Transformation of Tangible Metaphor Architecture in Design Process of Sultan Hasanuddin International Airport Terminal

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Abstract: Sultan Hasanuddin Airport in Makassar is the biggest international airport in South Sulawesi. The airport should have properly provided maximum service to the passenger. The airport has domestic and international route and demands to deliver adequate passenger service either adequate or quality. However, the terminal capacity cannot provide the entire passenger, create a crowd, and far from pleasant and secure expectation. In addition, disorderly circulation system increases the problem of the airport. As a result, the airport requires additional terminal with maximum circulation and availability terminal space with tangible metaphor design approach. The design will support the development and air transportation service in Makassar City. Transformation themes application in the airport design represents in the appearance of exterior, interior, material geometry pattern, and application of the expose structure expression.

Key words: airport, geometry pattern, tangible metaphor, circulation, terminal

INTRODUCTION

Makassar City is the capital city of the Province of South Sulawesi and as the center area of East Indonesia. One of government priority in the area development of the area is increasing the Makassar Sultan Hasanuddin Airport capacity by a new passenger terminal development. Hasanuddin Airport expects to be a gateway of the regional. As a result, Hasanuddin Airport would become a landmark that significantly refers as identity of the area.

Sultan Hasanuddin is existing airport owned by Makassar as the entryway from the air to Makassar (Figure 1). However, the condition of the airport is insufficient provided accessibility of domestic and international access nowadays. Therefore, there is a plan to design additional terminal of Sultan Hasanuddin Airport to support the transportation development and tourism for Makassar city. The old terminal will functioned as domestic flight only, and the new terminal plan will functioned as international flight only.

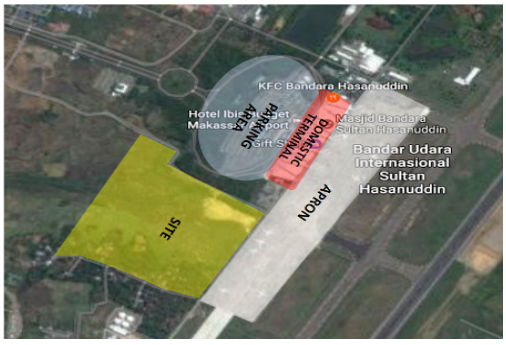

Fig. 1: Sultan Hasanuddin Airport Terminal Existing Site

Application of "transformation" theme in this design is according to the problem of Sultan Hasanuddin Airport terminal. The main problems are circulation, crowded, and imaging. (Figure 2). In architecture, transformation defined as the process of changing of a form to achieve final stage as a respond of external and internal dynamics. Consequently, transformation is a form and space representation.

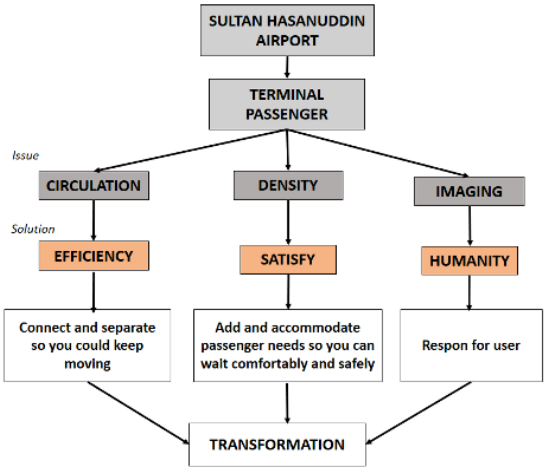

Fig. 2: Theme Achievement Process

The approach of theme transformation theory is metaphor. Metaphor describes theme characteristic, which are visible (appearance), well-defined, and

open, that configure in building space program and may understand in visual.

