DAIS
Dukuh Atas Interchange Station
Jakarta, Indonesia
adifajar utama, hyperbody graduation
Introduction

Analysis

- problems
- urban analysis
- network analysis
- climate analysis

Preliminary Design

- connections study
- volume study
- circulation study
- programming

Design Development

Construction Drawing

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DAIS is an Integrated Mass Transportation node in the center of Jakarta that will facilitate a seamless hub for train, monorail, bus, waterway and subway. A competition was held by Jakarta Special Administrative Region to initiate the new Jakarta Public Transport Program that started in 2008. DAIS will be a pilot project for other nodes in the city interchange station.

DAIS will become the infrastructure that helps solve Jakarta congested traffic problem due to intensive use of private cars. DAIS will not only be a transit station but prominently a destination, considering its location on the city centre and the intersection of all available mode of transport. The second aim is to develop and integrate the existing informal commercial along the river in part of the design. DAIS will be promoter for effective and efficient transport for Jakarta, designed for all class.
Jakarta is the capital and largest city of Indonesia. It also has a greater population than any other city in Southeast Asia. Located on the northwest coast of Java, it has an area of 661.52 square kilometres (255.41 sq mi) and a population of 8,489,910.[1] Jakarta is the country's economic, cultural and political center. Jakarta is the twelfth-largest city in the world; the metropolitan area, called Jabodetabek, is the sixth-largest in the world.

Jakarta has a hot and humid equatorial/tropical climate (Af) according to the Köppen climate classification system. Located in the western part of Indonesia, Jakarta's wet season rainfall peak is January with average monthly rainfall of 350 millimetres (14 in), and its dry season low point is August with a monthly average of 60 millimetres (2.4 in).[2] The city is humid throughout the year with a daily temperature range of 25° to 30°C (77°-86°F).

Jakarta, Indonesia
6°16′03″S 106°48′02″E

City Area: 750.28 km²
Elevation: 4 m
Population (2008):
- City: 8,469,910 people
- Density: 11,215.7/km²
- Metro: 13,194,000 people

Jakarta + metropolitan transportation scheme
Jakarta: Problems

Vehicle Growth Chart

Traffic density map

Heavy use of Private Transport causing traffic jams in morning and afternoon
Traffic volume to Jakarta from neighbouring cities

New Transportation plan 2020

- Monorail
- Airport Express
- Train
- Express Bus
- Roadway
- Subway
**DAIS** Dukuh Atas Interchange Station Jakarta, Indonesia

**Site Context**

- Regular Bus
- Subway
- Express Bus DAIS
- Boat
- Express Bus 1

Total program area: 48,000 m²
Site Area: 22,500 m²
Building Coverage Ratio: 50% = 11,450 m²
Floor Area Ratio: 2
Precipitation Distribution

Rainfall Distribution (mm)

Location: Jakarta, Indonesia

Average Rainfall: 1200 mm

Seasonal Distribution:
- Monsoon: 400 mm
- Summer: 300 mm
- Winter: 200 mm
- Spring: 100 mm


data from meteorological agency

Psychrometric Chart

Comfort Zones:
- Normal: 20°C to 24°C
- Comfortably cool: 18°C to 20°C
- Very cool: 16°C to 18°C
- Cool: 14°C to 16°C
- Mildly cool: 12°C to 14°C
- Mild: 10°C to 12°C
- Mildly warm: 8°C to 10°C
- Warm: 6°C to 8°C
- Moderately warm: 4°C to 6°C
- Very warm: 2°C to 4°C
- Hot: 0°C to 2°C

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ACTIVE COOLING = X

NATURAL VENTILATION = ✓

Climate Analysis

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Jakarta, Indonesia

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Connections Study

1. Points of transport on site
2. Direct route to all
3. Add points of transport length requirements
4. Connected with direct route
5. Loop connection from 1st points
6. All loop connections
7. All possible connections on site

Conditional statement: select distance less than 180 m from point to point.
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Jakarta, Indonesia

Circulation

Direct Route
Loop Route

Airport Express
Commercial
Direct Route

Loop Route

Commercial
Direct Route

Loop Route

Restaurant
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Jakarta, Indonesia

Circulation

Direct Route

Loop Route

Busway

Subway

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Sun Shading Component

Parametric Wood Structure
space frame

Load Bearing Glass
with metal connector

concrete slab shell floor and structure
• Why timber?
• Low thermal conductivity
• Seismic -> Absorb forces
• Low embodied energy level
• Locally available species™
• Sustainable timber source
Round timber space frame structure parametrically controlled in relation with:

1. surface curvature - space frame depth

2. member length - wood diameter
Construction Detail
scale 1:20

Space Frame Detail
scale 1:5
THANK YOU
Aurelie
Andy
Andreia
Bao
Benjamin
Junjie
Kwok