

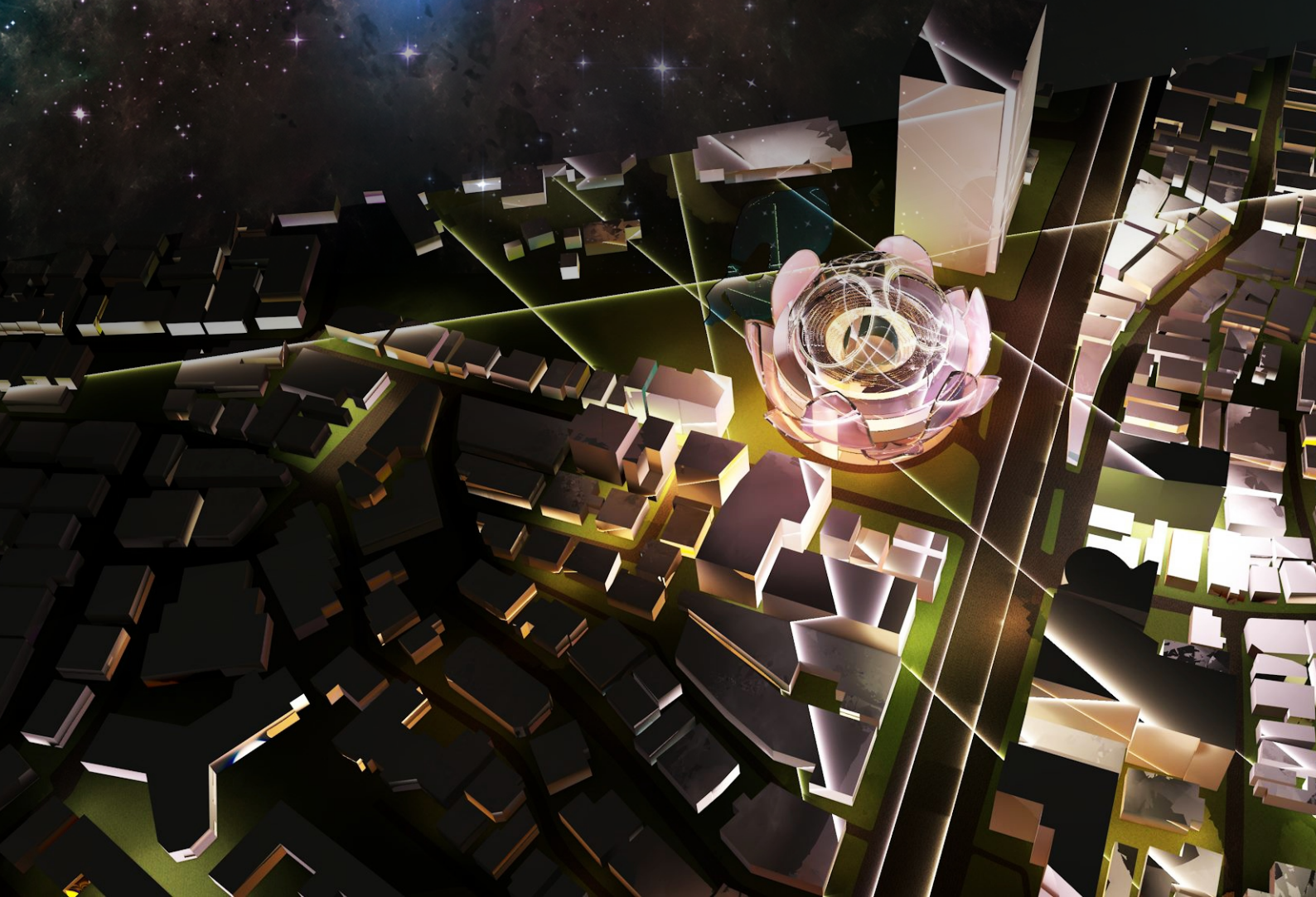
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Bachelor Final Project

TOKYO MUSIC CENTRE BY SYNESTHETIC ARCHITECTURE



BACHELOR FINAL PROJECT

TOKYO MUSIC CENTRE

by Synesthetic Architecture



by:

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FACULTY OF CIVIL ENGINEERING AND PLANNING
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2015

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by SYNESTHETIC ARCHITECTURE

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Yogyakarta, 14th August 2015

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STATEMENT of AUTHENTICITY

I certify that all parts of this work is my own work unless some specified reference works, and no assistance from other parties in whole or in part in the making process. I also declare there is no conflict of intellectual property rights on this work and submit to the Department of Architecture, Islamic University of Indonesia to be used for the benefit of education and publications

Yogyakarta, 14th August 2015

Nani Susiani



All praises be to Allah SWT, The Lord of The Universe who always bless His people. The Merciful Lord who always gives surprises and miracles endlessly, gives smart jokes and opportunities to me. Because You still give a chance, I still can live and only with knowledge, power, grace and Your guidance, I finally can resolve this Bachelor's Final Project in order to achieve Bachelor Degree of Architecture at the Islamic University of Indonesia.

