11th
INTERNATIONAL CONFERENCE ON
ARCHITECTURE RESEARCH AND DESIGN

Surabaya, 3 November 2020

**Architecture in 21st Century:**
**The Agency of Change**
**To Indonesia and Beyond**

# ABSTRACTS

Department of Architecture
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# Foreword

Assalammualaikum warahmatullahi wabarakatuh

Rector of ITS, Prof. Mochamad Ashari
Dean of Faculty of Civil, Planning and Geo-Engineering, Dr. Murni Rachmawati
Head of Departement of Architecture, Dr. Dewi Septanti,
Our Keynote Speakers: Prof. Jeremy Till, Dr. Deddy Wahjudi and Mr. J. Gatot Surarjo
Colleagues and friends,
Ladies and gentlemen,

Good morning and on behalf of the organizers and Department of Architecture ITS, welcome to the Symposium on Architecture Research and Design 2020.

Let me begin by thanking our speakers for being here with us.

This is the eleventh ARDC and the first to be held online. Our theme this year is 'Architecture in the 21st Century: The Agency of Change,' where we will discuss the importance of innovation for architecture to overcome key challenges in the 21st century; and the role to be played by architecture in the future.

We have received 13 selected papers, but only six papers are eligible to be presented at parallel sessions today. All of which will be submitted for the Journal of Architecture and Environment following the Symposium.

I would like to thank our program steering committee for arranging an excellent line-up of speakers, and I thank the speakers and moderators for their contribution.

Let me also thank to all of the participants. As always, we appreciate your support and look forward to your contribution to the discussion.

Lastly, let me convey my utmost gratitude to all organisers who have been working hard for the past months to make this event possible.

I wish you all a most enjoyable and productive symposium.

Thank you.

Wassalammualaikum warahmatullahi wabarakatuh

# Introduction

## Architecture in 21st Century: The Agency of Change To Indonesia and Beyond

The theme called for discussions of the potential of architecture as an agency of change in the complex world today.

The basic question was: can architecture contribute to society in the 21st century in a new and better way.

In the closing decades of the older century, the architecture profession, to some extent marginalized itself, the 'avant garde' even relinquishing its social obligations. However the skills of the architect are in fact particularly suited to deal with the complex problem of today. Can these skills help solve the problem of the planet? Should architecture define and emphasize itself as an agency of change? Can the dialogue between architects and educational institution, the media and the industry be improved to the benefit of all? Is the present communication between the institutions and organizations supporting the profession sufficient to empower the architects and architecture with up-to-date tools, methods and principles? Can architecture meet the new challenges of a new century with a new resourcefulness? And if so, then how? Or if not, what do?

Indonesia faced a disruptive new challenges with issues of open-source knowledge, IoT, global warming and environmental problems, and more or so, technology. The open-ended questions would be the problems of identity, authenticity and integrity. Should Indonesia suggested a new role for architecture in the new century with a paradigm of local wisdom as a new tabula? Should Indonesia define its architecture and its contemporary transformation into a new role?

# Aim and Scope

Academics, researchers, and students are invited to exchange their knowledge in this conference. This will be a medium where current theories, design methods and researches on this field are discussed. On AR+DC Symposium 2020, professionals are also invited to share and discuss their design and knowledge specifically on dealing with place based design for contemporary needs.

# Steering Committee

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# Program Schedule

**Tuesday, November 3, 2020**

| Time | Activities |
|---|---|
| 09.00 – 09.15 | Opening Indonesia Raya<br>IndoHymne ITS |
| 09.15 – 09.30 | Speech-Organizer<br>Nur Endah Nuffida, ST., MT. (pre-recorded session)<br>Speech- Dean FTSPK-ITS<br>Dr. Ir.Murni Rachmawati, MT. (pre-recorded session) |
| 09.30 – 09.35 | Opening Speech-Rector of Institut Teknologi SepuluhNopember:<br>Prof. Dr. Ir. Mochamad Ashari, M.Eng (pre-recorded session)<br>Remarks from keynote speaker:<br>Prof. Jeremy Till (pre-recorded session) |
| 09.35 – 10.35 | SESSION 1 – Parallel Session (5 authors@10 minutes)<br>Moderator : Ir. IGN Antaryama, Ph. D.<br>Presenter 1<br>Hanief Ariefman Sani; Tetsu Kubota; Usep Surahman;<br>Collinthia Erwindi<br>*"Indoor Air Quality And Health In Newly Constructed Apartments Of Indonesia: Case Study On The Effect Of Modification"*<br>Presenter 2<br>Fandhy Wahyono;Andrian Damianus; Dewi Septanti; BambangSoemardiono; Purwanita Setijanti.<br>*"The Concept of Vandalism Prevention (Case Study : Jalan Niaga Samping)"* |

