PICE SINGAPORE CHAPTER | AUGUST 31 - SEPTEMBER 01, 2017

SINGAPORE CHINESE CULTURAL CENTRE

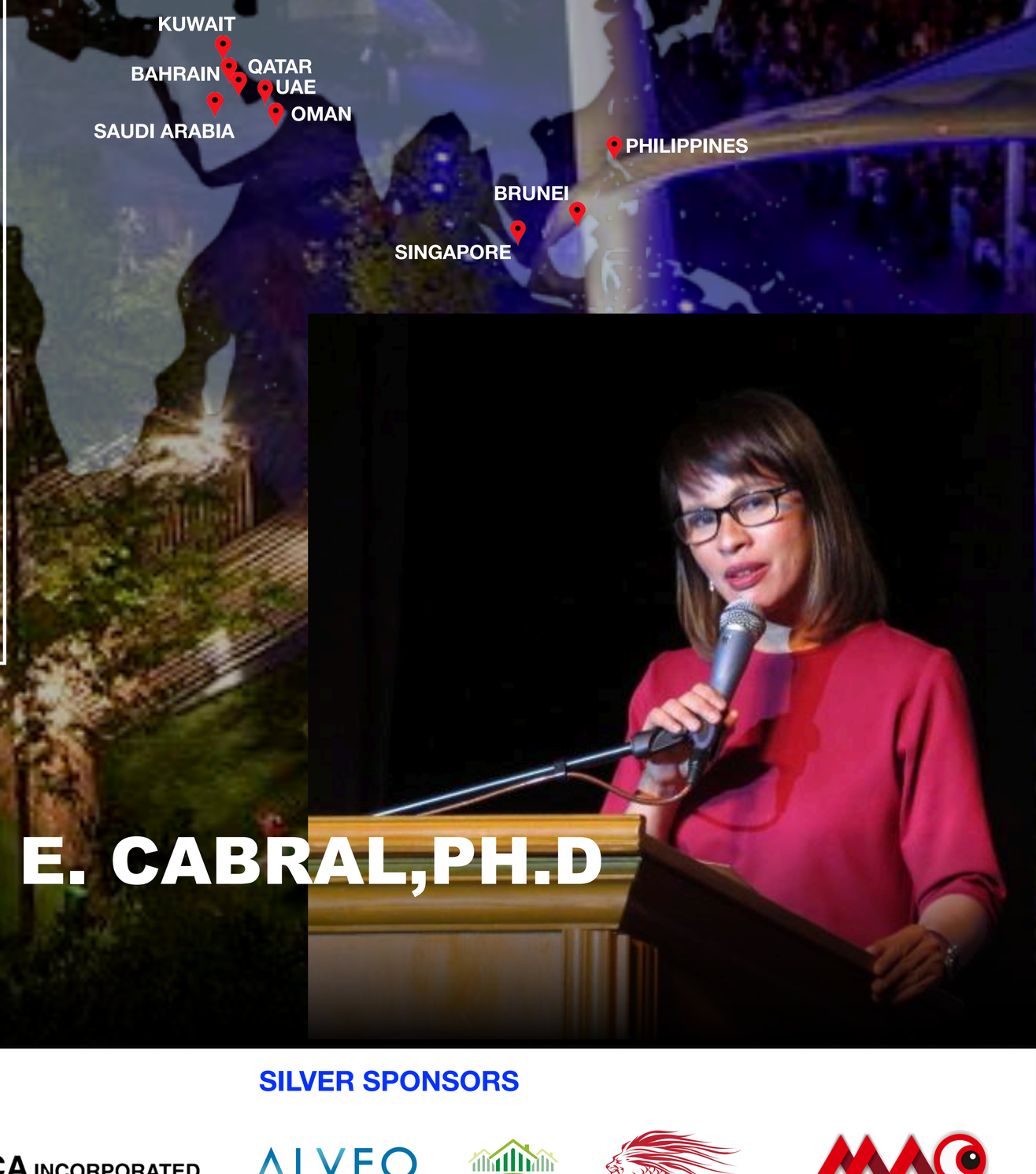
1 STRAITS BOULEVARD, SINGAPORE 018906

PHILIPPINE INSTITUTE OF CIVIL ENGINEERS INC.

6TH INTERNATIONAL TECHNICAL CONFERENCE

SINGAPORE 2017

UTILIZING TECHNOLOGICAL ADVANCEMENTS FOR SMART CONSTRUCTION TOWARDS SUSTAINABLE DEVELOPMENT



GUEST AND KEYNOTE SPEAKER

ENGR. MARIA CATALINA E. CABRAL,PH.D

PICE NATIONAL PRESIDENT

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INTRODUCTION

As the Philippines full throttle towards economic development, with infrastructures and civil engineering projects gearing up to peak on the coming years, numerous challenges are expected to be faced. The Philippines' goal of evolving into a smart and progressive country entails tapping innovative methodologies and construction practices developed by fast growing nations from across the globe. Being a smart nation corresponds to harnessing and utilizing available technological advancements to cater to the citizen's needs of comfort and better lives.

Civil Engineers being on the fore front of the construction and building industry, are to evolve and develop smart work practices. Developing into engineers with world-class capabilities and equipped with strong knowledge on various technologies and construction techniques that will literally build our nation towards further progress and development with utmost sustainability.

For this year's **6th PICE International Technical Conference**, civil and structural engineers from various local and international Chapters of PICE shall convene in Singapore. Being a country known for its fast-tracked economic progress and note-worthy Built Environment Industry practices combined with technological innovations, Singapore is definitely a model nation thriving with multitude of knowledge to learn from. The 6th ITC jointly hosted by Philippine Institute of Civil Engineers, Inc. (PICE) National and Singapore Chapter shall showcase advancements in the Construction Industry focusing on Building Information Modeling (BIM) applications, projects and best practices. The 6th ITC shall be graced by industry experts and authorities from various major agencies in Singapore and abroad.