MATERIALS AND METHOD

This research was conducted in Makassar. The research objects are airport terminal for international passenger in Sultan Hasanuddin International Airport. The terminal capacity cannot provide the entire passenger airport requires additional terminal with maximum circulation and availability terminal space. Basic data including passenger and space function of airport terminal based on passenger needs. The collect data will be analyzed using a metaphorical architectural approach.

Architectural approach in the design process of Sultan Hasanuddin International Airport terminal is tangible metaphor. Tangible metaphor is diction in architecture to compare a similarity of one object to another object that displays directly in form of architecture or material.

The fundamental concept combined with the planning of airport terminal system. The design creates a building mass forms, correlates the environment potency, and solves the the airport problem based on architectural component such as appearance, well-defined, and open.

RESULTS AND DISCUSSION

Fundamental concept in 'image' design of airport terminal refers to object oriented form duplication. Therefore, the design concept may categorize into metaphor approach method, specifically tangible metaphors. During the design process, the fundamental concept combined with the planning of airport terminal system. As a result, the design creates a building mass forms, correlates the environment potency, and solves the the airport problem.

Early design concept determined transformation theme definition that would applied in the building design. Figure 3 describe about the correlation between definition and application of building theme.

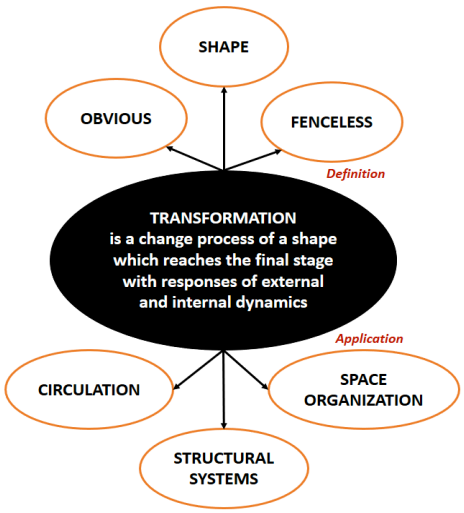

Fig. 3: Transformation Theme Application

1. Appearance

Appearance definition approach of the building will exist in the building facade. The form completed by:

a) Presenting local content of Makassar, the theme is The City of Maritime, which describes about the tide blows by the wind and create a wave (Figure 4).
b) Contain the concept of balance, rhythm, vocal point, scale, and building integration.
c) The building design describe about a wind blows the sea tide and creating a wave.
d) Form transformation explains an illustration about living seawater.

2. Well-Defined

The building should have a well-defined space organization. Design finishing process is:

a) Area division is according to space function, Commercial Area, Management, and Facility Area. Organization of space division area is based on characteristic and space feature.
b) The circulation direction of the passenger in arrival area to the departure area (Figure 5).

3. Open

Approach of the open definition in the building will experience in building interior, space organization, and building facade. Open/ transparent designed by:

a) Locate the circulation area around the interior space to create open space to all area
b) Most of interior apply natural air ventilation
c) Application of expose structure and material

In addition, there is a pseudo partition between the areas. Therefore, the place is visually access but not physically access.

