

3rd International Conference on Engineering of Tarumanagara
Jakarta, October 4th-5th, 2017

CONFERENCE PROGRAM & ABSTRACT BOOK

"SMART ENGINEERING FOR FUTURE CITIES"

ABSTRACTS

3rd International Conference on Engineering of Tarumanagara
(ICET)

"Smart Engineering for Future Cities"
Jakarta, 4-5 October 2017



FACULTY OF ENGINEERING
UNIVERSITAS TARUMANAGARA
JAKARTA-INDONESIA
2017

FOREWORDS

RECTOR OF UNIVERSITAS TARUMANAGARA



Keynote speakers, Honorable Delegates, Ladies and Gentlemen,

It is a great pleasure for me to open the ICET 2017 and to extend to you all a very warm welcome. We are grateful for having a number of participants who come here to share experience, and discuss problems of mutual interest with delegates from different cities and disciplines.

The topic of this conference, "Smart Engineering for Future Cities", could not be more important and relevant. If we explore the most populous cities in Asia, each city faces many complex problems that require different types of action. Einstein once said that "We can't solve problems by using the same kind of thinking we used when we created them." Engineers have a key role to play in creating and maintaining sustainable communities across the planet and we have to rise to the challenges we face very quickly. As engineers, we need to adapt our thinking, embrace advocacy and business planning, technology and computer sciences, work across wider domains and ensure that cities are truly able to meet the full needs of our future.

It is envisaged that the intellectual discourse in this event will result in future collaborations between universities, research institutions and industry both locally and internationally, particularly around issues of smart engineering and future cities.

I would like to congratulate the Organizing Committee of ICET 2017, for their utmost efforts and dedication. I would also like to express my gratitude to the sponsors for their contributions in making this conference a success.

I wish the International Conference on Engineering of Tarumanagara (ICET 2017) a very useful and fruitful event.

Thank you for your attention and contribution.

Rector

Prof. Dr. Agustinus Purna Irawan

FOREWORDS

CHAIRMAN OF THE ORGANIZING COMMITTEE



Welcome to the 2017 International Conference on Engineering of Tarumanagara.

This is the third event of the biannual international conference held by Faculty of Engineering of Universitas Tarumanagara since 2013. This time we choose the topic "Smart Engineering for Future Cities" in the hope that it will contribute to the dynamically changing world. Cities as human habitat should be ready and resilient to face those dynamic changes. Technology is one of strongest tools in our efforts of realizing the sustainability of our future cities. Innovative and smart engineering has an important key role to support those efforts.

I Hope this conference can give participants the opportunity to contribute valuable ideas as well as strengthen the networks among researchers, academics and professionals from different places, background and interests. Sharing ideas through research is the only way of achieving progress towards our objectives.

On behalf of the organizing committee, I would like to express our gratitude to the Foundation of Tarumanagara, Rector of Universitas Tarumanagara, Dean of Faculty of Engineering, partners and sponsors of ICET 2017, for their supports and helps. I also would like to thank the authors for their contributions. Without their contributions, this conference would never been realized. My sincere thanks go to my team who has worked really hard to prepare the event.

Finally, I wish you a nice day and enjoy the conference as well as the vibrant Jakarta.

Chairperson of 3rd ICET 2017

Dr.Eng., Titin Fatimah, S.T., M.Eng.

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ICET 2017 CONFERENCE PROGRAM

Day 1: Wednesday, October 4th, 2017

	Time	Activity
1	08.00-08.30	Registration + coffee break
2	08.30-9.30	Opening ceremony - Opening remarks from ICET 2017 chairperson - Opening remarks from the Dean of Engineering Faculty - Opening remarks from the Rector of Universitas Tarumanagara
3	9.30-12.00	Keynote Speaker I Prof. Dr. Stephen Cairns, Program Director of the Future Cities Laboratory, ETH Zurich <i>"Urban Transformations in Asia: Responsive Knowledge Strategies, Design Scenario, and Action Plans"</i>
		Keynote Speaker II Prof. Dr. Tech. Ir. Danang Parikesit, M.Sc. (Professor of Transportation Planning and Engineering UGM, Chair – Transportation Technical Committee, National Research Council) <i>"Updates on The Progress of Intelligent Transportation System for Indonesian Urban Areas"</i>
		Discussion (moderator: Dr. Danang Priatmodjo)
4	12.00-13.00	Lunch break
5	13.00-15.00	Parallel session I
6	15.00-15.15	Coffee break
7	15.15-17.00	Parallel session II

Day 2: Thursday, October 5th, 2017

	Time	Activity
1	08.00-08.30	Registration + coffee break
2	08.30-10.30	Parallel session III
3	10.30-10.45	Coffee break
4	10.45-12.15	Parallel session IV
5	12.15-12.30	Closing
6	12.30- end	Lunch break

Note :

- Opening ceremony and plenary session: Main Building, Auditorium 3rd floor
- Parallel session: Main Building, 14th floor

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PARALLEL SESSION SCHEDULE

ROOM 1

WEDNESDAY, OCTOBER 4th 2017

SESSION 1	13.00-15.00	SUSTAINABILITY	
No.	Time	Paper ID	TITLE
1	13.00 - 13.15	5	GREEN ARCHITECTURE STUDY ON CHANGES FOR SPACES IN GRIYA CINERE 1 HOUSING, DEPOK-WEST JAVA
2	13.15 - 13.30	7	REGIONAL AND CITY PLANNING: KAMPUNG PLANNING ARCHITECTURE STYLE OF DENAI ALAM AS SYMBIOTIC RELATIONSHIP BETWEEN HUMAN AND ENVIRONMENT
3	13.30 - 13.45	10	INTEGRATED SUSTAINABLE KAMPONG HYBRID IN CODE RIVERSIDE SETTLEMENT IN YOGYAKARTA, INDONESIA
4	13.45 - 14.00	11	PROSPECTS OF SUSTAINABLE WOOD BUILDING ARCHITECTURE
5	14.00 - 14.15	17	THE STRATEGIC PLANNING OF BORDER AREA IN WINI, REGENCY OF NORTH CENTRAL TIMOR OF EAST NUSA TENGGARA
6	14.15 - 14.30	22	COMPARISON OF BARRON AND HANSBO METHOD FOR DETERMINING VERTICAL DRAIN SPACING WITH TIME OF CONSOLIDATION AND RATIO OF COEFFICIENT OF CONSOLIDATION
7	14.30 - 14.45	77	HYDRAULIC HOUSE AS ALTERNATIVE HOUSE MODEL IN TIDAL AREA CASE STUDY OF KEMIJEN VILLAGE , SEMARANG
8	14.45 - 15.00	95	SETTLEMENT PATTERNS OF BAJO TRIBE IN BUNGIN ISLAND