MESSAGE

My warmest greetings to the Officers and Members of the Philippine Institute of Civil Engineering Chapters Singapore, Eastern Province Saudia Arabia, KSA-Riyadh Region, Qatar, Oman, Bahrain, United Arab Emirates, Western Region of Saudi Arabia, Brunei and Kuwait on the occasion of your **6th International Technical Conference** this August 31, 2017 at the Singapore Chinese Cultural Center.

Your convention theme, **Utilizing Technological Advancement for Smart Construction Towards Sustainable Development** is a very timely call among Filipino Civil Engineers all over the world to strive for better, smarter infrastructure adaptive to the present times and capable of improving civil engineering technology.

The Philippines recently launched its biggest and most ambitious infrastructure program and the Department of Public Works and Highways is at the helm of bringing the country's **Golden Age of Infrastructure** by doing three things: to **"Build. Build. Build."**

Our take on smart construction is to continuously adopt ways in integrating technology in all stages of the project development cycle and to also demand the same level of commitment from our industry partners.

Given the crucial role of the Civil Engineering profession in driving economic progress, this event reaffirms our organization's relentless effort in leveling the major final outputs of Filipino Civil Engineers in the same pedestal as the best in the world.

I am truly excited to personally witness and learn from what this convention has to offer and I pose a challenge to each of your to make your mark wherever your services are needed anywhere in the world.

Mabuhay kayong lahat!

MARIA CATALINA E. CABRAL, Ph.D.
National President, Philippine Institute of Civil Engineers
DPWH Undersecretary for Planning and PPP

MESSAGE

Greetings!

It is my distinct honour to warmly greet all guests, resource speakers, sponsors and delegates from the PICE International Chapters namely, Singapore (Host), Eastern Province Saudi Arabia, KSA-Riyadh Region, Qatar, Oman, Bahrain, United Arab Emirates, Western Region of Saudi Arabia, Brunei and Kuwait and the delegates from the Philippines to this 6th International Technical Conference. Welcome to the Lion City and the Garden City of Southeast Asia – Singapore!

Our conference theme, "**Utilizing Technological Advancement for Smart Construction Towards a Sustainable Development**" speaks well of our commitment to provide the needed effective and new solutions in dealing with the challenges of sustainability. PICE recognizes the role of civil engineers in planning, designing, building and ensuring a sustainable future. The promising rewards are great both to our people and to the civil engineer who can see the fruits of his or her labour – making a real difference to improving the quality of the life.

This gathering is indeed an appropriate venue to discuss the current trends, innovations and concerns of the profession, promote friendship and camaraderie among civil engineers while at the same time provides an opportunity of professional development to meet up and be responsive to the new challenges of development.

Let us therefore make the most out of this conference and bring home new insights and knowledge to share to our respective communities, offices and companies.

Finally, I would like to humbly commend the untiring and combined efforts of our International Chapters headed by its Regional Coordinator, Engr. Reynaldo R. Illut, the host PICE Singapore Chapter headed by its President, Engr. Christopher M. Vitug and all its members for making this event a success!

Mabuhay ang Filipino! Mabuhay ang PICE! Mabuhay tayong lahat!

God bless us all . . . .

ERDSAN RENE S. SUERO, ASEAN Eng.
PICE 2nd National Vice President
Chair, Regional Technical Conferences Committee

event guide

DAY 1

0800 Registration

0900 Opening Ceremony

- Invocation & National Anthem
- Introduction International Chapter Presidents & Personages
- Welcome Remarks

  ENGR. REYNALDO E. ILLUT
  PICE International Coordinator
  President-Eastern Province Saudi Arabia Chapter

- Opening of the Technical Conference

  ENGR. ERDSAN RENE S. SUERO
  PICE National 2nd Vice President
  Chairman Regional Conference Committee

- Introduction of Guest & Keynote Speaker

  ENGR. CHRISTOPHER M. VITUG
  President Singapore Chapter

- Guest & Keynote Speaker

  ENGR. MARIA CATALINA E. CABRAL, PH.D.
  PICE National President

1000 Break Time

1030 SESSION 1 — HDB'S APPROACH TO SUSTAINABLE TOWNS
MR. ALAN TAN
Former Director Housing Development Board

1115 SESSION 2 — ROBOTICS IN CONSTRUCTION
DR. ALBERT CAUSO
Director & Co-Founder, Transforms Robotics
Research Fellow, Robotics Research Centre, School of Mechanical & Aerospace Engineering, NTU

1200 Lunch Break

1300 SESSION 3 — THE BASIC AND APPLICATION OF RLT ON PILE
DR. OOI POH HAI
Director (Geothecnical) - KTP Consultants

1345 SESSION 4 — VIRTUAL SINGAPORE
BUILDING BLOCKS OF A SMART CITY
ENGR. SONNY ANDALIS
Executive Manager - BCA

1430 SESSION 5 — A BUILDER'S JOURNEY USING CLT & GLULAM @ JTC LAUNCH PAD 2
MR. FOO YEE LE
Project Manager - Lian Ho Lee Construction PTE LTD

1515 Break Time

1545 SESSION 6 — PRODUCTIVITY IMPROVEMENT USING IOT FOR ENVIRONMENTAL INSPECTION OF WATER POLLUTION IN THE CONSTRUCTION INDUSTRY
MR. DONALD WILLIAM FOLKOFF
Environmental Director - Singapore Environmental Consultancy & Services

