CUBA HAV-MUHA
THE FUTURE OF SUSTAINABLE CUBAN AVIATION
CUBA
HAV-MUHA

THE CONNECTIONS

1:60 000 000

THE POSSIBILITIES

1:15 000 000

CUBA

1:1 500 000

CANADA
EUROPE
Tourist arrivals (2016):

CANADA 36.9%
EUROPE 19.6%

Source: CAPA - Centre for Aviation and OAG
Cargo Traffic (2016):
Source: CAPA - Centre for Aviation and OAG

CANADA
16.0% Export traffic

BRAZIL
4.7% Import traffic

VENEZUELA
14.1% Export traffic
37.1% Import traffic

EU
26.7% Export traffic
20.7% Import traffic

CHINA
15.1% Export traffic
12.1% Import traffic
HOW ARE WE GOING TO DO THIS?
FLIGHT CORRIDOR
MIAMI
~350 km Distance
the major gateway to Latin America from North America and Europe

PANAMA TOCUMEN
~1500 km Distance

Cargo Hubs:
Source: CAPA - Centre for Aviation and OAG
MAX CAP

MIA\DJMI
~350 km Distance
the major gateway to Latin America from North America and Europe

FAR AWAY

PANAMA TOCUMEN
~1500 km Distance

Cargo Hubs:
Source: CAPA - Centre for Aviation and OAG
~ 50% ISLAND SUGAR PLANTATIONS
HAVANA
PORT OF MARIEL
Easy transition: control over the market and state controlled production
AIRPORT DE PARIS

2017
TRAFFIC

30 Minutes

40-50 Minutes
Bus only from Terminal 1 (National Flights)
Payment only in Cuban Pesos

DISTANCE TO THE CITY: 15 KM
TRAFFIC

30 Minutes

40-50 Minutes
Bus only from Terminal 1 (National Flights)
Payment only in Cuban Pesos
Practically never!

CURVATURE < 180 M
DANGEROUS FOR HIGH SPEED TRAIN
WASTE
UTILITIES
1356.2 MWH/DAY

ANDASOL
3 SOLAR POWER PLANTS
~6 KM²
365 OPERATION DAYS
1356.2 MWH/DAY

SUGAR BAGASSE (STEAM POWER)
- 41 STEAM POWER PLANTS
- ~1205.48 KM² OF SUGARCANE
- 150 OPERATION DAYS

ANDASOL
- 3 SOLAR POWER PLANTS
- ~6 KM²
- 365 OPERATION DAYS
1356.2 MWH/DAY

~6-7/HOUR ~42/HOUR
TAKE OFF TAKE OFF
182.97 MW 29.74 MW

SUGAR BAGASSE (STEAM POWER)
41 STEAM POWER PLANTS
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SCHIPHOL (63 M PAX/YEAR) HAS:
110 FLIGHTS /HOUR “PEAK”
HAV-MUHA

CAPACITY 3.4 MIL PAX
EXPECTATIONS BY 2020 : 10 MIL PAX
1 AIRWAY
4 KM LONG
1 AIRWAY
4 KM LONG

2.8 KM
NORMAL LENGTH

+1 KM
~97% HUMIDITY
TOPOGRAPHY

~65 M > SEA

HEAVY RAIN FLOOD AREA
CONCEPT
AIRPORT DESIGN
CONCEPT

AIRPORT DESIGN
CONCEPT
AIRPORT DESIGN
CONCEPT

AIRPORT DESIGN

- PASSENGER TERMINALS
- CARGO TERMINALS
- HANGARS AND MAINTENANCE
- CONTROL
- ECONOMICAL ZONE
EXTEND CURRENT INTERNATIONAL TERMINAL WITH A LARGE (HANGAR-BUS TYPE) CONCOURSE
1

EXTEND CARGO TERMINAL
2

INCORPORATE AND EXPAND THE ECONOMIC ZONE
3

ADD SECOND TAXIWAY
4

START WORK ON TRAIN TUNNELS
5

START WORK ON TRAIN STATION
6

MASTER PLAN 2020
PHASE 1
MASTER PLAN 2030

PHASE 2

1. NEW TERMINAL (HALF OF THE FINAL SIZE)
2. EXTEND CARGO TERMINAL (WITH HEADQUARTERS IN THE OLD INTERNATIONAL TERMINAL)
3. EXPAND THE ECONOMIC ZONE
4. NEW APRON
5. NEW LAND TRAFFIC CONNECTION
MASTER PLAN 2035

PHASE 3

- Finished Terminal
- New Runway
- Expand the Economic Zone
- Expand Apron
- Expand Land Traffic Connection
MASTER PLAN 2040

PHASE 4

1. ADD SECOND PIER
2. EXPAND THE ECONOMIC ZONE
3. EXPAND APRON
MASTER PLAN >2050

PHASE >5

1. ADD EXTRA TERMINALS
2. EXPAND THE ECONOMIC ZONE
3. EXPAND APRON
4. EXPAND AIRPORT FACILITIES
MASTER PLAN >2050

PHASE >5

TRAFFIC ANALYSIS OF TAXISWAYS

1. ADD EXTRA TERMINALS
2. EXPAND THE ECONOMIC ZONE
3. EXPAND APRON
4. EXPAND AIRPORT FACILITIES
INFRASTRUCTURE
TRAFFIC ANALYSIS

AUTODESK INFRAWORKS 360 TRAIN AND ROADS SIMULATION
TRAFFIC LOOP
PERFECT TERMINAL
MID POSITION
PEOPLE TRAFFIC SCHEME

LANDSIDE

AIRSIDE
CONCEPT
FEW DECISION POINTS
GLOBAL IDENTITY

HARD TRANSITION

“REVOLUTION”

NEW CUBAN IDENTITY

HARD TRANSITION

CONCEPT

GLOBAL IDENTITY

DEPARTURES
CONCEPT

SPANISH CUBA

NEW CUBAN IDENTITY

CASTRO

PRE CASTRO

HARD TRANSITION

“REVOLUTION”

ARRIVALS

SPANISH CUBA
PROTECT FROM SOLAR EXPOSURE

CONCEPT

CLIMATE

WIND
Average Density (LOS IATA)

CONCEPT
PEOPLE STREAM
HAV-MUHA
LEVEL -3
[-20.5 M] TRAIN STATION

TRAIN STATION
LEVEL -2

[-10.5 M] BOH & UNDERGROUND LANDSIDE BOH ACCESS

TRAIN STATION

BOH
LEVEL -1

[-4.8 M] BOH, PARKING & LANDSIDE PAX ACCESS

PARKING

BOH
LEVEL +2

[12.1 M] DEPARTURE (PIERS), SHOPPING CONCOURSE, BOH MAIN OFFICES

DEPARTURES

BOH HEAD OFFICE

DUTY FREE
PIER SEGMENT
IMPRESSION FROM WAITING SPACE
IMPRESSION FROM FAST WALK LANE
IMPRESSION FROM FAST WALK LANE ARRIVALS
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