure the output of the implemented system and compare it against the static scheduling system. The system composes of the computer vision, computer networks, and dynamic traffic control. It was explained that there is some difficulty in testing out the system in a real intersection. The setup of the simulation is through an open source, highly portable, microscopic and continuous traffic simulation named SUMO. The complete system composes of SUMO, Unity, and the hardware that goes to the RASPI-Sink. The computations done, and the medias that were produced afterwards, were presented to serve as a reference to the output. In conclusion, the dynamic scheduling system was able to adjust to heavy traffic. Additionally, further work on the system aims to expand over to more than two intersections.

Cyber Physical Transportation Systems (CPTS) Project

Dr. Adrian Roy L. Valdez
Department of Computer Science/National Center for Transportation Studies
University of the Philippines Diliman

Dr. Adrian Roy L. Valdez of the University of the Philippines Diliman presented on the **Cyber Physical Transportation Systems (CPTS) Project**. The problem that the project wanted to address was the growing congestion problem and, with the help of technology, help in presenting a solution. The project was also multidisciplinary in approach; employing people from computer science, electrical and civil engineering. The CPTS aims to develop a system that monitors, communicates, sense, and actuates traffic information data through different components. The set-up provided composed of three parts, namely computing, communication, and sensing and actuation. Their R&D Center is housed at the ITS Lab (situated at the UP NCTS). The hardware component composed of the i-ATOMS; which features a sensor system, vehicle-actuated traffic signals, variable message sign, and wireless communication with command center. The software used was T4Cast and a command center consisted of the CORTEX (Computational Software Resources for Traffic Data Exploration) and AORTA (Automated Operations for Real-Time Actuation). The aim of the project is that it would be used by planners and traffic engineers to find solutions in traffic.

DRIVERS: Data for Road Incident Visualization Evaluation and Reporting System

Mr. Miguel Enrico C. Paala III
World Bank

Mr. Miguel Enrico C. Paala III of the World Bank presented **DRIVERS: Data for Road Incident Visualization Evaluation and Reporting System**. The project presented the importance of data in the reliable safety and traffic so that it can identify the problem and see the possible solutions that can be done. The road safety, in numbers, were presented which pertained to 30 recorded fatalities per day and the majority are people between the ages of 20-29 and it mostly involves motorcycles and pedestrians. The problem with underreporting was shown and is caused by manually logged records. In 2014, the World Bank and DoTr developed the web-based and open source program: DRIVER; currently housed in the DOST-ASTI. It aims to provide a uniform platform in reporting road incidents. The platform of DRIVER was presented and showed how data was displayed from a users'

point of view. DRIVER is partnered with the PNP, LGUs, DOH, DPWH, and DoTr and agencies under it. DRIVER was used in planning, such as managing blackspots/blacklengths. Lastly, the presenter showed how they have been doing trainings on the LGUs and PNP on using the program.

Maritime Transportation Information System (MARIS)

Dr. John Justine S. Villar

Department of Computer Science / National Center for Transportation Studies
University of the Philippines Diliman

Dr. John Justine S. Villar of the University of the Philippines Diliman presented on the Maritime Transportation Information System (MARIS). It was presented the Philippine maritime industry's major contribution in the Philippine economy; and how the archipelagic design of the country is dependent on an efficient maritime transport system. It was also presented how there is a lack of an existing framework that would analyze the needed number of routes and their respective capacities. In partnership with MARINA and PPA, MARIS aims to develop and design a modular software and other related tools for an effective route capacity measurement system. In an overview, the project utilizes three factors namely a route system, state estimation, and rationalization. A current implementation in Batangas is being done to analyze the route. The Navis, a software developed for maritime transportation, was presented which features tools that helped with fleet optimization and route rationalization. In future prospects, the project aims to integrate with all routes and ports.

Development of a Local Automatic Identification System (AIS) for Ship Tracking and Monitoring

Engr. Febus Reidj G. Cruz

School of Electrical, Electronics, and Computer Engineering
Mapua University

Engr. Febus Reidj G. Cruz of Mapua University presented the Development of a Local Automatic Identification System (AIS) for Ship Tracking and Monitoring. In his presentation, he started by saying that the AIS is a very needed system for maritime vessels; especially that the Philippines is a maritime country. He also stated that as a maritime nation, marine traffic, built up by hundreds of marine vessels that cater to cargo, tankers, passenger and fishing vessels, etc., is very busy. He also presented that in marine traffic, vessels collide since not all are equipped with an instrument that detects nearby vessels; and that without a safety standard, vessels are heading for disaster. He recounted the incident of a foreign vessel sinking a domestic boat at the West Philippine Sea and that maritime disaster are mostly based on ship-to-ship collisions. He then presents the value of the AIS, which primarily promotes a safe, secure, and sustainable maritime transport, but does not come cheap. He informed that under the DOST-PCIEERD, Filipino engineers have developed a local AIS that has a significantly lower price; which also provides real-time information for monitoring & tracking marine vessels and are up to par with international standards. He also presented how they had designed all the components in the AIS and how they had developed an interface to track the ships equipped with the said technology. They aim that this local, low-cost, AIS device would prove to provide a safe marine transport system.