WEDNESDAY, OCTOBER 4th 2017

SESSION 2	15.15- 17.00	SUSTAINABILITY	
No.	Time	Paper ID	TITLE
1	15.15 - 15.30	41	THE FUTURE ROLE OF IoT FOR SMART CITY (SURVEY)
2	15.30 - 15.45	54	GROWTH PATTERN OF URBAN SPRAWL AROUND THE NEW CITY CASE STUDY BSD SOUTH TANGERANG
3	15.45 - 16.00	74	FACTORS INFLUENCING SAFETY AND HEALTH PERFORMANCE FOR LOW COST HOUSING: DEVELOPER'S PERSPECTIVE
4	16.00 - 16.15	75	ANALYSIS OF WOOD CERTIFICATION SYSTEM AND APPLICATION AT PCPD LOT 10 CONSTRUCTION PROJECT
5	16.15 - 16.30	52	DREDGER SELECTION METHOD BASED ON TRIPLE CONSTRAINT OF CONSTRUCTION

THURSDAY, OCTOBER 5th 2017

SESSION 3	08.30 - 10.30	SUSTAINABILITY	
No.	Time	Paper ID	TITLE
1	08.30 - 08.45	93	STUDY ON ENERGY EFFICIENCY IN GBCI CERTIFIED HIGH RISE BUILDING
2	08.45 - 09.00	97	TESTING USED INDUSTRIAL INDUCTION MOTOR TO HYDROELECTRIC GENERATOR FOR MICRO HYDRO POWER PLANT AT ISOLATED AREA
3	09.00 - 09.15	39	PLASTIC WASTE UTILIZATION IN LIEU OF FUEL OIL LAND USING SIMPLE PYROLYSIS
4	09.15 - 09.30	101	SUGGESTIONS OF MASTER PLANNING CONCEPTS FOR WATERFRONT PUBLIC SPACE IN KAMPUNG NELAYAN MUARA
5	09.30 - 09.45	96	ASPHALE CONCRETE CHARACTERISTICS USING AGGREGATE WASTE PLASTIC LOW DENSITY POLYETHYLENE (LDPE)

THURSDAY, OCTOBER 5th 2017

SESSION A	10.45 - 12.15	SUSTAINABILITY	
No.	Time	Paper ID	TITLE
1	10.45 - 11.00	40	CREATING EDUCATIONAL GREEN AREA THROUGH HYDROPONIC-AQUAPONIC SYSTEM (OBJECT OF STUDY: SD-SMK PERTI, GROGOL)
2	11.00 - 11.15	43	IMPLEMENTATION OF PSYCHOLOGY EDUCATION WITH ADVANCED TECHNOLOGY IN ORDER TO DESIGN AN EDUCATION AND RESEARCH CENTER OF MANGROVE FOREST ECOSYSTEM AT PANTAI INDAH KAPUK
3	11.15 - 11.30	50	VERTICAL HYDROPONICS FARMING COMPLEX
4	11.30 - 11.45	64	NATURAL SCIENCE AND ENVIRONMENT EXPLORATORIUM
5	11.45 - 12.00	21	THE QUATTRO HELIX MODEL FOR COLLABORATION AND PARTICIPATION IN REVERSE LOGISTICS: INDONESIAN MOBILE PHONE INDUSTRY
6	12.15	BACK to Auditorium for closing remark	

ROOM 2

WEDNESDAY, OCTOBER 4th 2017

SESSION 1	13.00 - 15.00	TECHNOLOGY	
No.	Time	Paper ID	TITLE
1	13.00 - 13.15	2	DEVELOPMENT INFORMATION SYSTEMS OF FREIGHT FORWARDING WITH AGILE SDLC
2	13.15 - 13.30	24	DESIGNING INFORMATION SYSTEM AS BUSINESS PROCESS REENGINEERING WITH SDLC METHOD
3	13.30 - 13.45	34	DETERMINING EFFECTIVE FACE MILLING CUTTING PARAMETER FOR ALUMINUM ALLOY AA-6061 AND AA-7075 BASED ON SURFACE ROUGHNESS

THURSDAY, OCTOBER 5th 2017

SESSION 4	10.45 - 12.15	SUSTAINABILITY	
No.	Time	Paper ID	TITLE
1	10.45 - 11.00	40	CREATING EDUCATIONAL GREEN AREA THROUGH HYDROPONIC-AQUAPONIC SYSTEM (OBJECT OF STUDY: SD-SMK PERTI, GROGOL)
2	11.00 - 11.15	43	IMPLEMENTATION OF PSYCHOLOGY EDUCATION WITH ADVANCED TECHNOLOGY IN ORDER TO DESIGN AN EDUCATION AND RESEARCH CENTER OF MANGROVE FOREST ECOSYSTEM AT PANTAI INDAH KAPUK
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ROOM 2

WEDNESDAY, OCTOBER 4th 2017

SESSION 1	13.00 - 15.00	TECHNOLOGY	
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SESSION 1	13.00 - 15.00	TECHNOLOGY	
4	13.45 - 14.00	36	DATA MINING AND SEMANTIC DATA WAREHOUSE FOR ANALYSIS ENROLLMENT IN MARKETING STRATEGY
5	14.00 - 14.15	59	ECG SIGNAL MODEL PARAMETERS EXTRACTION METHOD FOR DATA COMPRESSION
6	14.15 - 14.30	61	ANALYSIS OF RAW MATERIAL NEEDS IN MAKING EJ PRODUCT WITH MRP METHOD IN PT. BINTANG TOEDJOE
7	14.30 - 14.45	65	THE EFFECT OF INHIBITORS ASCORBIC ACID TO MORFOLOGI SURFACE, CRYSTAL STRUCTURE, AND RATE OF CORROSION IN SEA WATER MEDIA ON STEEL A 242
8	14.45 - 15.00	12	ANTECEDENT FACTORS OF INDONESIA FAIR REVISIT INTENTION: MODERATION EFFECT OF BRAND AWARENESS