1630 SESSION 7 — RECLAMATION OF FINGER ONE, TUAS VIEW EXTENSION
MR. CALVIN CHUNG
Director - Reclamation & Infrastructure Division, JTC

1730 International Chapter Presidents & Coordinator Meeting

1830 FELLOWSHIP NIGHT

event guide

DAY 2

0800 SESSION 8
INTERLOCKING PIPE PILES FOR HORIZONTAL AND VERTICAL RETAINING WALL CONSTRUCTION
MR. ERIC LEONG
Executive Director - Mer Lion Metal Pie Ltd

0845 SESSION 9
INCIDENT & INJURY FREE (IFF) WORK ENABLING CIVIL ENGINEERS TO BE PROJECT / MANAGERS IN EPCM ENVIRONMENT
ENGR. ENRICO GADIAN JR.
Project Manager - Brunel International S.E.A. Pte Ltd

0930 SESSION 10
SUCCESS OF SINGAPORE SPORTS HUB FROM DESIGN, FABRICATION & ERECTION OF STEEL STRUCTURE BY BIM
MARVIN GARCIA
Technical Specialist, Service & Consulting - Trimble Solution SEA

1015 Break Time

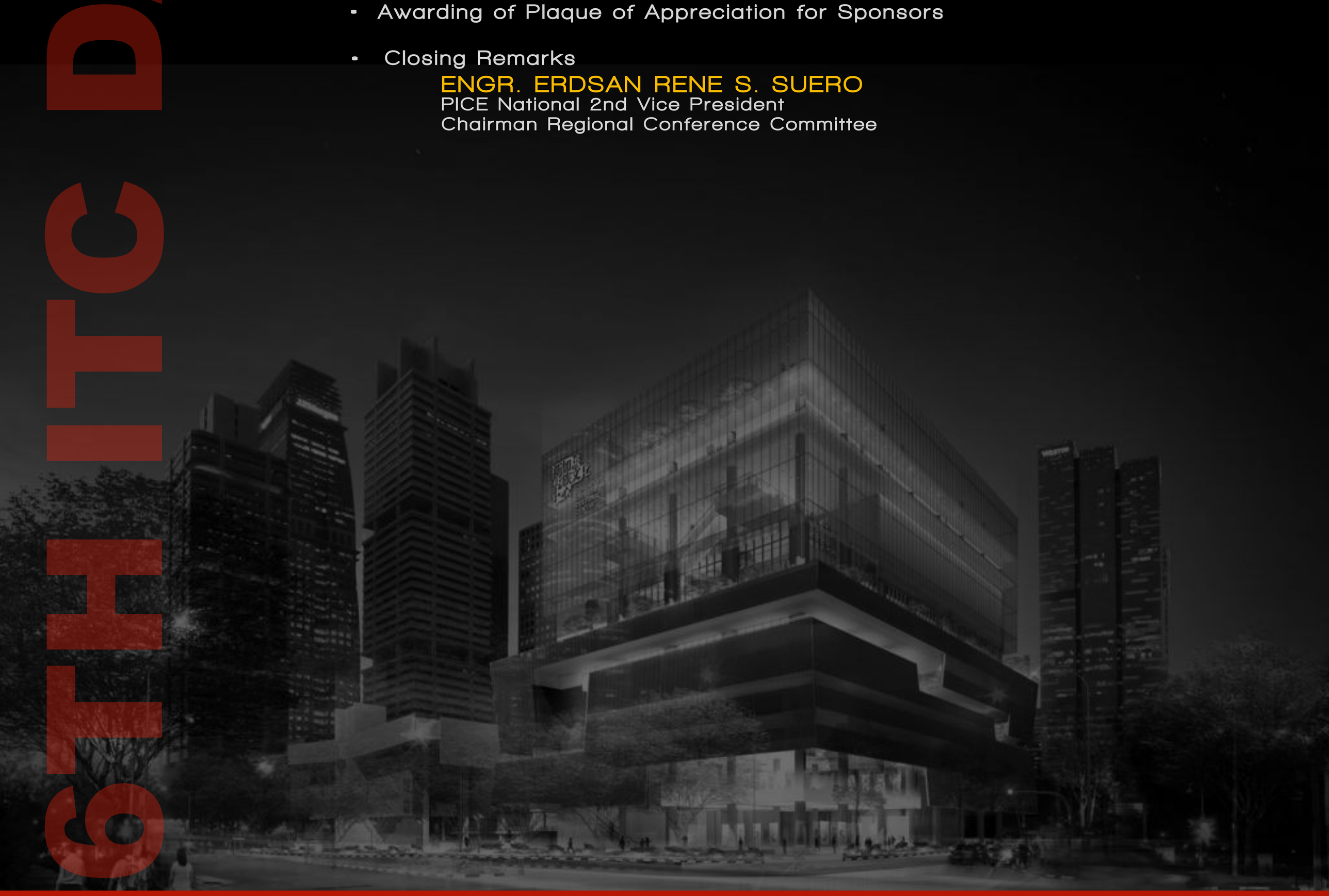
1045 SESSION 11
COMPUTATIONAL DESIGN STRATEGY FOR INTERACTIVE STRUCTURAL ANALYSIS
ENGR. ALDEN CAYAGA
Snr. Civil/Structural Engineer - Neo Spectrum Engineering

1130 SESSION 12
BUILDING A BETTER FUTURE WITH PEOPLE & TECHNOLOGY
DR. ERNESTO S. DE CASTRO
Immediate Past President - PICE

1215 LUNCH AND CLOSING CEREMONY

- Awarding of Plaque of Appreciation for Sponsors
- Closing Remarks

ENGR. ERDSAN RENE S. SUERO
PICE National 2nd Vice President
Chairman Regional Conference Committee



6TH PICE INTERNATIONAL TECHNICAL DIVISION CONFERENCE

MR. ALAN TAN

SESSION 1

HDB's APPROACH TO SUSTAINABLE TOWNS

The Housing and Development Board (HDB) is Singapore's largest developer, providing HDB flats and homes to over 80% of Singapore's resident population, with about 90% of these resident households proudly owning their HDB flats. Today, more than 1 million flats have been completed in 23 towns and 3 estates across the island.

