Geographically, Cuba, which is considered to be part of Latin America, comprises the island of Cuba, as well as the Isla de la Juventud and several minor archipelagos. It is located at the confluence of the Caribbean Sea, the Gulf of Mexico and the Atlantic Ocean. Cuba is south of Florida and the Bahamas, west of Haiti and the Dominican Republic, north of the tax haven of the Cayman Islands and east of Mexico, thereby occupying a strategic position. Looking at it from the point of view of airport hub operations there are two established ones in the region. Firstly Miami, which is probably the major gateway to Latin America from North America and Europe. Secondly, Panama's Tocumen International Airport, about 1000 km to the south and home to Copa Airlines and the 'Hub of the Americas.'

Panama Tocumen International Airport is the biggest transfer hub in the region and, with the notable exception of Mexico City, has a route network that serves more US cities than any other airport in the region. The airport calls itself the 'Hub of the Americas', while the passenger traffic set to rise by an average of 6% to 7% per annum for the foreseeable future, the airport has already established itself as one of the biggest cargo ports in the region next to Miami International Airport.

Miami is a major business and leisure city that doubles as the US' primary gateway to and from Central and South America. As a consequence its airport also acts as a hub connecting those regions with other parts of the US and Europe. It has a large and growing annual passenger throughout but its main strength is in air cargo, where it is also the principal US-Latin American gateway. There is pressure in both the O&D and hub business segments from nearby airports such as Fort Lauderdale-Hollywood and from giant hubs further afield such as Atlanta and Charlotte Douglas. Additionally, developers hope to open a new commercial airport nearby to challenge Miami in the handling of perishable cargo.
Unscheduled foreign aircraft are prohibited from entering or encroaching Cuban airspace including disputed international water zones except when permission has been explicitly given by the Cuban Government. The Cuban military has been known to shoot down and destroy unauthorized aircraft without warning including a 1996 incident in which two U.S.-registered aircraft were shot down and destroyed by Cuban Air Force MiGs.

Partnering with Cuba, the Dominican Republic, and Trinidad and Tobago in bilateral exchanges of traffic flow data. Air service providers in the region now speak weekly to share real-time air traffic flow, demand, weather and other data. By increasing communication, they can anticipate and be proactive together to handle capacity issues. Sharing critical data and collaborative decision-making tools will increase the safety and efficiency of the Caribbean region.

Encouraging Cuba to establish the first Air Traffic Flow Management position in Havana Center to accommodate growing traffic as U.S. carriers begin scheduled passenger service to Havana. The FAA continues to collaborate within the U.S. Government and with the Cuban aviation authorities to improve access in the busy Giron corridor between Miami and Havana. The U.S. warning areas in U.S. airspace were moved in September to help alleviate growing traffic congestion issues. This will improve the safety and efficiency of air traffic through that area by allowing for dedicated north and southbound routes at all times, even when U.S. military warning areas are activated.

Flying over Cuba used to be done through corridors. The country used to have three corridors namely: Giron - East, Maya - Central, and Nuevas - West. In our day the flight regulations have been loosen and it easier to traverse above different spots of the island.
Garbage disposal/landfills (biggest of Havana) : Calle 100, Ocho Vias and Guanabacoa. Due to the inadequate manner of waste treatment and disposal these sites pose a great health and environmental risk. In fact the sites should have been closed by the end of 2014. Nevertheless, even if these sites were no longer active, newer landfills would take their place and the problem would repeat itself. Seeing how the MSW (municipal solid waste) of a high priority international airport can be of the same amount as a city district MSW, the future MUHA international airport could cause a serious waste management problem.

Solar power station based on the dimensions of the Spanish Andsaol solar power station. The current electrical production of Havana is not able to sustain a major airport expansion. The solar power plant can help facilitate the extra electrical need and provide the city with power. Nevertheless, in a future scenario when the airport is required to facilitate electricity for electrical planes a type of solar power station of this dimension with an estimated output of 495 GWh per year, could facilitate enough energy for the lift-off of 27 B747 per hour.

A network of bio-based sugar bagasse power stations could also be considered. An area of 450 km² of sugar cane plus 11 processing plants that can process 3500 t of sugar per day can also provide 495 GWh per day.

Situated at the minimum required 3000 m distance from the beginning of the runway, a recycling plant will accompany the future airport development. If in the future the function of the San Antonio de los Baños airport changes from military to civilian, the proposed recycling plant could then be used for both airports. This is why the proposed plant should be located between the two airports and have a good road/railroad connection with both of them.
On their way to the airport, be it by car/bus or train, the users of the airport pass through the multiple architectural layers that compose Havana. When dissected, the architectural identity of Havana can be resumed to the following elements:

- **19th Century - 1930**: Colonial & Baroque Period
- **1930 - 1950**: Neo-Classical Period
- **1950 - 1980**: Art Nouveau, Art Deco & Eclectic Influences
- **1980 - Present**: Modern Period, Brutalist Architecture

**UNESCO Heritage**

**Dangerous Collapse Zone**

**High Speed-Train Issue**

**Curvature Not in Compliance**
The financing of the airport expansion is dictated by the foreign interest in reinstating Cuba as the main gate to the “New World”. The planned investments of Russia, the Emirates and Brazil can facilitate an accelerated process of development. However, within their plan, people transportation is subsidiary to freight shipping. Therefore, in order to create a financially viable proposal for the future of Jose Marti International, a balanced mix of freight/people traffic has to be implemented.