Open Forum for Session 2

The open forum for Session 2 was not held due to time constraints and the next part of the program, which consisted of Dr. Sigua presenting the global context of ITS and moderating the panel discussion among the panelists from DOST-PCIEERD, MMDA, and DICT.

Panel Discussion

Presentations of Dr. Sigua and the Panel Discussants

The panel discussion began with **Dr. Ricardo G. Sigua**'s presentation on the [ITS: Global Context](#). Dr. Sigua presented the key organizations around the world that fostered the ideas of the ITS in their specific regions. These organizations hold world forums once a year to present current trends in ITS. The status in the region is that it is composed of 12 members, and two partners; one of which is the Philippines. In ASEAN countries, four pioneering countries were presented: Singapore, Thailand, Malaysia, and Indonesia. In Japan, there are 9 Areas of ITS Development, ranging from the different modes of transportation. In Thailand, there are 6 Areas of ITS Development, ranging from traffic management to safety and electronic payment. Current themes, such as intelligent vehicles, data analytics, sustainable smart cities, multimodal transport, safety, policies, and cybersecurity to name a few, on ITS were also presented. The topic of the panel discussion would revolve on the development of the ITS Framework; and the ITS Master Plan for Metro Manila served as an example of the ITS in the Philippines. The seven ITS Development Areas in the country were presented, which ranged from traffic signal control, traffic information provision, traffic safety assistance, PUV management, traffic enforcement assistance, road management, and toll fare collection. The creation of ITS Philippines organization in March 2015 aimed to: bring together the professional interests of those in public and private organizations, practitioners, academicians and researchers related to ITS, and create opportunities for networking and interaction.

After Dr. Sigua's presentation, he then called on the three panel discussants: Engr. Francisco Pesino, Chief of Traffic Signal Operation & Maintenance Division, MMDA; Mr. Rommel R. Natividad, Project Adviser of the Office of the Asst. Sec., Digital Philippines, DICT; and Dr. Enrico C. Paringit, Executive Director of DOST-PCIEERD. Dr. Sigua began the discussion with asking the discussants the current application of ITS and its promotion in their respective institutions.

Engr. Pesino answered that the application of ITS in the MMDA revolved primarily in Metro Manila; specifically, in modernization, traffic systems, and apprehension systems. They have also placed various CCTVs and they have integrated with the LGUs in making a uniform system.

Mr. Rommel R. Natividad replied that they have gathered data on various data with the LTFRB and LTO in presenting the trips done by the PUVs to the public and they have also provided data on the maritime transportation. They aim to foster connectivity of the government and the public on the side of transportation. They also aim to make a nationwide system for the data gathering of the DICT.

Dr. Enrico C. Paringit, Executive Director of DOST-PCIEERD, through his presentation entitled [Intelligent Transportation System Forum Towards Development of an ITS Framework in the Philippines](#), showed the 2013 ITS Roadmap and expressed the adamant support of DOST-PCIEERD in the projects involving ITS. They are looking towards the future of ITS and its integration with the current system. After the research had been conducted, the DOST gathers the data and stores them. They also aim to integrate multimodal studies in transportation. He also aimed to have a technology transfer between agencies for the utilization of data; and present them to the public if possible.

Open Forum of the Panel Discussion

The questions of the audience focused on data sharing, current trends of ITS in rail and air transport, policy making for ITS, and current updates of the application of ITS in Metro Manila.

A suggestion was raised by Engr. Rene Santiago, a TSSP Lifetime Member, to integrate the current technologies in ITS for the traffic management system and how there should be a focus on the maritime transportation sector here in the country.

Question 1: For MMDA... would it be possible to get the signal phase scheduling of traffic enforcers and the current system, in general, on the solutions using large scale ITS, is it possible to get the data out for the system?

Engr. Pesino (MMDA): We are open to all data; many have been asking for data in the administrative and some LGUs have asked for the data for traffic management. We are also open to collaborating with the researches presented here in our ITS expansion that we use in our traffic management system.

Mr. Natividad (DICT): If I may, you may also refer yourself to the National Transport Policy that is also posted, and you could write an official letter to us so that the document can be released.

Dr. Paringit (DOST-PCIEERD): With respect to the partnerships, the provision of data can be quite expensive. For example, you can leverage the data and equipment with a partnership.