Participants will have an overview about the housing policies, programmes, and developments that make Singapore public housing towns and flats successful today. These portray how HDB enhances the living environment for the residents, and the continual process to nurture vibrant, innovative, and sustainable towns and communities.

The presentation will also provide an overview of the Research and Development efforts towards good planning and designing of HDB towns and flats that are well designed, sustainable and community centric, as part of HDB's Roadmap for Better Living in HDB Towns.

Mr Alan Tan is an adjunct with the Center of Liveable Cities under the Ministry of National Development. He was a former Director from the Housing and Development Board (HDB), Building & Research Institute, overseeing the R&D department in Environmental Sustainability Research. His works involved collaborations with academic institutions, Institute of Higher Learning and HDB's business partners.

Alan Tan has also sat in key committees which promote sustainable developments across various agencies. In recognition of his contributions, he has been conferred the 2009 National Day Award - Public Administration Medal for outstanding public service, and the Green Architect of the Year (2014) by Building Construction Authority and the Singapore Green Building Council. With his years of experiences in HDB, he shares his expertise with overseas delegates and local officers on HDB's sustainable development and approaches in achieving greater sustainability and livability in Singapore's public housing living environment.

Pinnacle @ Duxton (Background Photo Credit to Housing Development Board)

Treelodge @ Punggol : HDB's 1st ECO Precinct

DR. ALBERT CAUSO

SESSION 2

ROBOTICS IN CONSTRUCTION

This talk will talk about developments in robotics as applied to the construction industry. Various universities, companies, and research institutions have been chipping away at the problem of automating various processes of the construction industry. A number of these robots would be discussed briefly. Additionally, an overview of where these robots could make a difference vis-à-vis the construction process will be presented.

Later in the talk, a more detailed discussion will be provided on the two construction robots that are currently being developed and commercialized in Singapore. Two robots developed at Nanyang Technological University (NTU) and fully supported by JTC – QuicaBot and PictoBot – are for the construction industry.

DR. Albert Causo is a Research Fellow at the Robotics Research Centre at Nanyang Technological University Singapore and a co-founder robotics start-up company called Transforma, also based in Singapore. His research interests include robotics for construction, logistics, social and educational, and rehabilitation, as well as human-robot interaction, motion analysis, hand pose estimation, and computer vision. Some of the projects he worked on include logistics robotics for e-commerce applications, assistive robots and grasping systems for professional services, social robots for pre-school education in Singapore, and sensing devices for post-stroke rehabilitation. He has co-founded Transforma Robotics in 2017, a company that provides robots and robotics services for the construction industry, particularly in the indoor painting and construction quality assessment works. The company is spin-off from our research work at Nanyang Technological University. He obtained his undergraduate degrees in Chemistry and Computer Engineering at Ateneo de Manila University in the Philippines and his Masters and PhD in Robotics at Nara Institute of Science & Technology in Japan. He is a member of the IEEE and the IEEE Robotics and Automation Society.

SESSION 3

THE BASIC AND APPLICATION OF RAPID LOAD TEST ON PILES

The use of rapid load test on piles has gained popularity recently due to its advantages of quick dynamic loading duration, relatively small test setup and its ability to approximate the load settlement behaviour of equivalent static test. The objectives of this presentation is to discuss on the theoretical and technical backgrounds of rapid load tests.

The interpretation of test results as well as its limitations. These are particularly important for the designers to understand the governing factors that affect the validity of rapid load tests, and key points to look into when evaluating the test proposal and results. Relevant case histories will be presented.

ER. DR. OOI POH HAI

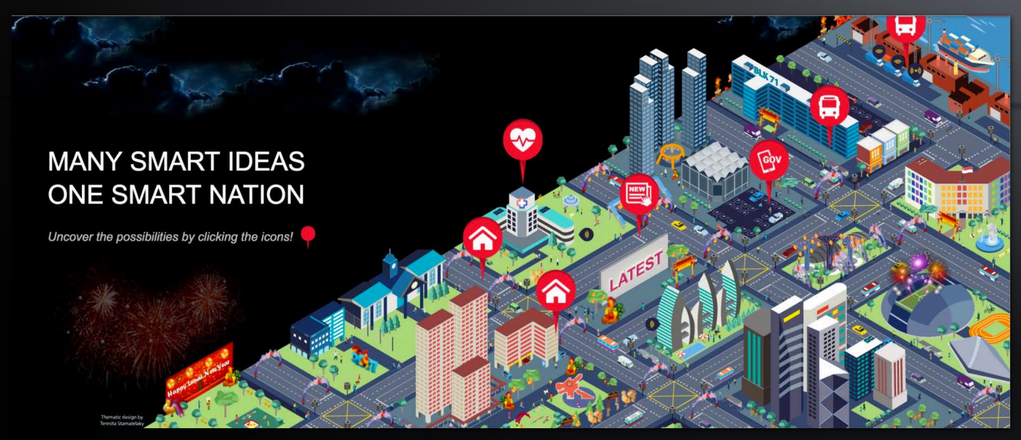
Director (Geotechnical) of KTP Consultants

He obtained his B. Eng (Civil) with 1st class Honours from University of Technology, Malaysia and PhD in geotechnical engineering from National University of Singapore. He has more than 10 years of practical experiences in foundation designs. He has being actively involved in working committee with BCA and IES to draft guidelines relating to piled foundations. He is a registered Professional Engineer (Civil) and Specialist Professional Engineer (Geotechnical) in Singapore. He is also a committee member for the Geotechnical Society of Singapore (GEOSS).