The master plan is based on a prediction for the coming 50 years. This plan works as a guideline and should be refined within the norms at regular intervals to allow especially for changes within the nature and amount of traffic, and developments in aircraft technology e.g. electrical/biofuel based aircrafts. The runways are designed with an extra 1km [landing end] + 0.7km [take off end] no build zones in order to adapt to future changes e.g. longer acceleration time due to change from fuel based motor to electrical motor.

**Phasing**

This is the most extensive phase within the airport plan. Phase 1 has an accelerated plan of development. Due to the expected exponential increase in PAX/year [by 2020 10 m] phase 1 needs to be completed within the upcoming 5 years. At the moment of completion, the airport is expected to handle a flow of approximately 20 PAX/year. Phase 1 includes the following elements:

- International/national terminal
- The main train station
- Bus terminal
- Taxiway, on the side of the existing runway
- New Runway (Heading 05-23) plus taxiway

The phases beyond the implementation of the new terminal and runway are envisioned for possible traffic flows increase, airborne and terrestrial. Therefore, the creation of two extra terminals, additional land traffic connections and two more runways are included within the masterplan.
These are the future terminals of the airport. They are based on a repeatable system of: Parking – Bus terminal/PMS Terminal/DropOff – Terminal LandSide – Terminal Airside. T1 is the first to be built within phase 1 and it will extend the current processed PAX/year to approximately 20 million.

Airport Business Center. The airport hotels and offices will be located in this area.

Free Economic Zone. This is an area in which companies will be taxed very lightly or not at all to encourage economic activity.

Free Trade Zone. In this area goods will be landed, handled, manufactured or reconfigured, and re-exported without the intervention of the customs authorities. Within this zone, business representatives will be able to remain within the confinement of the airport without actually entering the country, thus, being exempt of the immigration procedure.

The former international terminal of HAV airport will be transformed and extended into the new Cargo Terminal.
In accordance with the concept, the entrance to the airport welcomes guests to the new identity of Cuba. An identity of unity; represented by the wooden roof that connects all the airport elements. The choice of wood was due to the fact that wood is/was a controversial material. In the time of Batista a lot of sugar plantation owners deforested very large areas of the Cuban forest in order to grow more sugar. One of the biggest deforesters was the father of Castro Ángel María Bautista Castro y Argiz. His older son Fidel, once in power, because of the scarcity of the material, he banned the export of Cuban wood and later after the political uprisings, he banned the sale of wood altogether. People were using construction wood in order to create rafts and emigrate to America.

Since the beginning of this year wood has reappeared, in small quantities, as a saleable entity on the Cuban market. Therefore, wood is a perfect material to represent the future, openness and connection of the Country.

The wooden roof is supported by 6 concrete pedestals and lose from the roof, supporting the walk bridges are 8 "arch" columns. These columns are designed as hooks so that when leaving Cuba you are traveling through arches, and archetypical architectonical omnipresent element in Cuba. Whilst, when arriving the "arches" are perceived as square rational modern columns.
Coming home brings so many mixed feelings: joy of seeing everything so familiar again, melancholy and nostalgia of past time, combined with sadness for bad memories lived here, all in the same place. But above all, coming home is comfort. Comforting feeling of being where everything started for me, comforting feeling that I know the order of things and the impression that everybody can understand me, can get the way I am. So much joy to be where all my loved ones are, such a great sentiment of being reunited with all that formed me as the person that I am today. Although I didn't have a very easy life here, I feel the safest in this very place because it's home. Because it's where all started and I know nothing else better.

A tear drops slowly while my eyes search eagerly for the Capitolio. It all comes back to me now. I was just 10 years old when He entered the city, everybody was so ecstatic. My father embraced me and with the utmost happiness in his voice he shouted: “Viva la revolucion, Viva Fidel”. Huh!, If he only knew, “Viva Fidel”, he much regretted those words not so many years later.

The fasten seat-belts sign is on, we must be approaching the airport. Indeed, not moments later, out of the milky cloud, I identify a captivating form. It makes me think of the old tales of my grandfather about his childhood in Africa. Yet, very interestingly, as we further approach it I can almost picture the noisy streets of the neighborhood I grew up. They were far too noisy, uneducated and impolite for the western world, but for me it was the safest place, it was love, comfort, it was home.

The terminal unfolds above me, the heavy and hot Cuban air feels like mother's embrace. I am home, "cuba mi isla bella".

I take a moment to cherish this first contact with my home, as it already sets me in contact with my comfort and identity: Feeling and Identity. No, the airport is the oasis; it's giving me the illusion of reaching a holy, desired place. It's giving me the space to imagine everything beyond it just as I left it, just as I remember it, full of meaning, full of essence, full of emotions and hopes. Regardless of its novelty, I can easily recognize traces of our colorful culture.
Retail

• Culturally Cuba is not a place for malls, there is no logical reason for the introduction of an extensive retail on the land-side, only recreational and eating facilities for waiting.