WEDNESDAY, OCTOBER 4th 2017

SESSION 2	15.15- 17.00	TECHNOLOGY	
No.	Time	Paper ID	TITLE
1	15.15 - 15.30	107	CONCEPT REFORMULATION OF ENVIRONMENTALLY FRIENDLY PLASTIC LABEL DESIGN OF READY-TO-DRINK PRODUCTS
2	15.30 - 15.45	18	BINARY IMAGE MORPHOLOGY USING LOW PASS FILTERING
3	15.45 - 16.00	85	DESIGN AND IMPLEMENTATION OF WEB SERVER APPLICATION FOR MANAGING THE SMART HOME ARDUINO BASED
4	16.00 - 16.15	70	ONTOLOGY MODELING OF DIGITAL LIBRARY USING SLIMS DATABASE SCHEMA

THURSDAY, OCTOBER 5th 2017

SESSION 3	08.30 - 10.30	TECHNOLOGY	
No.	Time	Paper ID	TITLE
1	08.30 - 08.45	14	GAIT ANALYSIS OF A SCOLIOSIS PATIENT WEARING A RAMIE/HDPE THERMOPLASTIC COMPOSITE BOSTON BRACES USING 3D MOTION ANALYZER
2	08.45 - 09.00	16	INFLUENCE OF CONTACT BETWEEN CRACK SURFACES ON STIFFNESS REDUCTION IN A BREATHING CRACKED ROTOR
3	09.00 - 09.15	20	DASHBOARD APPLICATION FOR ENVIRONMENTAL SECURITY SYSTEM
4	09.15 - 09.30	45	BUTTON-PUSHING DEVICE
5	09.30 - 09.45	46	VEHICLE MONITORING SYSTEM USING ANDROID
6	09.45 - 10.00	35	ABNORMAL KIDNEY DIAGNOSIS THROUGH IRIS USING DEEP CONVOLUTIONAL NEURAL NETWORK
7	10.00 - 10.15	51	SEARCHING TOOLS AT HOME BASED ON ANDROID
8	10.15 - 10.30	68	EXPERIMENTAL STUDY OF SMOKE IN A BACKWARD-FACING STEP GEOMETRY

THURSDAY, OCTOBER 5th 2017

SESSION 4	10.45 - 12.15	TECHNOLOGY	
No.	Time	Paper ID	TITLE
1	10.45 - 11.00	72	ANALITICAL STUDY OF MECANUM WHEELS FOR OMNI DIRECTIONAL FOUR WHEELER MOBILE ROBOT
2	11.00 - 11.15	103	CAPTIVE PORTAL TO SUPPORT ONLINE AND OFFLINE STORE PROMOTION
3	11.15 - 11.30	105	DESIGN OF TUNNEL LIGHTING MODEL FOR VEHICLE DURING NIGHT TIME
4	11.30 - 11.45	48	IMALEKTA PRESIDENT ELECTION BY FINGERPRINT SYSTEM
5	11.45 - 12.00	49	ANDROID-BASED NURSE CALL
6	12.15	BACK to Auditorium for closing remark	

ROOM 3

WEDNESDAY, OCTOBER 4th 2017

SESSION 1	13.00 - 15.00	URBAN DEVELOPMENT	
No.	Time	Paper ID	TITLE
1	13.00 - 13.15	9	WATER QUALITY MODELING DUE TO BOD PARAMETER INCREMENT IN THE RIVER BODY OF CINAMBO
2	13.15 - 13.30	23	LOCAL WISDOM FIDELITY AS AN EVIDENCE OF TRADITIONAL HOUSE PRESERVATION
3	13.30 - 13.45	33	STUDY ON TRADING ACTIVITIES CHANGE ALONG COMMERCIAL CORRIDOR. CASE STUDY : JALAN RAYA BEKASI BARAT
4	13.45 - 14.00	37	ANALYSIS OF RED LIGHT RUNNING VEHICLES ALONG THE ROADS WITH TRAFFIC LIGHTS AT BAKAU CONDONG ROAD
5	14.00 - 14.15	56	STUDY OF EDUCATIONAL FACILITIES USAGE AT JELAMBAR SUB-DISTRICT, WEST JAKARTA
6	14.15 - 14.30	58	RPTRA EVALUATION AS SOCIAL FACILITY
7	14.30 - 14.45	60	THE SLUM AND PERI-URBANIZATION IN METROPOLITAN BANDUNG RAYA
8	14.45 - 15.00	55	FINAL ACCOUNT ON CONSTRUCTION CONTRACT WITH MUTUAL TERMINATION AGREEMENT

WEDNESDAY, OCTOBER 4th 2017

SESSION 2	15.15- 17.00	URBAN MANAGEMENT	
No.	Time	Paper ID	TITLE
1	15.15 - 15.30	6	EVALUATION AND MULTI-OBJECTIVE OPTIMIZATION OF DJUANDA RESERVOIR OPERATION IN EMPHASIS TO FLOOD CONTROL AND WATER DEMAND
2	15.30 - 15.45	32	RESEARCH OF SHOPPING CENTER PERFORMANCE BASED ON COMPARISON BY IMPORTANCE AGAINST SATISFACTION LEVEL OF VISITORS AND TENANTS
3	15.45 - 16.00	42	STUDY OF URBAN TOURISM DESTINATION DEVELOPMENT IN JAKARTA (CASE STUDY : PETAK SEMBILAN REGION GLODOK)

SESSION 2	15.15- 17.00	URBAN MANAGEMENT	
4	16.00 - 16.15	71	EVALUATING SAFETY AND HEALTH FACTORS INFLUENCING PERFORMANCE OF LOW-COST APARTMENTS IN JAKARTA
5	16.15 - 16.30	84	THE ENDURANCE OF <i>PURI SAREN UBUD'S</i> CULTURAL SPACE AS A HERITAGE AREA IN GIANJAR CITY

