

CONVR 2019

Enabling digital technologies to
sustain construction growth
and efficiency

19th International Conference on
Construction Applications of Virtual Reality
13-15 November 2019, Bangkok, Thailand

Organising Committee: Prof. Nashwan Dawood, Chair

Asst. Prof. Vachara Peansupap, Co-chair

Dr. Petcharat Limsupreeyarat, Co-chair

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จุฬาลงกรณ์
มหาวิทยาลัย
CHULALONGKORN UNIVERSITY



Keynote session

Speakers	Organisation	Title
 Prof. Nashwan Dawood	Teesside University, UK	CONVR past and present, the role of digital technology to Transform Construction, UK perspective.
 Prof. Raymond Issa	University of Florida, USA	Modular Off-Site Construction and BIM in the US: Case Studies
 Dr.-Ing. Racha Chahrour	BIM Project Manager HOCHTIEF ViCon, Germany	BIM implementation strategies in Germany
 Prof. Nobuyoshi Yabuki	Osaka University, Japan	Digital Construction in Japan: Current and Future Trends
 Dr. Jack Cheng	Hong Kong University of Science and Technology	BIM Adoption and Researches in Hong Kong: Opportunities, Challenges and Lessons Learnt.
 Dr. Farzad Rahimian	Teesside University, UK	Open BIM-VR Paradigm: How BIM-VR Integration will influence AEC Industries
 Assoc.Prof. Tanit Tongthong	Chulalongkorn University, Bangkok Thailand	Advanced Technologies for Supporting Infrastructure Structure Project Management In Bangkok, Thailand

Keynote session

 Mr. Patai Padungtin	CEO - BULK ONE GROUP, Thailand	Digital Marketing towards Construction Industry Improvement
 Prof. Amorn Pimanmas	President Thailand Building Information Modeling: TBIM Association	Current Stage of BIM Development in Thailand Construction Industry
 Dr. Satakhun Kosavinta	King Mongkut's Institute of Technology Ladkrabang	BIM Initiative in Thai Construction Industry
 Mr. Songpol Yomnak	BIM committee, Architect Council of Thailand	BIM Initiative in Thai Construction Industry

Outline Programme

Venue: Chulalongkorn University, Conference building, 7FL Chamchuri 10 Bangkok, Thailand				
Day 1 13 Nov	Registration and Opening 06:00 PM Thai cultural Performance with cocktail and food			
Day 2 14 Nov	09:00 – 09:30	09:30 – 10:00	10:00 – 10:30	
	Keynote: Prof. Nashwan Dawood Title: CONVR past and present, the role of digital technology to Transform Construction, UK perspective.	Keynote: Prof. Raymond Issa Title: Modular Off-Site Construction and BIM in the US: Case Studies	Keynote: Professor Nobuyoshi Yabuki Title: Digital Construction in Japan: Current and Future Trends	
	Coffee Break (10:30 – 10:45)			
	Industrial Seminar sessions			
	10:45 – 11:30	11:30 – 12:15	12:15-12:45	
	Speaker: Prof. Amorn Pimanmas, President Thailand Building Information Modelling (TBIM) Association Title: Current Stage of BIM Development in Thailand Construction Industry	Speaker: Dr.Satakhun Kosavinta and Mr.Songpol Yomnak Title: BIM Initiative in Thai Construction Industry	Speaker: Prof. Nashwan Dawood Title: UK implementation road map of BIM	
	Lunch Break (12:45 – 14:00)			
	Industrial Seminar sessions			
	14:00 – 14:30	14:30 – 15:00	15:00 – 15:30	15:30 – 17:00
	Speaker: Dr. Jack Cheng Title: BIM Adoption and Researches in Hong Kong: Opportunities, Challenges and Lessons Learnt.	Speaker: Assoc. Prof. Dr. Tanit Tongthong Title: Advanced Technologies for Supporting Infrastructure Structure Project Management In Bangkok, Thailand	Speaker: Dr. Racha Chahrour Title: BIM implementation strategies in Germany	Discussion about construction and development of digital construction road map in Thailand
Conference Dinner: River banquet https://www.supatrariverhouse.net/				
Day 3 15 Nov	09:00 – 09:30	09:30 – 10:00		
	Keynote: Dr Farzad Rahimian Title: Open BIM-VR Paradigm: How BIM-VR Integration will influence AEC Industries	Keynote: Mr. Patai Padungtin, CEO - BULK ONE GROUP Title: Digital Marketing towards Construction Industry Improvement		
	Coffee Break (10:00 – 10:15)			
	10:15 – 11:45	10:15 – 11:45		
	Parallel session 1A: BIM & GIS Venue: Room 1	Parallel session 1B: Collaboration & Design Support Systems Venue: Room 2		
	11:45 – 13:15	11:45 – 13:15		
	Parallel session 2A: Sensing & AI Venue: Room 1	Parallel session 2B: AR & VR, Serious Games & Wearables Venue: Room 2		
	Lunch Break (13:15 – 14:30)			
	14:30 – 16:00	14:30 – 16:00		
	Parallel session 3A: BIM & GIS Venue: Room 1	Parallel session 3B: AR & VR, Serious Games & Wearables Venue: Room 2		
16:00 – 17:30	16:00 – 17:30			
Parallel session 4A: AR & VR, Serious Games & Wearables Venue: Room 1	Parallel session 4B: Knowledge & Theory Frameworks Venue: Room 2			
Conference Closing Remarks				