SESSION 4

VIRTUAL SINGAPORE, BUILDING BLOCKS OF A SMART CITY

Virtual Singapore aims to be a central repository of maps and information to enable a Smart City a reality. It enables smart planning, data analytics and complex simulations. The programme will support the development of semantically enriched 3D model of Singapore which includes detailed information such as texture, geometry and topology of city objects and terrain attributes. Advanced information and modelling technology will allow dynamic and real-time data to be incorporated on top of static city data powered by BIM and GIS integration. Phase 1 is now online in the government cloud and public version available in 2018.



Benefits to Attendees:

-what are photogrammetry and point clouds
-benefits of semantic information embedded in cityGML formats
-big data analytics and simulation for both planning and engineering

ENGR. SONNY ANDALIS

Sonny Andalis is a Civil and Structural BIM Specialist for Building and Construction Authority (BCA) under Ministry of National Development (MND). He is registered civil engineer in the Philippines with a professional focus in Transport Engineering and BIM. He is also a registered ACPE and StE Specialist. He has 15 years' experience in Rail & Airport engineering and has work for Mitsubishi Heavy Industries and CPGairport respectively. He teaches BIM at NUS, NTU, and BCA Academy for both undergrad and post graduate courses. He has written technical papers on BIM interoperability and GIS integration; cloud computing; buildability score and point clouds from 3D LiDAR scanners. He is currently involved in the Virtual Singapore project in cityGML; Underground Master plan and assisted to automated code checking to Eurocodes.

SESSION 5

A BUILDER'S JOURNEY USING CLT & GLULAM @ JTC LAUNCH PAD 2

MR. FOO YEE LE

MR Foo Yee Le, Project Manager, Lian Ho Lee Construction (PTE) LTD.
Yee Le has 25 years of construction experience in various industries. He is a BCA Certified Construction Productivity Professional (CCPP). He has managed building precast project and has involved actively in improving productivity on site. Yee Le will be sharing on the CLT & Glulam project at JTC Launch Pad 2 as a builder Main contractor's perspective.

The adoption of Cross Laminated Timber (CLT) and Glued Laminated Timber (Glulam) in Singapore construction scene is relatively new. By adopting this innovative construction product in JTC Launch Pad 2, the Builder is able to reduce dust, noise, manpower and construction time. Implementing an innovative product has its challenges and these challenges consists of site planning, coordinating with Supplier, testing of material, installing and finishing. By understanding the characteristics and conditions of CLT & GLULAM like humidity, performance, termite protection, fire safety and design aspect, the builder is able to overcome these challenges to deliver the project as planned.

SESSION 6

PRODUCTIVITY IMPROVEMENT USING IOT FOR ENVIRONMENTAL INSPECTION OF WATER POLLUTION IN THE CONSTRUCTION INDUSTRY

In the recent year, SECS has designed an innovative app that allow inspection of Earth Control Measures (ECM)
and the water catchments to be recorded real-time with auto scheduling of the next visit depending on the grading of the
site. The client, Public Utilities Board will be able to download the reports from the Cloud and assess the backend information through an innovative dashboard for downloading of real-time information. He will take you through the process of using the Internet of Things (iOT) to simplify the inspection process in the construction industry

DONALD WILLIAM FOLKOFF

Donald William Folkoff , MSc (Geological Sciences) is one of the Directors in Singapore Environmental Consultancy and Solutions Pte Ltd (SECS). Donald is a well respected professional in soil and water with over 40 years of experience in geological and environmental consultancy . He has conducted more than 700 Environmental Site Assessment and Remediation projects worldwide. He has undertaken many geo-environmental boreholes for many engineering infrastructure works like the building of the
cut-off wall for the construction of Punggol Serangoon Reservoir next to a landfill. He has assisted LTA and their contractors to design an appropriate validated technique to re-cycle some of the landfill materials for the building of the TPE expressway at Lor Halus.

SESSION 7

MR. CALVIN CHUNG

RECLAMATION OF FINGER ONE, TUAS VIEW EXTENSION, SINGAPORE

The Jurong Town Corporation (JTC) is the lead agency to spearhead the planning, promotion and development of a dynamic industrial landscape in Singapore. JTC plays a major role in Singapore's economic development by developing land and space to support industries and their transformation. JTC has been appointed as the Centre of Excellence for infrastructure projects and is also the agent to the Government for land reclamation.

Finger One is located at Tuas View Extension and is in the midst of the Tuas Industrial Estate. Finger One will be used for industries but is reclaimed to a very high specification to future-proof it for possible container port expansion in the longer term. It has 3 kilometers of waterfront that are constructed using 91 caissons to create a vertical wharf front and the approach channel and basin will be dredged to a water depth of 23m, ready to receive the largest container ships of the future. All 91 caissons, each equivalent to a 10-storey high HDB flat, were completed in just 15 months. The construction started in 2014 and will be completed in 2019.

The presentation will provide an overview of the Finger One construction and the various productivity, innovation and environmental initiatives that are deployed for the project. It will also discuss some of the extensive advance planning and coordination that have helped to optimize resources, reduce risks and achieve overall cost savings for the project.