THURSDAY, OCTOBER 5th 2017

SESSION 3	08.30-10.30	URBAN DEVELOPMENT	
No.	Time	Paper ID	TITLE
1	08.30 - 08.45	13	IMPACTS OF HUMAN DEVELOPMENT TOWARDS ROAD TRAFFIC FATALITY IN THE WORLD
2	08.45 - 09.00	80	CHARACTERISRIC OF ASPHALT CONCRETE MIXTURE USING LOW DENSITY POLYETHYLENE (LDPE) WASTE AS PARTIAL SUBSTITUTION OF FINE AGGREGATE
3	09.00 - 09.15	82	EFFECT OF MIXING TEMPERATURE ON ASPHALT CHARACTERISTIC OF CONCRETE USING HIGH DENSITY POLYETHYLENE (HDPE) AS PARTIAL SUBSTITUTION OF FINE AGGREGATE
4	09.15 - 09.30	94	STRUCTURE SYSTEM OF NUSANTARA ARCHITECTURE, CASE OF EMPYAK ROOF CONSTRUCTION
5	09.30 - 09.45	99	EARLY STUDIES ON POTENCIES OF SUB-DISTRICT ADMINISTRATION OF JUWANA, DISTRICT PATI, CENTRAL JAVA
6	09.45 - 10.00	19	SPATIAL INCLUSION FOR MARGINALIZED PEOPLE IN PUBLIC SPACE
7	10.00 - 10.15	89	WATERFRONT CONCEPT SITE PLANNING OF SEMARANG CITY BANJIR KANAL TIMUR RIVERSIDE AREA

THURSDAY, OCTOBER 5th 2017

SESSION 4	10.45 - 12.15	URBAN MANAGEMENT	
No.	Time	Paper ID	TITLE
1	10.45 - 11.00	3	A STUDY ON CULTURAL LANDSCAPE CONSERVATION OF SUBAK IN GIANYAR REGENCY, BALI, INDONESIA
2	11.00 - 11.15	25	EFFORT OF UPGRADING THE LAWEYAN TO BE NATIONAL CULTURAL CONSERVATION
3	11.15 - 11.30	27	STUDY OF URBAN TOURISM DESTINATION DEVELOPMENT IN JAKARTA (CASE STUDY: RAWA BELONG REGION)
4	11.30 - 11.45	102	SITE PLANNING OF CURUG PARIGI AS A TOURISM ATTRACTION IN BEKASI CITY
5	11.45 - 12.00	106	STUDY ON RUSUNAWA'S RESIDENTS SATISFACTION AFTER BEING EVICTED FROM WADUK PLUIT
6	12.15	BACK to Auditorium for closing remark	

ROOM 4

THURSDAY, OCTOBER 5th 2017

SESSION 3	08.30 - 10.30	SUSTAINABILITY	
No.	Time	Paper ID	TITLE
1	08.30 - 08.45	76	SHOPPING CENTER IMPACT STUDY: SOCIO-ECONOMIC POINT OF VIEW, CASE STUDY LIPPO PURI MALL, WEST JAKARTA, INDONESIA
2	08.45 - 09.00	28	URBAN SPATIAL DESIGN BASED ON TRANSIT ORIENTED DEVELOPMENT CONCEPT, CASE STUDY: PALMERAH AREA, WEST JAKARTA
3	09.00 - 09.15	44	THE EFFECT OF SHOPPING CENTER ATTRIBUTES ON CUSTOMER SATISFACTION AT THE WEST JAKARTA PRIMARY CENTER AREA
4	09.15 - 09.30	67	DEVELOPMENT OF ART DECO ARCHITECTURE IN INDONESIA

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 Faculty of Engineering, Tarumanagara University, Jakarta-Indonesia, October 4-5th, 2017

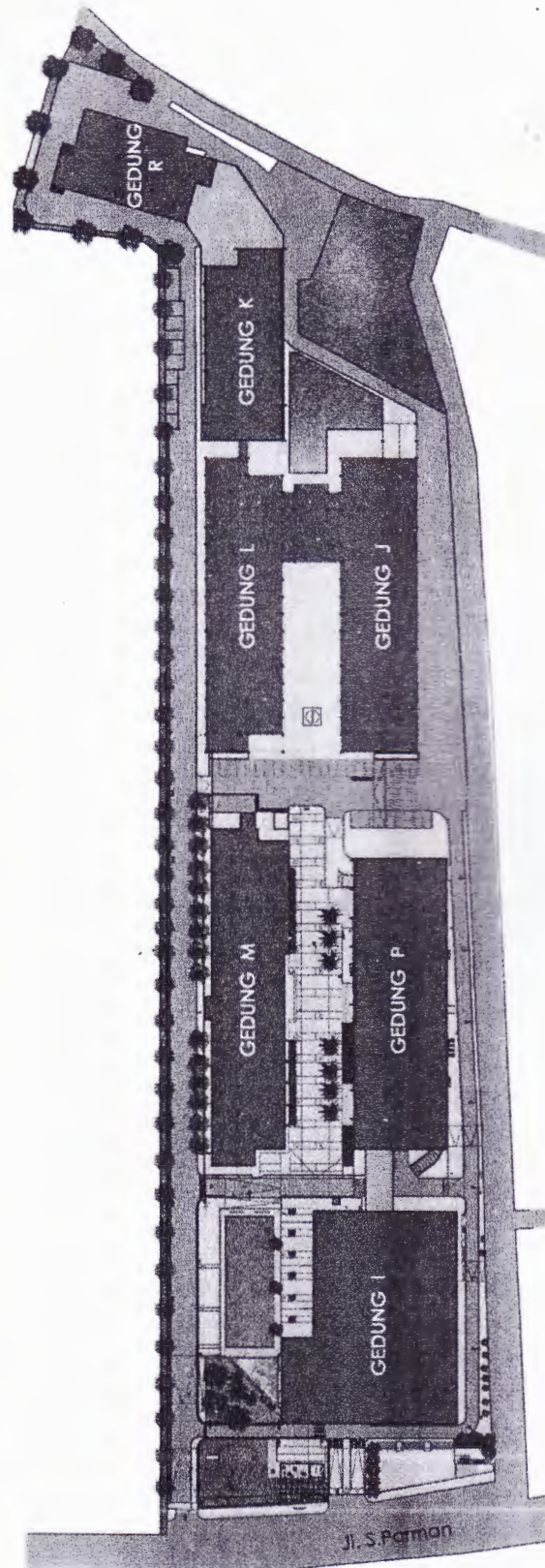
SESSION 3	08.30 - 10.30	SUSTAINABILITY	
5	09.30 - 09.45	90	STUDY OF PROCUREMENT, UTILIZATION, AND MANAGEMENT MOSQUE IN JEMBATAN BESI AREA
6	09.45 - 10.00	30	A STUDY OF FACTORS DETERMINING TENANT MIX IN SHOPPING MALL BASED ON VISITORS PREFERENCES
7	10.00 - 10.15	83	FACTORS AFFECTING THE SHOPPING OPPORTUNITY FOR DAILY NEEDS, CASE STUDY: WEST JAKARTA RESIDENCE (KELURAHAN BOJONG, KEMBANGAN AND SURROUNDING)