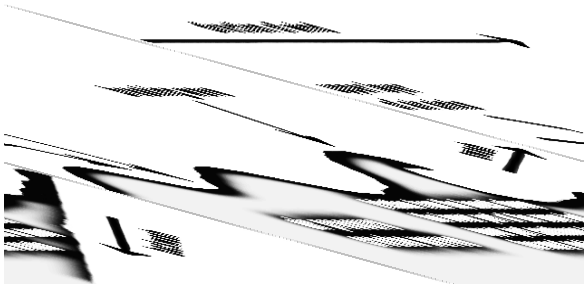

Fig. 4: Adaptation of Sea Wave Form

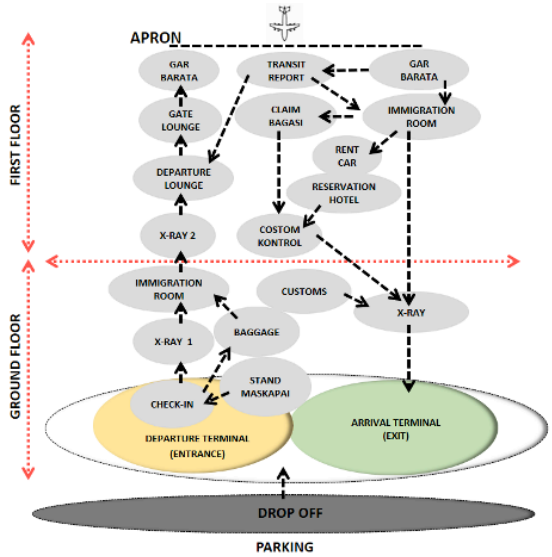

Fig. 5: Illustration of Passenger Circulation Concept

According the explanation above, transformation character emphasized in the building design appearance and experience of the space inside the airport terminal building. Existing of transformation definition character is also influence the building physical formation. The characters became a fundamental of the concept design inside of airport terminal. The concept is form, circulation, structure system, and space organization.

Site Concept and Outdoor Space: As transformation as the themes, the site structure is natural, well-defined, and efficient to avoid of imprecise orientation and direction for the passenger. Building mass location is nearby the apron with liner design to maximize the number of boarding plane (Figure 6). Positioning and linear building mass forms are following the demand of existing apron (Figure 7). Building orientation and form is flat form the wind movement as adaptation form from local climate.

Circulation concepts of vehicle are one direction to avoid traffic jam. One-way direction will provide clear orientation direction for the visitor. The parking area is in the front of the building mass and divided into two, car and motorcycle parking area. These two types of parking area integrated with arrival and departure area. As a result the sequence are parking area - drop off area - arrival area - terminal building - departure area - apron. There are pedestrian path to optimize the circulation system in terminal area that connects the parking area and the building.

Natural concept emphasize in the vegetation maximum advantage. The functions of vegetation element are shading, partition, orientation of circulation direction, reduction of noise sound from activity of the aircraft.

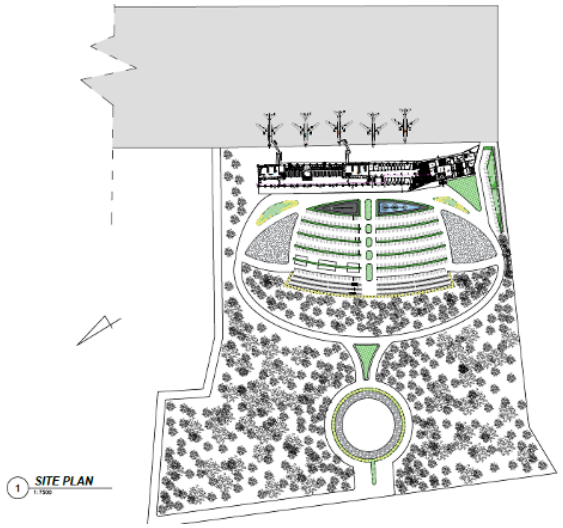

Fig. 6: Layout plan

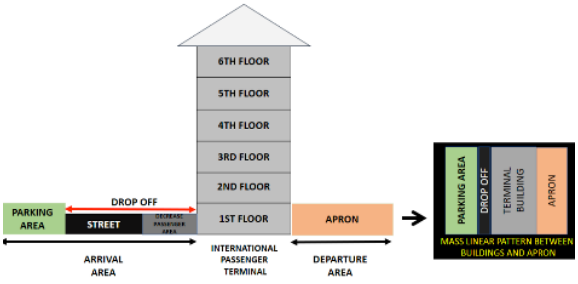

Fig. 7: Illustration of space concept

Composition Concept of Mass and Building Material: The interesting concept of building form design presents local content of Makassar and the theme is The City of Maritime. The themes stories about the tide blows by the wind and create the wave, because the Makassar City has long coastal line. Building form transformation illustrates the wind that blows the sea tide and create the tide become a wave. This transformation reflects living seawater (Figure 8).