Presenter 3
Akhlish Diinal Aziiz; Mochammad Donny Koerniawan;Risa Kawakami; Hisashi Hasebe; Angela Upitya Paramitasari;Fathina Izmi Nugrahenti; Vebryan Rhamadana; Tetsu Kubota
*"A Pilot Experiment To Analyze Indoor Thermal Comfort In Hot-Humid"*

Presenter 4
Dwi Rahayu Amini; Kharisma Miftahul; Dewi Septanti; BambangSoemardiono; Purwanita Setijanti
*"Arrangement Of The Kalimas River Tourism Area In The Ngagel Side Of Surabaya Based On Waterfront Development"*

Presenter 5
Linda Widiachristy; Adinda Smaradhana Rachmanto

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# THE EFFECTIVENESS OF JAKARTA SMART CITY APPLICATION IN ENHANCING COMMUNITY RESILIENCE IN FACING FLOOD RISK

Linda Widiachristy[1], Adinda Smaradhana Rachmanto[2]
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## Abstract:

Jakarta is the most populated city in Indonesia with a long history of natural disasters, particularly floods. The city's geographical condition has been said as the leading cause of the recurrent floods that happen over the years. This situation has predominantly affected the people living in the flood-prone locations in several settlements along the Ciliwung riverbanks. The government has conducted various efforts to enhance the city resilience towards flood incidence, including utilizing smart city approach, such as flood monitoring applications to give a real-time information related to certain circumstances that possibly caused flooding. This effort aims to increase the community awareness toward disaster events.

The aim of this paper is to analyse the effectiveness of people using the flood mitigation application as an early warning system in Jakarta. To construct this objective, questions for instance as to what extent people are familiar with the application, how much they understand its function, and whether they face any difficulties in using the application during the flood events are proposed. The quantitative

approach is being used in this research to gather people's opinions towards the application, specifically JAKI.

Preliminary results suggest that there are still some gaps in the implementation of technology applied with how society comprehends it, resulting in the interference with the application's intention as an early warning system. Some important features that need to be reformed in favor of public use are the application basis, target group, data selection, and application in disaster management schemes. While the research is still on-going, an understanding that technology should be aligned with the community's ability to use it should be redefined in the implementation of smart city principles in Jakarta.

Keywords: smart city, community resilience, flood, early warning system

# INDOOR AIR QUALITY AND HEALTH IN NEWLY CONSTRUCTED APARTMENTS OF INDONESIA: CASE STUDY ON THE EFFECT OF MODIFICATION

Hanief Ariefman Sani[1], Tetsu Kubota[1], Usep Surahman[2], Collinthia Erwindi[3]

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## ABSTRACT

In Indonesia, sick building syndrome (SBS) and related health problems are suspected among the residents in emerging new urban houses constructed of modern building materials without sufficient material standards or minimum ventilation rates. First, this study investigates the current conditions of indoor air quality (IAQ) and health in newly constructed high-rise apartments in major cities of Indonesia, in contrast with traditional landed houses, the so-called Kampongs. Concentrations of formaldehyde and TVOC were measured, whereas a face-to-face interview was conducted. A total of 896 respondents were interviewed, and 207 rooms were measured during 2017-2019. The results showed that overall, the newly constructed apartments recorded higher formaldehyde levels compared to Kampongs. The status of the self-reported multiple chemical sensitivity (MCS) among occupants was significantly different between the two building types. Furthermore, the occupants

with higher levels of TVOC, in particular, were associated with the higher MCS risks, especially in the apartments. Second, we conducted a modification project in several apartment units of Surabaya to examine the effects of exhaust fans on IAQ. In most units, the concentrations of both formaldehyde and TVOC were reduced after the modification. Further, a follow-up measurement was conducted in the same units for about a month.

Keywords: Indoor air quality, Formaldehyde, TVOC, QEESI, Modification

# A PILOT EXPERIMENT TO ANALYZE INDOOR THERMAL COMFORT IN HOT-HUMID

Akhlish Diinal Aziiz[1], M.Donny Koerniawan[2], Risa Kawakami[3], Hisashi Hasebe[3], Fathina Izmi Nugrahenti[2], Angela Uiptya Paramitasari[2], Vebryan Rhamadana[2],Tetsu Kubota[1]

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## ABSTRACT

An experiment was conducted in a controlled room in Bandung-Indonesia, assessing 28 subjects for their thermal comfort while doing light work equal to common office activities. Skin temperature as a physical parameter measured to monitoring the body response every 10 minutes. The physical environment condition is recorded and composed from varies temperature of 22 °C, 25°C, 28 °C and 31 °C, in relative humidity conditions 40%, 50%, 60%. Meanwhile, questionnaires as psychological parameter were conducted after the experiments to obtain the vote from the subjects. This article aims to acquire neutral temperature as an appropriate thermal comfort range for indoor working activity in hot-humid. We are using the multi-regression analysis to generate the value of each variable and its correlation. The result shows that 25-28 °C indoor is still appropriate for working indoor activity. However, respondents tend to feel 22 °C as the most comfortable ambient temperature. In contrary, humidity is not significant in contributing thermal comfort.