THURSDAY, OCTOBER 5th 2017

SESSION 4	10.45 - 12.15	URBAN MANAGEMENT	
No.	Time	Paper ID	TITLE
1	10.45 - 11.00	63	KALMAN FILTERING ON EARNED SCHEDULE METHOD
2	11.00 - 11.15	8	FACTORS AFFECTING CHOICE OF ROAD CROSSING METHOD
3	11.15 - 11.30	57	CHRONOGRAPHICAL SCHEDULING LOGIC METHOD FOR CONSTRUCTION SCHEDULING OF HIGH RISE BUILDING PROJECT IN JAKARTA
4	11.30 - 11.45	47	BUILDING CONSTRUCTION PROJECT DELAY ANALYSIS WITH ISOLATED COLLAPSED BUT-FOR (ICBF) METHOD
5	12.15	BACK to Auditorium for closing remark	

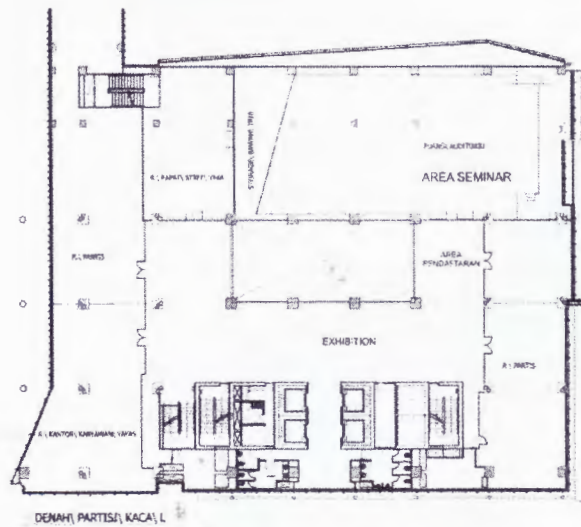
FLOOR PLAN

SITE PLAN

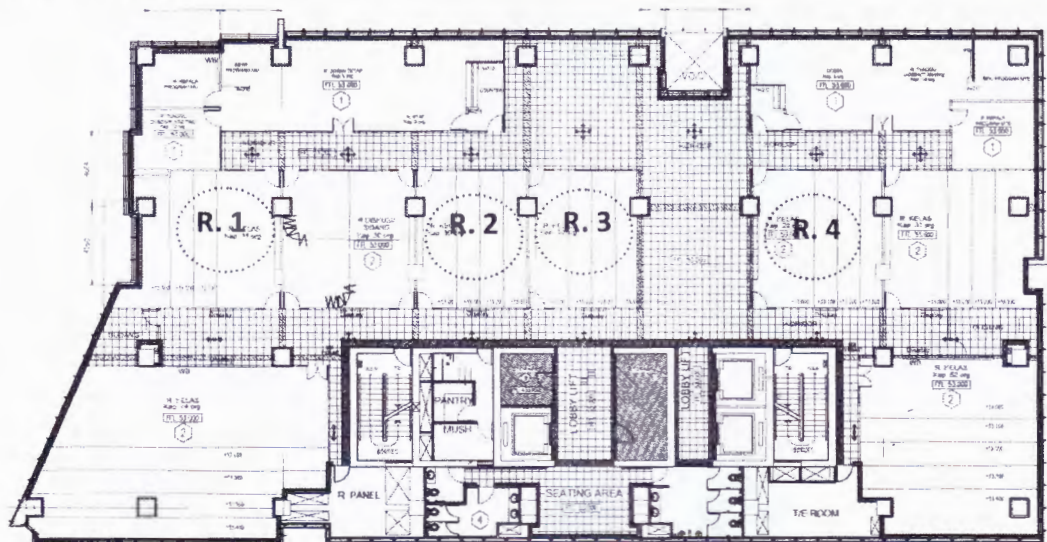


- Venue : 3rd Floor, Auditorium Building I (Gedung I)
- Parallel Session : 14th Floor, Building I (Gedung I)
- Praying Room (Musholla) : 3rd Floor, 5th Floor, 15th Floor Building I (Gedung I) and 6th Floor, Building P (Gedung M)
- Praying Room (Friday) : 8th Floor, Building P (Gedung M)

3rd FLOOR



14th FLOOR



Note :

Parallel session : 14th Floor (Room 1, Room 2, Room3 and Room 4) Building I
 (Gedung I)

EARLY STUDIES ON POTENCIES OF SUB-DISTRICT ADMINISTRATION OF JUWANA, DISTRICT PATI, CENTRAL JAVA

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Abstract

Juwana is a subdistrict city in north of Java on trajectory of post track (*Daendels*) from Anyer to Panarukan and it is one of coast line area passed by biggest river in district Pati namely Silugonggo (In Javanese language, Silu=river). Silugonggo is artery of Juwana, if it is in availability of Silugonggo thus Juwana will never exist.

The fishermen with traditional wooden ship sought fishes in the sea and brought them in the auction whist they as hored. Development of settlement and trade preceded first long river and finally ended in the estuary and finally it developed on the coastline. Opennes element of fisherman settlement was visible clearly in accordance with their life free in the midst of ocean. On the different viewpoint many chinese businessmen regularly arrived to occupy the rural area (today it becomes city hub of Juwana). Development in settlement pattern in Juwana started to change.