Detailed Programme

Day-1: 13th November 2019

Time	Session	Location
5:30- 9:00 PM	Registration and Opening Thai Cultural Performance with cocktail and food https://www.chula.ac.th/museum/702/	Thai House Chula University

Day-2: 14th November 2019

Time	Session detail	Location
	Morning Session	
8:45-9:00	Arrival	
	Session Chair Prof. N Dawood and Asst. Prof. Vachara Peansupap	
9:00-9:30	Keynote: Prof. Nashwan Dawood Title: CONVR past and present, the role of digital technology to Transform Construction, UK perspective.	(Conference building)
9:30-10:00	Keynote: Prof. Raymond Issa Title: Modular Off-Site Construction and BIM in the US: Case Studies	
10:00-10:30	Keynote: Prof. Nobuyoshi Yabuki Title: Digital Construction in Japan: Current and Future Trends	
10:30-10:45	Coffee break	
	Session Chair Asst. Prof. Vachara Peansupap	
10:45-11:30	Keynote: Prof. Amorn Pimanmas, President BIM association Thailand Title: Current Stage of BIM Development in Thailand Construction Industry.	Industrial Seminar sessions (Conference building)
11:30-12:15	Keynote: Dr. Satakhun Kosavinta and Mr. Songpol Yomnak Title: BIM Initiative in Thai Construction Industry	
12:15-12:45	Keynote: Prof. Nashwan Dawood Title: UK implementation road map of BIM	
12:45-14:00	Lunch	
	Session Chair: Prof. Ray Issa	
14:00-14:30	Keynote: Dr. Jack Cheng Title: BIM Adoption and Researches in Hong Kong: Opportunities, Challenges and Lessons Learnt.	Industrial Seminar sessions (Conference building)
14:30-15:00	Keynote: Assoc. Prof. Tanit Tongthong Title: Advanced Technologies for Supporting Infrastructure Structure Project Management In Bangkok, Thailand	
15:00-15:30	Keynote: Dr. Racha Chahrour Title: BIM implementation strategies in Germany	
15:30-17:00	Discussion about construction and development of digital road map in Thailand	
19:00-21:00	Conference Dinner: https://www.supatrariverhouse.net/	

Day-3: 15th November 2019

Time	Session detail	Location
	Morning Session, Chair Prof. Nobuyoshi Yabuki	
9:00-9:30	Keynote: Dr. Farzad Rahimian Title: Open BIM-VR Paradigm: How BIM-VR Integration will influence AEC Industries	Conference building
9:30-10:00	Keynote: Mr. Patai Padungtin, CEO - BULK ONE GROUP Title: Digital Marketing towards Construction Industry Improvement	Conference building
10:00-10:15	Coffee break	