# ARRANGEMENT OF THE KALIMAS RIVER TOURISM AREA IN THE NGAGEL SIDE OF SURABAYA BASED ON WATERFRONT DEVELOPMENT

Dwi Rahayu Amini[1], Kharisma Miftahul Jannah[1], Dewi Septanti[2], Bambang Soemardiono[2], Purwanita Setijanti
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## ABSTRACT

River or Kali is a natural resource, which must be managed in the context of human life and living things. According to Bagijo (2004), river as a water resource, river has a conservation, economic and socio-cultural function that is very important for people's lives. According to Handinioto (1995), Kalimas in Surabaya, whose existence is very central to the lives of the people of Surabaya. Then, Mutfianti (2010) states that the banks of the Kalimas River have changed a lot due to changes in the function, facade, and orientation of its buildings. This is caused by changes in the role of the river in relation to buildings on the banks.

Research on the Kalimas River Development seeks to preserve the river environment in sustainable city development so that harmony occurs in accordance with its local wisdom, and supports the overall sustainability of the City of Surabaya. The research method used is descriptive qualitative by describing the phenomena that occur in the Kalimas River Ngagel Side Surabaya with surveys and observations.

The results of this study indicate that the arrangement of the Kalimas Ngagel riverside region must pay attention to aspects of the area's functions, human aspects, and aspects of sustainability. The evaluation then produces design recommendations through a strategy in the development of Waterfront Development that aims to develop holistic and more sustainable marginal areas, so that the architecture of the urban and the city can provide a solution to the problems of river banks in Surabaya.

Keywords: Tourism, Kalimas Surabaya, Waterfront Development

# THE CONCEPT OF VANDALISM PREVENTION (CASE STUDY: JALAN NIAGA SAMPING)

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## ABSTRACT

Vandalism is a negative manifestation of individual and group expression in conveying a message in the public space through an unfavorable handwriting. Public space in Surabaya is the main asset of the people in representing the identity of a livable 'hero' city. Jalan Niaga Samping is part of the Old Town area of Surabaya that must be considered by the government in improving the health and safety of an environment. The purpose of this study is to design an area that is able to prevent vandalism through a Crime Prevention Through Environment Design approach on the road corridor. The method used is a type of qualitative research with literature study techniques by linking defensible space concepts through the CPTED approach strategy. The results of this study are revitalizing and making over the corridor of the Jalan Niaga Samping.

Keywords: Vandalism, Public Space, CPTED, Corridor

# DESIGNING FOR THE BLIND: MULTISENSORY DESIGN APPROACH FOR CITY'S PARK

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## ABSTRACT

A city is said to be accessible if its implementation accommodates users' needs, including those with special needs, either disabled, elderly, children, etc. The environment is considered accessible if it ensures users' equality, equity, and living without a hitch. Surabaya, a city with abundant appreciations and recognition, known to be one of the best cities in the world, is still yet not to be entitled as accessible city, despite all the greatness of the city which do improve the people living in it. Like most cities in Indonesia, Surabaya is built mainly normative oriented to buildings and urban infrastructures and facilities, not human oriented approarch. Some failures in urban design implementation are common, for instance: tree roots and its placement are still interfering pedestrians on the sidewalk; most signage is still not informative enough for people with special needs in streets and public facilities; guiding blocks for blind people are far from decent to be safely and comfortably used in a daily basis; parks pay no attention to their accessibility; etc.

This paper offers an idea about how to live as a blind person in Indonesia, and how the experience is considered as the primary part of a design process. The idea is generated to propose the design criteria

for redesigning a public park. The data is gathered through participant observation by referencing from a blind's point of view. Taman Bungkul is chosen as field study as it is as one of the best and the oldest parks in Surabaya and that has been recognized and actively used by the residents. The propose idea are formed by directly experiencing and observing what it feels like to be blind amidst public facilities designed for able-bodied. The design criteria are weighing on how blinds gather information, percept spaces and distances, and use their senses such as aural, olfactory, tactile, and other senses. The result proposes design criteria for existing public facilities that is more accessible, visitable, comfortable, and inclusive for everyone especially for the blind. The design is presented and graphically communicated.

Keywords: Sensory design, Blind, Public Facilities, User's Experience.

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