• Air-side: it needs to be lively exactly as a Cuban street; this activity should be visible for both Arrivals and Departures, as social impact helps in anchoring the relation of the airport with the country. Nevertheless, (see path-finding) it should not obstruct from the functionality of the pier.

Prime location vs operational needs:

• Placements choice for different activities should be based on the functionality of the gates and Terminal.

Dwell time vs efficiency:

• Because of the desired architectural effect dwell time should be proportional to the efficiency (see also path-finding).

Reliability vs redundancy (look at the long term):

• Long term future design adaptability. Change in political or economical situation should not influence the terminal.

• Accommodate changes in processing methodology (ex: self border control booth, self-baggage check etc.).

Path-finding:

• Clear line of sight for the facilities
• An interchange should be an uplifting experience.
• The design should emphasis the interchange role as a portal into different transport modes, provide a welcoming environment for the traveler and create interest by emphasis of the arrival and departure points.

• Natural daylight should be maximized wherever possible, creating a sense of well-being and reducing a sense of enclosure.

• Imaginative use of lighting can give many opportunities for holding interest, and variety and color enhance this effect.

• Spaciousness is important, especially since many people are prejudiced against enclosed and underground stations because these spaces have been cramped in the past.

• An interchange should be designed with good sight lines between different modes of transport, to assist way-finding and add a sense of interchange experience.

• Soft internal landscaping will soften the design of interiors and provide variety.

• The geometry of the interior and choice of materials should ensure a calm interior.

• The architecture, technology and facilities should work together to provide a coherent whole.

• Person eye view Landmarks should be introduced to act as focal points.

• Each interchange should have a distinct identity, though with consistency in the design of elements such as way-finding to make movement easy to understand.

• Design should be 'timeless' yet of its time.
Air is supplied through columns, flooring and/or walls by means of displacement ventilation.

Exhaust air from Baggage Reclaim, Immigration and Customs is extracted with exhaust fans via the main ceiling.

Exhaust air from Main Concourse (airside and landside) and Shopping Area is extracted through the ceiling.

Hydronic radiant slabs within the shopping area provide thermal comfort to the passengers.
The architectural idea behind the design of the airport is that a passenger gradually experiences leaving or entering Cuba, depending on his point of access (airside/landside). The architectural mass is modelled with the help of the only truly Cuban architecture, namely the School of Arts. Even if executed in concrete, the geometry still resembles the sensual and poetic arched roofs and curved walls.

From within, the architecture performs according to the design concept. Inside the departures area the architecture is categorized as "clean" and through the use of contemporary materials, it blends the border between the old shapes and the modern global architecture. At the same time the arrivals corridor is executed as a mix of old architecture with a modern finish. It is designed in order to resemble a Cuban interior garden corridor with wooden beams ceiling, arched columns and palm trees garden.
Going abroad is the first step of becoming an explorer, an adventurer. It allows me to forget about everything I knew and start putting aside new knowledge.

We are almost at the terminal; the train ride was an incredible feeling. I have not expected in my lifetime to experience my Havana from the rails.

As I step on the escalator I already hear and feel the intensity of the space, at the end of these steps the world is awaiting me. The terminal unfolds before my eyes. The space is big and bright. The architecture is compares to nothing of what I have seen before yet it has such a soothing feeling it is very appealing, it is alien yet very close to my heart. My horizons instantly expand and I realize that what I knew so far is most probably the smallest part of a very big thing. Once I get to know different things, I see the world with a completely different set of eyes because what I see shapes my perception. Once I start learning and discovering new things, I want to know more and more as if I had an obsessive thirst of knowing everything that I didn't know so far. The more I know, the more I realize that I know nothing. The airport is my bridge to extending my knowledge. It takes me to the other side. To the unknown side, where everything is different and unexpected and also exciting. The airport is the first contact that I have with the unknown side. It's construction is so impressive, I have never seen anything like his in my life, yet it all feels so familiar. I still see things that I can relate to my culture. And I get even more...

Feeling and Identity:

anxious with the thought that this is just the beginning of my exploration, of my adventure. This is the first step towards the rest of my life.
The main structural material in use in the design is a white shade of concrete. The concrete is used with different finishes; on the inside, the finish is matte white, while on the outside of the design a rough layer of stucco is applied to show a relation to the local architectural finish in Cuba.

The leading architectural/structural element is the roof, made up of weaved LAMBOO beams, this element guides the passengers from the main plaza to the gates. The weaved beam system is connected to a custom laminated LAMBOO beam on the boundary of the roof. The roof system is protected from the elements by a Tensotherm canvas, covering the entire span of the system. The systems are anchored by steel connections, allowing for some movement during construction, the edges are covered by a prefabricated composite profile, giving a clean edge from the outside.

The floor has a main construction of TT-floors, which rest on a main span concrete beam. Due to the structure use of cams in between these two elements, room for insulation is acquired. In this space, room for a system of ventilation shafts is made which keep the systems working elements out of sight. The edge of the floor is also covered by a prefab composite panel, hiding the main air circulation system from sight.