Breakout sessions		
<i>Session 1A</i>		<i>Room: 701</i>
Session Name: BIM & GIS		
Session Chairs: Atif Hafeez		
Time	Author(s)	Paper Title
10:15-11:45	Mikael Johansson & Mattias Roupé	BIM and virtual reality (VR) at the construction site
	Kishor Bhagwat & Venkata Santosh Kumar Delhi	Application of BIM to ensure safety in the planning and execution phase of the construction project
	Chavanont Khosakitchalert, Nobuyoshi Yabuki & Tomohiro Fukuda	Automatic concrete formwork quantity take-off Using building information modelling
	Michael Jenewein & Peter Ferschin	Validation of construction deviations using Parametric BIM and augmented reality

<i>Session 1B</i>		<i>Room: 702</i>
Session Name: Sensing & AI		
Session Chairs: Anderson Akponeware		
Time	Author(s)	Paper Title
10:15-11:45	Takayuki Fujii, Hiroshige Dan & Yoshihiro Yasumuro	Examination of photography quality index in UAV aerial shooting for 3D reconstruction
	Rio Takahashi, Hiroshige Dan & Yoshihiro Yasumuro	2D-3D AR visualization of physical barrier for wheelchair users with RGB-D sensing
	Satoshi Kubota, Kotaro Nishi & Chiyuan Ho	Construction and usage of three-dimensional data for road maintenance using various measurement instruments
	Natthapol Saovana, Nobuyoshi Yabuki, and Tomohiro Fukuda	Quantitative effect evaluation of the unwanted features removal of infrastructure digital images
	Noppadol Jaisue, Vachara Peansupap & Tanit Tongthong	Potential use of big data and artificial intelligence for delay problem resolution by construction management consultancy services in Thailand

<i>Session 2A</i>		<i>Room: 701</i>
Session Name: AR & VR, Serious Games & Wearables		
Session Chairs: Dr. Farzad Rahimian		
Time	Author(s)	Paper Title
11:45-13:15	Meinhardt Thorlund Haahr, Kjeld Svidt & Rasmus Lund Jensen	How can virtual reality and augmented reality support the design review of building services
	Mattias Roupé, Mikael Johansson, Elke Miedema, Saga Karlsson, Lin Tan, Göran Lindahl & Christine Hammarling	Exploring different design spaces – VR as a tool during building design
	Sunseng Tea & Kriengsak Panuwatwanich	Application of virtual reality based remote collaboration system in construction
	Mehdi Hafsia, Yasmine Ouarti, Laure Ducoulombier, Eric Monacelli & Hugo Martin	Assessing the cognitive load of a tower crane operator's workstation using virtual reality and electroencephalography: a methodological overview

<i>Session 2B</i>		<i>Room: 702</i>
Session Name: BIM & GIS, Collaboration & Design Support Systems		
Session Chairs: Dr. Petcharat Limsupreeyarat		
Time	Author(s)	Paper Title
11:45-13:15	Nawari. O Nawari, Shriiraam Ravindran & Adel Alsaffar	Block chain technology and BIM: automated code compliance processes
	Ryu Izutsu, Nobuyoshi Yabuki & Tomohiro Fukuda	As-built detection of bridge structure using deep learning and volume detection system using BIM model
	Kayla Manuel, Nobuyoshi Yabuki & Tomohiro Fukuda	A BIM-based user-specific fire evacuation guidance system using customized earphones
	Ivaylo Ignatov & Peter Nørkjær Gade	Data formatting and visualization of BIM and sensor data in building management systems
	Vigneshkumar C, Urmi Ravindra Salve, Roode Liias & Rita Yi Man Li	Developing a database to capture, store and share fall-related safety knowledge to enhance fall prevention in construction industry