The research aims to establish teory from empirical condition at hand, then describes it into operational concept (*grounded research*) in settlement in Juwana.

Method used is decriptive-qualitative in the usage of way of *strategy grounded theory research*. Research is focussed on actors actively and passively getting involved in alteration process of Juwana settlement. With "Investigation Focus" directed on actors taking influence on the business either internally or externally. Investigation results are coupled with observation data of field, documentation, and literature study thus resulting in accurate findings. Finding data is analized by using: 1.Cultural Model, 2.Economy Model, 3.Technology Model.

To-do steps are such as; conducting data of settlement based on its grouping n a m e l y businessmen, industries, employees, local community economy development, regeneration pattern, filterization and selection of tourism development, integrated system development, development with persuasive approace, *regulation*, *market mechanism*, development in social-cultural activities sector, political development for regional activities sector.

Our finding is that; pattern and form of settlement of Juwana hold potential products as enchantment, human resource support, strong motivation of society still living in the settlement, supports of facilities and infra structures, tourism activities support facilities, institution in cultural art sector, availability of development land.

Keywords: Juwana, Settlement, Potency, Development.

1. INTRODUCTION

Juwana is selected as study object since the Government is activating studies on maritime and coastline. Juwanais a subdistrict city in Javanese northern coast passed by post lane (*Daendels*) from Anyer to Panarukan, with area width of 5.593ha (55,93km²).

Juwana is one of coastline area and low plain passed by biggest river in District Pati namely Silugonggo (Silu=river). Besides society living in Juwana from generation to generation are fishermen society and milkfish breeders. The outcome over power milkfish market places in Indonesia.

Besides, Juwana region has specific characteristics namely in the beginning they lived in riverbank of Silugonggo and coastline with lineary settlement. In coincidence with time development, the society started to develop and Chinese entrepreneurs started to come by, they commenced to settle in the rural in adial settlement shape in which the midst is open space as orientation center. As time goes by there emerged up streets penetrating early settlement in that lineary shape. In the end, the region grows to be a city with buildings in architectures of Colonial Dutch, namely *Indisch*, China, and Java. Moreover Silugonggo still remained to be important role in its development, thus it established city character as we see today.

Regional border in the north, South Java ocean; Subdistrict Jakenan and sub district Pati, in the west; Sub district Wedarijaksa, in the east; Subdistrict Batangan. Juwana is one of coastline area passed by biggest river namely (Silu=river). As an effort to support governmental program to make Indonesia as a maritime country, therefore coastline area with its potencies becomes important for studies as research. Juwana has specific characteristics namely in the beginning the society lived in river bank of Silugonggo and coastline with lineary settlement shape. In coincidence with periods of time, society started to develop and Chinese entrepreneurs started to come by, settle in radial settlement shape in the midst. In the midst there is an open space as an orientation hub. In the end settlement region is penetrable by streets in lineary form becoming a city with architectures of dutch colony, *Indisch*, China and Java with Silugonggo remained to significant in its development. Becoming city character as it is today.

In expression of financial transformation and architectural shape, thus research is focussed on aspect of human "act", changes in social-cultural values and politics in Juwana specially settlement in river bank of Silugonggo and its coastline. Juwana's settlement to be on study is not separable from village complexities and inseparable from village complexity as it is genuine. Village or Kampung in dictionary Dutch-Indonesia and Indonesia-Dutch is translated as "*dorp*" ward/space or area (*wijk*), neighborhood (*hurt*), or *fenced yard* (*omheind erf*), *yard* (*erf*) and "living residence" (*woonbuurt*)¹. Prioharjono² said that, in social history of colonial towns in Colonial Dutch thus kampung is settlement area of the native inhabitants (*inlanders*), where in the beginning holding no proper-environmental sanitation system.

Marginalization condition of this kampung was improved by Colonial Dutch administration by applying kampung program of *Verbetering* (Kampung Renovation Program), solely plied by Colonial administration in order to keep away from epidemics of infectious diseases (such as malari, disenteri, thypus) into settlement area of European inhabitants.

Based on its building site physic, there is kampung not adopting/following rule of planned building site arrangement but here is one building rule already existing. On above description, keyword from definition *kampung* can be meant as a thing of social unit in which in its content there is a very close social relation, staying in a close vicinity as well as holding close famil relationship. Definition *kampung* in this dissertation refers to a type of settlement physically resembling to urban settlement with a street width relatively small and tending to be dense, as well as featuring social community, in which the members have social relationship pattern relatively close as

well as holding social solidarity highly, often called as *patembayan* (*gemeinschaft*). Therefore according to my perspective, village intern-resident's social interaction pattern is based on *face to face social interaction*.

2. RESEARCH METHOD

In light of situation in the field, exposing meaning in architecture presence process takes a "thing" searching way tangible or *fix* as typical strategy to gain metaphisic data, as well as to obtain spatiality on its architectural object, thus a proper method selection is with a *strategy grounded theory research*. Method of a *strategy grounded theory research* or research providing a strong basis of a theory. Research is focussed on architectural shape alteration and its spaces through actors getting involved namely; businessmen, merchants, then elements of government, fishermen, and people living in Juwana undergoing its regional alteration. Its analyzing unit is the actor getting involved in Juwana.

Substance border to be on study is about system alteration and culture of Silugonggo and coast as orientation hub to be a square in the midst of city (as today) becoming an orientation hub. Research design is qualitative descriptive, by getting some persons involved as key instruments. Research subject selected is with purposive-sampling method, namely subject selected based on certain criteria. Respondents selected are merchants, businessmen, then elements of government, fishermen, and persons living in Juwana are still active and not active in the employment following alteration process of that orientation. Data gathered is "Investigation Focus" directed to actors taking influence on alteration either internal or external. Basis to do investigation is data by itself without a guidance of certain theory device. There are two main flows as investigation namely; 1). Collecting region's physical data in river bank of Silugonggo and coastline; the pertinent data of actor giving contribution of change in Juwana; in-depth interview, and direct observation to actors functioning in taking influence on orientation change. 2). Archive study of Juwana historicity.