Dr. Sigua (TSSP): As far as data is concerned, I hope that it can also be shared to other agencies such as the DoTr and that there is also data there. I also hope you can partner with the academe in processing the data that is there.

Question 2: Do we have existing studies and exploits on ITS and applications on rail and air transport?

Dr. Sigua (TSSP): As I have said earlier, the focus of ITS worldwide is to service traffic but not road traffic. But it's good that it has an extension on water. But it is likely that we can also look at the other modes. So, we don't only commit ourselves to road or maritime.

Dr. Paringit (DOST-PCIEERD): We have also supported projects on mass transit, particularly on hybrid-electric train, road train and smart transit. One way to look at it is that we want to make it intelligent. For example, we look at CCTVs and there are data estimations displayed on that, but there is currently no are still no guidelines or something on that. We are currently encouraging proposals on managing traffic systems in smart cities on for example the electric hybrid train. But we also want some applications and intelligent systems on other projects and innovations such as in collisions for example.

Question 3: I would like to ask if you think it is important for the government to enact a policy regarding the application of ITS?

Dr. Paringit (DOST-PCIEERD): One of our outputs, as part of the 6Ps, one of the Ps is policy. We ask the researchers to draft policies or input policies for the implementation and adaptation of the technology to serve as a guide. It is also a way for us to make a legal stand and promote and incentivize it.

Engr. Pesino (MMDA): It is important to have policies since, for example, there have been TROs from the Supreme Court in the LTFRB's GPS system for security purposes. We helped the LTFRB revise that system. But the system also promotes safety and security for families for example.

Question 4: My question is on the update of signal system that was installed in 1999, and then how many intersections have been part of the signalling system?

Engr. Pesino (MMDA): To give you a context, this was from the DPWH and there was a goal to update the system during the time of Chairman Bayani Fernando, that had only happened under Chairman Tolentino. Now, we have 441 signalized intersections and there are still ongoing upgrades of the current system. We hope to integrate this on all the LGUs in Metro Manila to have a better management of the cities here in Metro Manila.

Closing

Dr. Sigua formally ended the panel discussion and closed the program. He then called on Dr. Vergel who thanked all the participants and delivered some announcements

Photos

Session 1



Photo 1.1 Pre-Conference



Photo 1.2 Dr. Ricardo Sigua, TSSP President, Delivers his Opening Remarks (Photo 1 of 2)



Photo 1.3 Dr. Ricardo Sigua, TSSP President, Delivers his Opening Remarks (Photo 2 of 2)

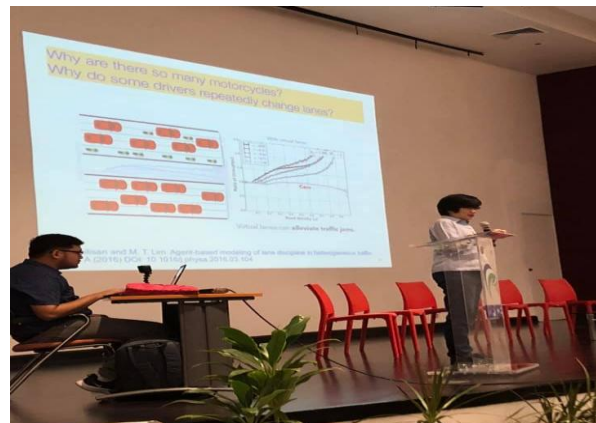


Photo 1.4 Dr. May Lim presents the DARE Program Overview



Photo 1.5 Dr. Larry Vea presents the DARE Project 1



Photo 1.6 Dr. May Lim presents the DARE Project 2



Photo 1.7 Dr. Noriel Tiglaio presents the DARE Project 3



Photo 1.8 Dr. Alexis Filione presents the MMTN: BDAA



Photo 1.9 Dr. Sean Palmiano presents the LOCALSim



Photo 1.10 Dr. Lew Tria presents the IntElect



Photo 1.11 Dr. Nestor Tiglao presents the UP Bike Share



Photo 1.12 Panel Discussion with First Group of Presenters

Session 2



Photo 2.1 Dr. Elmer Dadios presents CATCH-ALL



Photo 2.2 Dr. Wilson Tan presents Project DILAW



Photo 2.3 Dr. Nestor Tiglao presents the Smart Traffic Signaling



Photo 2.4 Dr. Adrian Valdez presents the CPTS



Photo 2.5 Mr. Miguel Enrico Paala III presents DRIVERS



Photo 2.6 Dr. John Justine Villar presents MARIS



Photo 2.7 Mr. Febus Reidj Cruz presents AIS



Photo 2.8 Panel Discussion with guests from DOST-PCIEERD, MMDA, DICT