Calvin graduated with a degree in civil engineering and masters of engineering (stochastic simulation in structural analysis) from NUS in 2004. He subsequently works for JTC Corporation in various engineering areas, which include research and innovation, planning, design and project management. In his last ten years in JTC, he has been involved in the planning, conceptualization and development of a number of large scale infrastructure projects. These projects include the reclamation and infrastructure development on Jurong Island, Tuas View Extension, Marina Bay Cruise Centre and one-North etc. He has particular interest in environmental impact assessment and hydrodynamics simulations and was directly involved in the execution of the Pulao Ulnar reclamation, which was one of the first marine project to implement a comprehensive environmental assessment and monitoring throughout the whole works. He also holds a master degree in hydraulics from TU Delft and a master degree in environment and water management from NUS.

SESSION 8

INTERLOCKING PIPE PILES FOR HORIZONTAL AND VERTICAL RETAINING WALL CONSTRUCTION

Interlocking steel pipe walls or Steel Pipe Sheet Piles (SPSP) have been utilized since the late 1990s in large scale projects across Japan as the ideal solution for fast construction of high strength retaining walls and cofferdams. SPSP are accepted as a suitable alternative to existing sheet piling technology or concrete structures as a solution for bridge pier footings or reclamation works. The method in which the piles are interlocked were adapted from existing sections and materials available at the mill producing them, namely P-P, P-T and L-T interlocks. These interlocks have since gained popularity outside of Japan and been implemented in civil and structural projects worldwide. In Singapore, we have seen this concept being applied in the horizontal manner for pipe roof projects for MRT projects where tunnelling occurs in critical areas. However, interlocks of such nature have undergone much innovation through the last 20 years and many of the issues and disadvantages have not been addressed. This presentation serves to discover a new ball and socket interlock called O-Pile, which solves existing problems previously seen on interlocks commonly used. The results from testing of the interlocks and two case studies of recent port projects in the Philippines will also be discussed.

Eric Leong is the Executive Director for Mer Lion Metals Pte. Ltd. Prior to his appointment, he has held regional sales positions and spearheaded marketing development efforts in construction market for Arcelormittal's subsidiary in Asia. His knowledge and understanding of civil construction for Ports and Waterfront projects has provided government agencies and port owners' unique insights into how cost and time savings could be derived with the use of steel solutions for their future upgrading. He works closely with many steel stockist and end users by supplying them with customized solutions and regularly imports material into several key locations in Asia.

In 2011, he worked with Manila North Harbour Port and their consultants to help assist their engineering department to embark on a massive upgrading project. Innovative solutions such as low corrosion steel were implemented to help reduce costs and were introduced in Philippines for the first time. He has also worked with government agencies in Asia to introduce new techniques to solve flood control issues and improve their infrastructure. Most recently in 2015, he assisted the implementation of O-Pile solution for a new dry bulk terminal in Mariveles Philippines.

ERIC LEONG

SESSION 9

ENGR. ENRICO GADIAN JR.

INCIDENT & INJURY FREE (IIF) WORK

- Safety ON & Off the job – "Choose to follow" rather than "Have to follow"
- Culture of Caring – Personal Relationship
- Assigning IIF, Recognizing & Reinforcing safe behavior, Constructively correcting unsafe acts

ENABLING CIVIL ENGINEERS TO BE PROJECT/ CONSTRUCTION MANAGERS- EPCM ENVIRONMENT

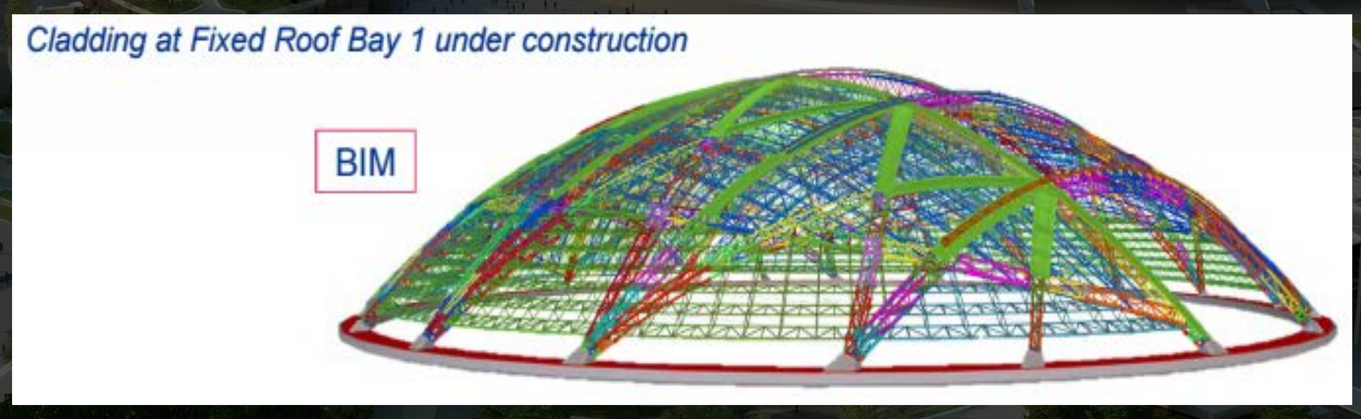
- Phases of a Project
  - ✓ Opportunity Analysis
  - ✓ Conceptual design
  - ✓ Project definition – FEED
  - ✓ Detailed Design & Procurement (Early Packages, QRA, PCS, EBS, QP's - Permitting)
- Project Execution Plan -PM
  - ✓ Safety & Security – HASAP
  - ✓ Staffing
  - ✓ Constructability Inputs
  - ✓ Temporary Facilities
  - ✓ Working Hours and Direct labor
  - ✓ Contract Administration – Subcontracting Strategy
  - ✓ Supply Management – Expediting, Warehousing, Laydown
  - ✓ Construction Execution Plan
  - ✓ Field Inspection and Testing – FAT, SAT
  - ✓ Project Control
  - ✓ Mechanical Completion and Turnover
  - ✓ Project Completion – Close-out, Lessons Learned