Ways of analysing: investigation data consisting of in-depth interview result, direct observation to the pertinent actors, archive studies, historicities, coupled with Structurization Theory, Basics of Societal Social Structure Establishment (Giddens, 2010). Result of coupling will yield Substantive Theory expected in Juwana settlement.

Method of analysis to do is with transcription verbatim for research outcome conducted with in depth interview. This transcription verbatim result then produces analysis and reflection on each subjects.

3. RESULTS AND DISCUSSION

Juwana is one of 21 subdistricts in Municipality Pati, Central Java. Juwana city administration's border is as follows: North; bordered by Javasea, East ; bordered with subdistrict Rembang, West; bordered with subdistrict Pati, South; bordered with subdistrict Jakenan.

Juwana city is in Pantura main lane or North coast of Java (Idandels lane) connecting Pati city and Rembang city. This position is strategic since connecting mobility lane, transportation as well as economy in Java on the East (Surabaya) with Java region on the West (Jakarta) and Central (Semarang). Juwana city is passed by river Juwana (Silugonggo) becoming a flowing area from Kedungombo dam, biggest river in District Pati which take impact in flood yearly. Juwana inhabitants is mostly on livelihood of farming, labors and fishermen.

Name of Juwana is in several source versions, one of which is derived from word Jiwana, deriving from word Sansekerta, soul. Therefore, a word of Juwana is assumed in a name of " Kahuripan " as in sansekerta language. Another opinion is that Juwana is from word of *drujuan dwana*. Drujuis name of tree an a forest. History of Indonesian archipelago in general and Java land in particular, is found from some sources different one another. According to one of sources, derivation of Java inlanders is from Hindu and some are from China. Whilst, according to another party, at the first time Hindu came thus there were plants of Juwawut seen, its of food substance, also sold in market for food of turtle dove bird, growing fertile in this island, therefore this island is called as Juwawut and inlanders or inhabitant is called as Juwana.

City profile stretched from Southeast to northwest, perpendicular to Juwana river or called as Silugonggo. Unfortunately, as a port city name of Juwana was sunk between the fame of north coast line of central Javalike Semarang, Jepara, and Rembang. Previously, Silugonggo river was sea, former Muria Mount separable with Java island. Between the both was separated with a strait. Cities like Jepara, Kudus and North Pati were in the early land of Muria land. This proceeded up to the sixteenth century. Since there was shallowing thus gradually it narrowed and up to now it has been just a width of Juwana river. Juwana area is if in light of that theory means a sea actually shallowing to be swamp. This theory is strengthened by historical facts. For instance: a history of Bintoro Demak kingdom's history. Demak kingdom was maritime kingdom and its governmental center was in area of GlagahWangi. But area of GlagahWangi up to now is about 30 km from the coast. Thus formerly Glagah Wangi was a coast, but gradually due to its shallowing the coast shifted to the north and it became far away GlagahWangi. At that time (if in this theory), Juwana harbor in the early was in the strait. And this strait in the past time was trade lane connecting Demak and Tuban as biggest harbor at that time. It is likely that Juwana harbor is a transit place among the two. On another word, Juwana harbor since the last epoch had been visited by merchant's ships or fishermen's ships.

Under the Colonial Dutch, Juwana as city hub of kawedanan (district). Started from January 1902 and to present, its status has been a subdistrict, part of District Pati. Juwana during colonial era was a trade harbor a bit traffic. In the past time's Juwana there was a fortress up to present not tangible and invisible from its ruin. In the 16th century, Juwana was a significant harbor hub in Java island. Foreigners bought the crops and sold it to another place. Opium was a witness how Juwana became northern coastline lane important. Henri-Louis Charles TeMechelen, a head of inspector of Regi Opium and Municipal Assistant of Juwana in 1882, reckoned that one of 20 Javanese persons inhaling opium at that time. In ancient pictogram, Juwana fortress was located on bank river of Juwana with background of Muria mount. In colonial era, Juwana was also famous of or shipyard place and industrial hub of brass handcraftmanship. During Colonial Dutch, Juwana was also ever functioned as a municipality.

Juwana, geographically located 12 km away from the capital city Pati and 87 km away from capital city of Central Java province, Semarang. Juwana borders directly with Java sea and also is passed with Pantura road. Juwana city is divided by a biggest river in district Pati namely Sungai Juwana (Bangawan Silugonggo). Juwana inhabitants of 2010 was 90.006 in number and about 45.000 in number living in Juwana urban area. Inhabitants were mostly Javanese (native) and the minority was Chinese ethnic settling in area of around urban center.

Subdistrict Juwana has a strategic position namely in Java Northern lane

(Pantura road), connecting mobility lane, transportation and utilities, and economy in the West and Central (Banten, Jakarta, and Semarang) with Javanese area on the East (Surabaya and Bali). Profits from strategic position are facilities in distribution of goods, service and human being, particularly in support of coastline resource management. However the advantages are as follows: activities of capture fishing in category of big intensity, agriculture fishing activities, particularly milkfish pond and shrimp pond holding big land width poten, sea liaison area as shipment media for resource, service, maritime tourism object namely an island (Seprapat island) and river estuary with its panorama (Silugonggo river), sea liaison area as shipment media for service resource. Brass industry places are villages of Growong Lor, Growong Kidul, Kauman, Pajeksan, Kudukeras and Bajomulyo. With its center (the biggest one) is t village Growong Lord and village of Growong Kidul. Batik industry places are in villages of Bakaran Kulon and Bakaran Wetan, respectively becoming center (the biggest ones). Fish processing industry and one pertinent to marine products processing includes: **a.** milkfish processing industry in villages of Dukutalit and Doropayung and as a hub (most businesses) locate in village of Dukutalit, **b.** Pindang fish processing industry with business places are in villages of Dukutalit, Bajomulyo, Bumirejo, Bendar and as hub (most businesses) in villages of Dukutalit and Bajomulyo, **c.** salty fish processing industry with business places are in villages of Bendar and Bajomulyo and a hub (most businesses) is in village of Bendar. Smoke fish processing industry place is in villages of Bendar also as a hub (big business), *terasi* processing industry (*terasi* is condiment made from fermented shrimp/small), ketchup with business palace in villages of Bakaran Kulon and Lenggenharjo and a hub (big business) locates in village of Bakaran Kulon; people's salt processing industry with business places are in villages of Langgenharjo and Trimulyo and hubs (most businesses) are in villages of Langgenharjo and Trimulyo; Ship yard industruies with business places are in villages of Bendar and Bumirejo and a hub (big business) is in village of Bendar, Net industry with business location is in villages of Bendar, Bumirejo, Kedungpancing and hubs (most businesses) are villages of Bendar and Bumirejo.