Session 3A		Room: 701
Session Name: AR & VR, Serious Games & Wearables		
Session Chairs: Amna Salman		
Time	Author(s)	Paper Title
14:30-16:00	Loporcaro G., Bellamy L., McKenzie, P. & Riley, H.	Evaluation of Microsoft HoloLens augmented reality technology as a construction checking tool
	Md Nazmus Sakib, Megha Yadav, Theodora Chaspari & Amir H. Behzadan	Coupling virtual reality and physiological markers to improve public speaking performance
	Jan Spilski, Christoph Giehl, Sabine Schlittmeier, Thomas Lachmann, Jan-Phillipp Exner, Alina Makhkamova, Dirk Werth, Mareike Schmidt & Martin Pietschmann	Potential of VR in the vocational education and training of craftsmen
	Amna Salman	Pedagogical transformation in building structures' classroom: immersing students into a virtual world for in-depth understanding of steel connections
	Dongnyeok Han, Swarnali Ghosh Dastider, Salman Azhar & Amna Salman	Strategies and lessons learned to create virtual reality immersive games for construction safety training

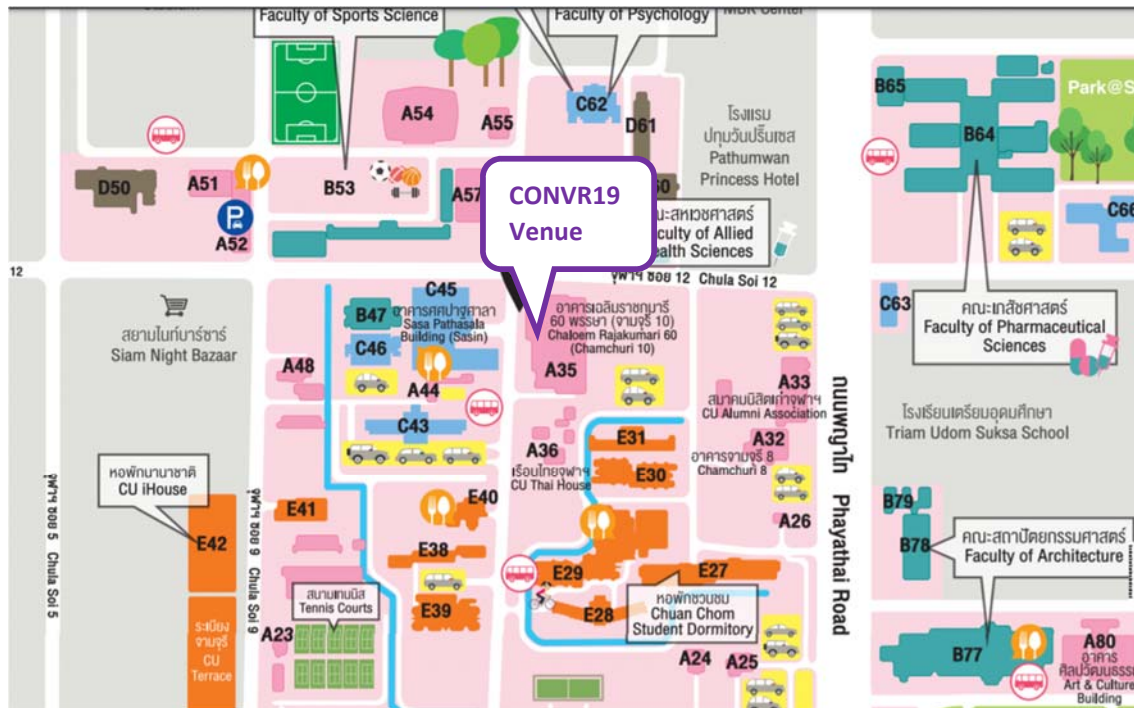
Session 3B		Room: 702
Session Name: AR & VR, Serious Games and Wearables		
Session Chairs: Mikael Johansson		
Time	Author(s)	Paper Title
14:30-16:00	Sokkeang Try & Kriengsak Panuwatwanich	Virtual reality application to aid civil engineering Laboratory preparation for undergraduate students
	Gulbin Ozcan-Deniz & Carmen Cordero	A comparative analysis of non-immersive and Immersive VR on improving students' understanding of Building systems
	Noppadon Jokkaw, Tanit Tongthong & Somjintana Kanangkaew	An application of virtual environmental technology For reducing the problems of construction works Change orders
	Wei-Cheng Chen, Hui-Ping Tserng & Jiasheu Josh Huang	A novel solution of continuous monitoring tunnel worker's physical and psychological status using wearable PPG heart-rate detection wristband and BLE IoT system
	Lauren Donatelli, Robert Leicht & John Messner	Exploring the use of virtual reality to support value engineering decisions