Graduated in October 1988 – University Of Mindanao, Davao City. From1989 till 1992 various companies in the Philippines contracting various Housing projects & Commercial Developments, DPWH, RPMO XI and upgrading of Bislig Airport. In 1993 to 1996 he worked in Ahmed Abdullah Al-Saeed, Qatiff, KSA as a Project Manager leading the various Villas and Commercial developments in the Eastern Province of KSA. By 1996 to 2016 he went to Singapore as a Construction Manager of various companies. He completed projects such as Condominiums and Commercial developments in mainland Singapore, Mercedes Benz Showroom in Alexandra Road, various Pharmaceutical, Nutritional and Chemical facilities in Tuas and Jurong Island, Singapore Hydro-desulfurization Project (SHDS) – ExxonMobil, Methionine 5 by Evonik and Master Planning Changi Terminal 5.From Nov 2016 up to present he is the Senior Construction Manager of Brunel Int'l S.E.A. Pte Ltd – Singapore/Evonik S.E.A. Pte Ltd with an on-going project, Methionine 6 at Jurong Island, Singapore

SESSION 10

SUCCESS OF SINGAPORE SPORTS HUB
FROM DESIGN, FABRICATION & ERECTION OF STEEL STRUCTURE BY BIM

The presentation will talk about in brief about the Singapore Sports Hub, how BIM improves the entire construction process of this project. The speaker will also discuss the Design to Construction workflow with BIM, how the model develop on the design phase, what are the parameters and information embedded into the model, the key BIM authoring tool used and how this information was use in the fabrication , logistic and erection of these steel structures. With this experience, the participants will have knowledge what application of BIM that provides the most integrated and collaborative approach to manage design and detailing with many revisions and optimizing the whole production process and plan erection with its live model representation. Tekla which continuously support open-BIM collaboration with other authored tools either direct and in-direct link interfaces or even 3rd party add-on extension tool gives advantage over the other system.



MARVIN GARCIA

Marvin graduated with a Bachelor's Degree in Civil Engineering. He joined Trimble Solutions SEA focuses on providing technical support to Tekla Structures. He had a 14+ years of working experience in Building, Engineering and Construction Industry focuses on BIM management and implementation. His notable iconic project was the Singapore Sports Hub – Stadium. In 2014. He completed and graduated Specialist Diploma in Building Information Modeling (BIM) at Building & Construction Authority (BCA) Academy, Singapore.
In 2015, he took up Structural Steel Supervisor (Sts) course at Singapore Structural Steel Society (SSSS), Singapore. He was the very first recipient in South-East Asia region in 2012 Tekla Professional Certified Users (Advanced Level). In June 2014, he initiated the very first Tekla Power User Group in Singapore. He was also invited guest speaker on several talks on BIM: BuildTech Asia 2014, Tekla Regional ATC Symposium 2014, Tekla Steel User Day 2016 and NUS BIM Module Session 2017.

SESSION 11

ENGR. ALDEN CAYAGA

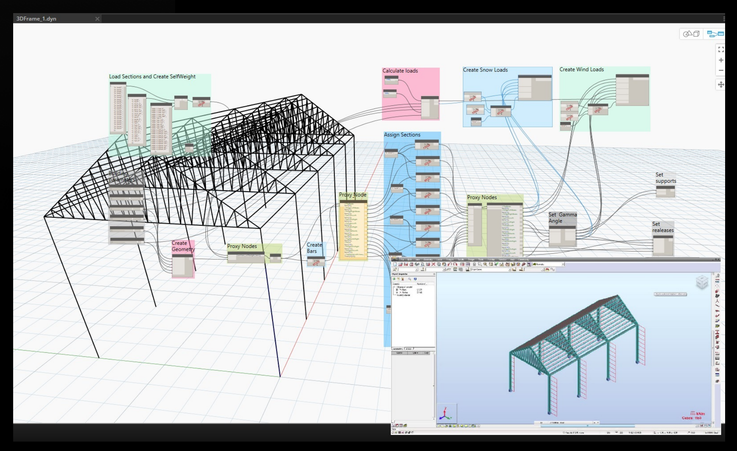
COMPUTATIONAL DESIGN STRATEGY FOR INTERACTIVE STRUCTURAL ANALYSIS

Structural design and analysis, especially during the initial design concept stage, is an iterative process where we try to find an optimum structural solution to conform to a given shape and form presented by the architect. In the traditional workflow, structural engineers evaluate the building design concept provided by the architect where the building's performance is evaluated and propose enhancements with minimal visual impact to the original design concept.

In general, the procedure and techniques used by structural engineers do not support well in the design of structures with complex geometries and is not flexible enough for design modifications. This is particularly true during the concept design stage of a project wherein multiple alternatives of the design is required to be produced.

Although computational design in structural engineering is not as common and advanced as compared to the tools available for use by architects. There are several tools that can be utilized for the efficient interoperability between the architectural shape and its structural performance. By taking advantage of the available technology, the structural design workflow using a visual programming environment will allow better control of the structural design and decision process.

The presentation aims to demonstrate how the design process can be realized into an efficient structural form by means of visual programming. Furthermore, the procedures presented in this paper may be used as a guide to allow the user to change the model geometry and section properties of the structure by changing the inputs instead of modifying the model manually.



Alden P. Cayaga, BScCE ACPE ASEAN Eng. M.ASEP LM.PICE, is a senior civil/structural engineer at Neo Spectrum Engineering Consultancy WLL based in Doha, Qatar. He obtained his BS Civil Engineering at the University of the Philippines Los Baños. He has more than 17 years of work experience in the field of civil/structural engineering and project management.He is currently managing the team responsible for the design of associated temporary structures and the peer review of structural design of the Lusail Stadium under the joint-venture between Qatari contractor HBK Contracting Co. WLL (HBK) and China Railway Construction Corporation Limited (CRCC). The Lusail Stadium will host the opening and final matches of the 2022 FIFA World Cup Qatar™.