Building appearance built interestingly from four sides. Every side touched with transparent material. The building side part with sunrise and sunset light has sun shading to filter the sunlight. Application of

transparent glass is emitting natural exposure into the building.

The support structure construction of the roof is a space frame. The slot in the bottom of the roof function as air ventilation to blows wind movement into the building (Figure 9). Roof material is silver metal sheet to create dynamic and elegant impression and enhance aesthetics element as combination of commercial building harmonization (Figure 10).

The terminal wall has massive wall material to reduce noise level of aircraft sound activity. Curtain wall material also applied in some terminal building side to optimize natural lighting. Curtain wall material is transparent glass, the application widely to enhance wide and exposed impression (Figure 11).

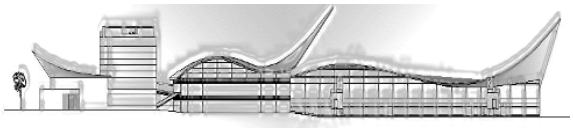

Fig. 8: Building form transformation from the adaptation of sea wave model

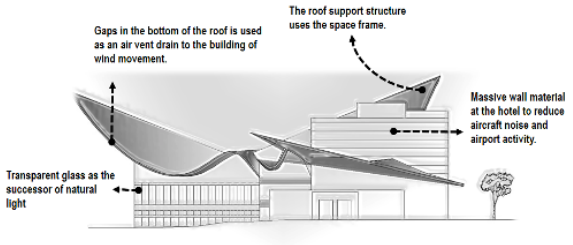

Fig. 9: Illustration of roof structure and building material

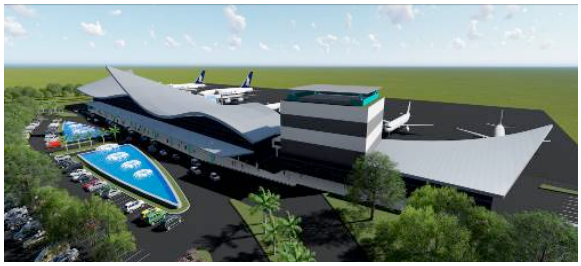

Fig. 10: Application of metal sheet roof material

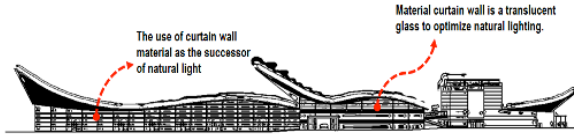

Fig. 11: Application of curtain wall material

Transformation characteristic form applied in the terminal building roof with the characteristic feature of Makassar City where the geographical condition is coastal city with the sea identity. Main building facade and commercial building and the structure applied steel material and exposed brick. These material will presents futuristic impression and to simplify maintenance activity because of the public building characteristic.

Interior Concept: The prominent focus on terminal building interior planning is visitor amenities. The design is presenting the light color with clean and wide impression of the space. Dark color application consciously avoid in interior plan of Sultan Hasanuddin International Airport terminal. Moreover, combination of the curve roof design and exposing structure provided futuristic atmosphere in the terminal space area.

CONCLUSION

A transformation theme presented from the concept of the airport as the bridge to introduce the Makassar City identity as Tourism and Coastal city. Therefore, the themes requires form and appearance element that expressing the Makassar City identity with the design transformation of Sultan Hasanuddin International Airport terminal as one of monumental building with identity and local requirement. The theme has become a macro concept contains a collection of micro concept. The theme presents a limitation to completion and provides design solution for the problem of the Sultan Hasanuddin International Airport terminal. Main application of the concept practiced in the organization of space zonation, interior, and exterior of the building with open, well-defined, secure, and comfortable impression for Sultan Hasanuddin International Airport terminal of Makassar.

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