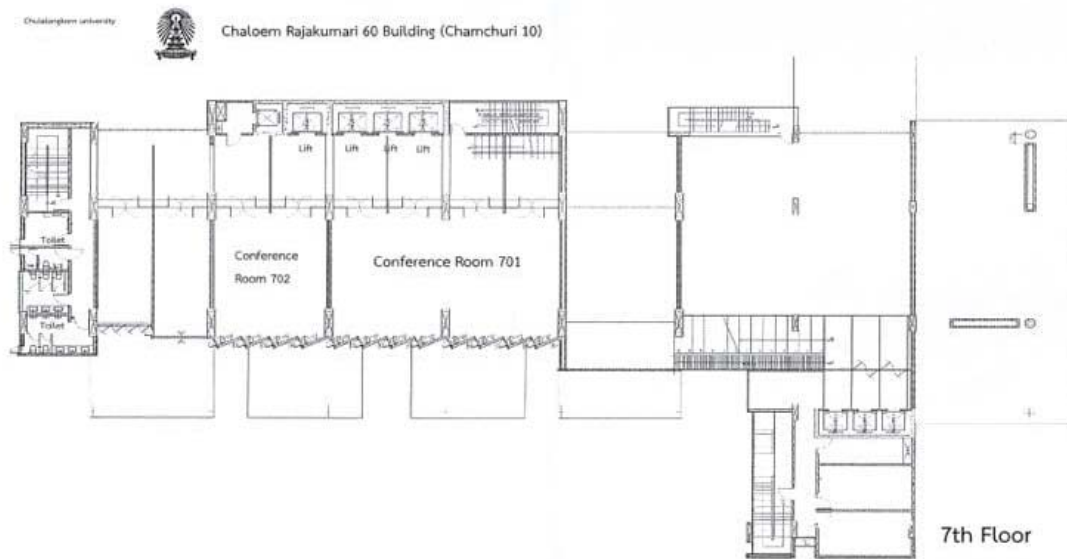
Session 4A		Room: 701
Session Name: AI, Knowledge & Theory Frameworks		
Session Chairs: Giuseppe Loporcaro		
Time	Author(s)	Paper Title
16:00-17:30	Satoshi Kubota, Kokichiro Horishita, Chiyuan Ho & Kotaro Nishi	Creation and quality evaluation of three-dimensional Road space data using camera footage
	Giorgos Sfikas, João Patacas, Charalampos Psarros, Antigoni Noula, Dimosthenis Ioannidis, Dimitrios Tzovaras	A deep neural network-based method for the detection and accurate thermography statistics estimation of aerially surveyed structures
	Mounter W., Dawood D., Dawood H.	Augmenting building energy usage models with data segmentation
	Gudlaugsson B., Dawood H., Pillai G.	A review of sustainability assessment and integrated modelling for urban energy planning
	Hafeez M., Dawood H., Rodriquez S., Patacas J., Schaik P., Dawood N.	A conceptual framework for integrating user experience and energy systems with design parameters for residential buildings.
	Akponeware A., Dawood N., Rodriquez S., Dawood H.	Exploring model techniques of measuring the carbon footprint of rail systems: a systematic review
	Alani Y., Dawood N., Rodriquez S., Dawood H.	Reviewing semantic WEB technologies in the architecture, engineering and construction industry
17:30-17:45	Closing Ceremony	

Conference maps and plans



- ประตูทางออก Gate
- ศูนย์ข้อมูลสารสนเทศ Information Center
- ที่จอดรถยนต์ Multi-Storey Car Park
- จุดจอดจักรยาน CU Bike Parking
- จุดบริการรถโดยสาร CU Shuttle Bus Stop
- โรงอาหาร Canteen
- ไปรษณีย์ Post Office
- ศูนย์บริการสุขภาพ Health Service Center
- รถไฟฟ้าบีทีเอส BTS Sky Train
- รถไฟฟ้าใต้ดิน MRT Subway





MAP OF CONFERENCE ROOM