Besides, from social cultural viewpoints there are interesting points such as; Program Tradition for Marine Alms is Juwana societal tradition executed once a year, a week after Iedul Fitri as a thanksgiving for God Almighty upon fisherman's capture during offshore. Marine Alms is commonly held in villages of Bendar, Bajomulyo, Trimulyo, Kedungpancing and Bumirejo since most of their population is on livelihood of fishermen. Programme process is initialized by Rite Parade for Alms by stepping around villages and heading to TPI (Fish Auction Place) of Juwana. Once in TPI, the Alms is then brought along to onshore for offshoring aim, Crop Alms Program Tradition/RITE is held in routine from generation to generation once a year. This program is held post-program of Marine Alms, about on April month, around April month (Javanese month after Syawal month) as a form of thanksgiving for God Almighty already providing advantageous fortune on the earth. Almost all of villages in Juwana still perform this tradition. Numerous societal races as well as art performances are such as *ketoprak*, *tayuban*, skin puppet, *karawitan* or walking big puppet or barongan art eld in the program.

Juwana city holds historical buildings with the architecture typical characteristics of the Colonial Dutch, China and Java. Ancient buildings with Javanese architecture feature are in majority of villages of Bakaran Kulon and Wetan, and village of Bringin. Ancient buildings with Dutch architectural feature are in villages of Kaumanan and Doropayung; whilst Chinese architectural buildings are in villages of Truwah, Jepuro, Pajeksan, Kebonsawahan, Bajomulyo and Bendar. Historical inheritance is like building with architectural style can be potential tourism object, by in consideration of building genuine sustainability.

From light of Facility and Infrastructure then Juwana is District Juwana's local asset a bit important, in recollection of potencies in Juwana harbor. In geography, Juwana has a region in border with ocean, this definitely supports goods transportation activities via ocean, with Juwana harbor potencies.

Aspect of transportation facility inavailability in Juwana, for in terms of transportation then it is served by minibuses, city transportation, public tricycle, ojek (public transportation motor), and *dokar* (horse transportation); whilst goods transportation is served by pickup vehicles and trucks. Designated route lane only prevails for human transportation, whilst goods transportation is not arranged in a certain designated route, but it shall pay attention on street classes.

Juwana holds big potencies in its development, since Juwana is passed by primary arterial street namely regional lane dividing Juwana into two folds such as in the north and in the south of city, main axis of regional movement and local movement in Juwana.

Juwana has street network centralized on city hub area. This pattern is established and supported by geographical factors. Based on the latter, this city can function to a distribution node since on transportation lane node namely transportation lane meeting between Jakarta and Surabaya. Besides Juwana has strategic area since holding harbors. Advantages owned are easy to centralize urban activities and effective in movement. This structure takes influence on activity centralization so that it enables activity hub concentrated in one just hub.

However potential nature resources of Juwana city are such as: island Sepapat in village of Bendar and estuary of river Silugonggo with its panorama as marine tourism object; marine liaison area as shipping media for service resource, and fish capture activity are included to have big businesses, fishing agriculture activities specially milkfish ponds and shrimp ponds.

4. CONCLUSIONS

From all potencies Subdistrict Juwana has takes influence on their settlement development. Moreover the temporary grouping obtained from this research is;

1. Period before the Dutch ruled Java's northern coast (epoch of king Paku Buwana II), inhabitant settlement was in river bank of Silugonggo up to area of estuary, this is due to the livelihood of Juwana society was mostly fishermen on the river and on the sea with traditional devices.
2. In Dutch era during ruling of Java's northern coasts in coincidence with the entry of Chinese merchants, they established settlement clusters not in the estuary area or onshore but on rural area. With central point is *openspace*. As previous area belonging to kingdom Kartasura and then belonging to Surakarta, then *openspace* was called as square. Urban pattern established by the Dutch was adjusted with royal city pattern in the rural (Surakarta), namely there were squares, and in the north there were mosques, markets, Kauman village or Kampong Kauman, and karaton supposed to be existing then replaced with a luxurious building as an office of the Dutch ruler.

3. Era of Post-Indonesian Independence

- a. Building of Dutch administration could be used as subdistrict office. The chinese merchants develop their businesses by making tobacco cigarette plants like : Rokok Jarum, Rokok Tapal Kuda, cigarette Jambu Bol. Besides, they develop Brass businesses. This group build their houses linneary in along big streetsof Silugonggo with an *Indisch* building style.
- b. Society formely solely had fishing businesses and made fish ponds of bandeng (milkfish and salt), then started to make housing businesses such las batik, and finally developed rapidly. This group occupied area in the vicinity of coastline but if seen with urban pattern recently then it is in urban edges(the famous kampong is Bakaran).
- c. Fishermen in the era of post-finding of modern net device named as *cantrang*(its rumor was that they could capture fishes up to the deep of sea),became rich society, they started to make their own ships. They made cluster of modern settlement with modern minimalist architecture style or spainnish styled and so forth.

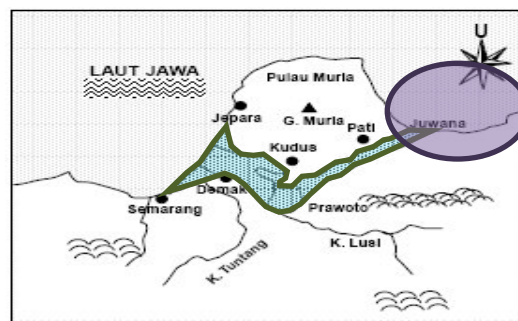


Fig. 1. Juwana Overview of the surrounding Area
(Source: wongpati.com, April 2017)

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