SESSION 12

DR. ERNESTO S. DE CASTRO

BUILDING A BETTER FUTURE WITH PEOPLE AND TECHNOLOGY

The need for a roadmap towards wider BIM adoption in the Philippines

With the Philippines accounting for some forty three percent of all registered engineers in ASEAN, and with about five hundred thousand Filipinos currently taking engineering in our higher educational institutions, we do not see any reason why the Philippines cannot be the Centre of Excellence for Engineering Services in ASEAN and for the rest of the world.

And before other ASEAN countries overtake us again, the Philippine government needs to seriously consider taking the road towards wider BIM adoption -- as the country goes on an massive infrastructure program to 2022. Not only will BIM adoption lead to increased productivity, this will also enable transparency and quality in the constructed project.

By taking advantage of technology on how we conduct our profession and provide services, and transforming how we train our engineering students and engineers, we will be able to match skills and knowledge with global industry needs that leads to real and shared growth

The road to wider BIM adoption in the Philippines will start with where we are – the level of adoption of BIM in the Philippines in comparison with the rest of our ASEAN neighbors, and look at best practices that we can adopt to serve as guidance for our government, academe and industry professionals in the built environment sector. Finally, we will look at the initiatives we have started that we would need to continue working on a collaborative basis with all stakeholders in building the BIM capability of the Philippines.

This will give the attendees the opportunity to see between how we can currently do things – use of technological opportunities, education, research and development, and in our practice – as against how the rest of the world are now taking advantage of technology to increase productivity, and how we can bridge the gap as we look at a national journey for the wider BIM adoption in the Philippines, for the Philippines and the Filipino people.

Ernesto S de Castro, PhD is the immediate past president of the Philippine Institute of Civil Engineers. A well-known and well-respected authority in the field of civil and structural engineering, Dr de Castro's expertise and reputation has helped ESCA Inc, the firm he founded thirty-five years ago reach its present status as one of the nation's most respected engineering firms. ESCA Inc is also one of the pioneers in the adoption of BIM in the Philippines. Seeing the increasing global trend towards engineering services outsourcing (ESO), Dr de Castro also founded ESCA International more than ten years ago, and is recognized by the Philippine IT- BPM sector as spearheading the country's major push into ESO.

Dr. de Castro is now focusing his efforts at advocacy and education through ESCA Knowledge, which is an industry-based Structured Skills Training and Knowledge Development to match skills and training with global industry needs – that is now driven and shaped by technology, like BIM and others. With its unique approach, ESCA Knowledge also partners with the academe in transforming engineering education in the country to have a sustainable talent base adept with the use of technology to design, construct and manage global infrastructures.

PICE SINGAPORE CHAPTER
ITS BIRTH IN SINGAPORE


TECHNICAL SITE VISIT

On December 11, 1973, the Securities and Exchange Commission (SEC) has issued registration certificate to the Philippine Institute of Civil Engineers, Inc (PICE) which was a historical landmark for the Filipino Civil Engineers.

Upon the approval of the Securities and Exchange Commission (SEC) to the amended By-laws of the PICE on November 25, 1999, the formation of International Chapters was made possible. The chapters, which are based on other countries, are manifestation of PICE's commitment to reach-out to Filipino Civil Engineers around the world. We strongly advocate the formation of International Chapters in order to establish a more concrete point of union for Filipino Civil Engineers. Since then, four (4) International Chapters were chartered in the Middle East.

Today, the Filipino Civil Engineers has grown to over 100,000. With the challenges of globalization and cross-border practice, the Filipino Civil Engineers has set footprints not only in the Southeast Asian Region, but more strategically in Singapore.


2017 - NEW MEMBERS OATH TAKING

In Singapore, the Filipino Civil Engineers works in collaboration with their local and expatriate counterparts making us proud to be truly globally competitive.

With the growing numbers of Filipino Civil Engineers in Singapore, there is a need to be organized to foster camaraderie, and professional advancement.

Guided by the objectives and ideals of the Institute, a group of Filipino Civil Engineers residing and working in Singapore has come together through social networking site such as Facebook and informally launched the Facebook Page for PICE (Singapore) on 15 October 2011.

On 22 October 2011, the PICE (Singapore) was formally launched by passionate Filipino Civil Engineers who signed the petition to the PICE National Headquarters for the creation of the Singapore Chapter. The kick-off meeting was held at the RedDot Brewhouse at 25A Dempsey Road Singapore.


22 OCTOBER 2011 KICK-OFF MEETING

The following are the pioneering and founding members of PICE (Singapore)
Ray Ramilo, Sonny Andalis, Ariel Pedrosa, Darwin Graciano, Darwin Bazar, Zamil August Cabatuan, Roy Rosales, Liborio Sibayan Jr, Arvin Atanante, Gary Penados, Alvin Galve, Geoffrey Seguira, Alfredo Claro Jr, Kim Cheng Tan Managuerra, Christopher Merino, Monina Villacarlos, Rommel Maniti, Benedict Bueno, Roldan Magbag, Alvin Caneba, Mariecris Borac, Noel Almajeda, Marnelle Alivio, Anariza Sayangco, Harriet Follosco, Julius Rueco, Rodrigo Butac Jr, Gerry Aguelo, Francis Alfred Salvador, Ma. Isabel Saed, Rommel Saed, Ronald Paja, Ken Leyson, Gil Cualteros and Erlyn Martinez.

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