In addition to express gratitude to God, author would like to express thank you to those who intentionally or not, either directly or indirectly have helped the process and the completion of this project. Those who contributed were:

1. Noor Cholis Idham, S.T, M.Arch, Ph.D as Department of Architecture Islamic University of Indonesia Chairman.
2. Ir. Arman Yulianta, MUP as Guru and Supervisor Lecturer who always gives his guidance, advice, time, and energy over the years. Thanks for everything you've given to us.
2. Dr. Ing. Ir. Ilya Fadjar Maharika, MA, IAI as the Examiner Lecturer who is always open to discuss and direct the learning process during the Bachelor Final Project and in the other occasion as well.
3. Ir. Soelarko Soeminar and Suburyanti, my beloved parents, Kris Riantono and Ari Santoso my big brothers, for the overflowing support and love. Good meals do heal. Thank you.
4. Putri Suri Andriyani and Bintang Lazuardi, as team mates and partner for AC-CA Tokyo Music Centre Competition. Galieh Gunagama, Ical Dwiartono, Dodo Sukmanata, Nur Asyrof as the rivals for competition. Doni Fajar Romadlon for his assistance.
5. Agus Dwi, Mediza Mazharina, and Maulani Kurniawati, friends from PAS Group 1.
6. My dearest Family Putri Suri, Fatmawati Nur Aisyah, Arini Yuliandari, Lina Hanifah, for all the love and support.
7. Besar Anggara, Reza Febriansyah, Latifah Isnaini, Nadira Amal, Endra Dewatama, Saldo Maulana, Lukman Hendra, Restu Subagya, Maulani, and Achmad Mirza, friends from Setengah Sadar Studio for all their supprt and cheers.
8. and Eugene.

Harajuku Culture is Japanese Modern Culture that dynamically developed among the traditional culture. Harajuku Culture shows the freedom of personal expression as responses to environments and personal feelings. Harajuku Culture is so dynamic and experimental depends on the subject. Music is a human expression, shown by singing or any music instruments. Music has developed dynamically and can be enjoyed by anyone and anywhere as the effect of technological developments.

Tokyo Music Center offers dynamic musical-spatial experience like Harajuku Culture does. Synesthetic Architecture is determined as a basic concept which connects three issues: sensual experience, personal expressions and dynamic-experimental design.

Synesthesia is a neurological condition which stimulation of one sensory or cognitive pathway leads to automatic-involuntary experiences in a second sensory or cognitive pathway. Synesthetic approach on architecture positioned the building as a Synesthete: the subject that receives a stimulation and expresses it into a dynamic-spatial experience as an expression.

Tokyo Music Center design is equipped by building sensor systems that capture audio signals and manifest them into Audience Moving Seats. Audience Seats rotate slowly around the stage based on audio signals received with Magnetic Levitation technology. Audience Seats Movement and Zero-Gravity Dome Stage give audiences 360 degrees perspective to the performance. Music is a dynamic art, so that Tokyo Music Centre by Synesthetic Architecture gives unstatic music Performance.

Keywords: *dynamic, expression, music, sensor system, synesthesia.*

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PRE FA CE

**ROCK CONCERT
AUDIENCE EVOLUTION**

Source: 9GAG.com



DESIGN MOTIVES: *Building as A Synesthete, Living and Expressing.*

Music is a work of audial art manifested through song and musical instrument. Music was used as a media of ritual, ceremonial, and folk entertainment. Now music has become inseparable part of human life, especially after the development of technology.

Technology developments allow humans to enjoy music anywhere and anytime. Electronic devices and internet developments allows people to create, record, process, and distribute musical works world widely. This makes the live music performances more special than the recorded ones.

But in the other hand, due technological development as well, the way of enjoying live performances also changed. Picture on the side is a joke that was launched by 9GAG about the concert music lovers nowadays. The trend of social media that focuses on "share every event that we experience in the virtual world" makes music concerts fans are more focused on perpetuating what they see to be distributed to others. It is considered be an irony, because the excess of performances live music is when all our senses enjoying the atmosphere created by the music itself.



The role of architecture in live music performances so far are as a place and sound propagation and/or reflection medium. This Tokyo Music Center design concept was come from the idea of "what if the space is not only has a function as a place of musical activities, but also as a subject who can 'enjoy' music and 'express themselves'. With the help of technology, space supposed to be able to offer an interactive experience to users just like dynamic music itself.

Synesthesia Approach as the basic concept puts the building as a synesthete, a subject that has synesthesia ability. Synesthesia, or commonly referred as Unity of the Senses, is a neurological condition when a person receives a stimulation on one sense, he will feel another experience on the other unstimulated sense. In this design context, Tokyo Music Center has musical-spatial synesthesia. The building 'heard' a piece of music with a sound sensor system, then express it into a spatial experience in the auditorium automatically.

Responding the contexts of dynamic Harajuku culture and music arts, Tokyo Music Center design concept combines musical performance with amusement for audiences which is manifested in the Audience Moving Chamber with Sound Detector and Magnetic Levitation technologies. Amusement for musicians embodied in the floating music performance dome stage with Zero Gravity Em-Drive technology. PThe fusion of the technologies provide dynamic 360-degree viewpoints from audiences to music performances.

This project located in Harajuku, known as the center of Youth and Modern Culture. Located on the intersection of Takeshita street and Meiji street, the most popular tourist destination on Harajuku, the location is really strategic to be developed with an experimental approach.

The design should respond to the needs of large capacity in a limited area. Limited land area of 4023 m² with a capacity of 2106 seats auditorium solved by transforming horizontal conventional music auditorium standard into vertical and multidirectional space. With the help of kinetic technology and metabolism architecture, particularly synesthesia approach, the issue of limited space can be overcome.

ISSUES

General Issues

How synesthesia approach in architecture become Harajuku musical expression media, as well as making technology as a tool for establishing experimental expression of Japanese art and culture to the world.

Special Issues

- How to design Music Center on limited land with a large capacity?
- How to apply of technologies as a tool in creating space expressions and experience on the design?
- How Synesthesia approach became the basis in designing and its implications to the building and its users?

PURPOSES AND GOALS

Purposes

Designing Music Center with synesthesia approach which can express human artwork into kinetic-spatial expression as a musical-spatial experience.

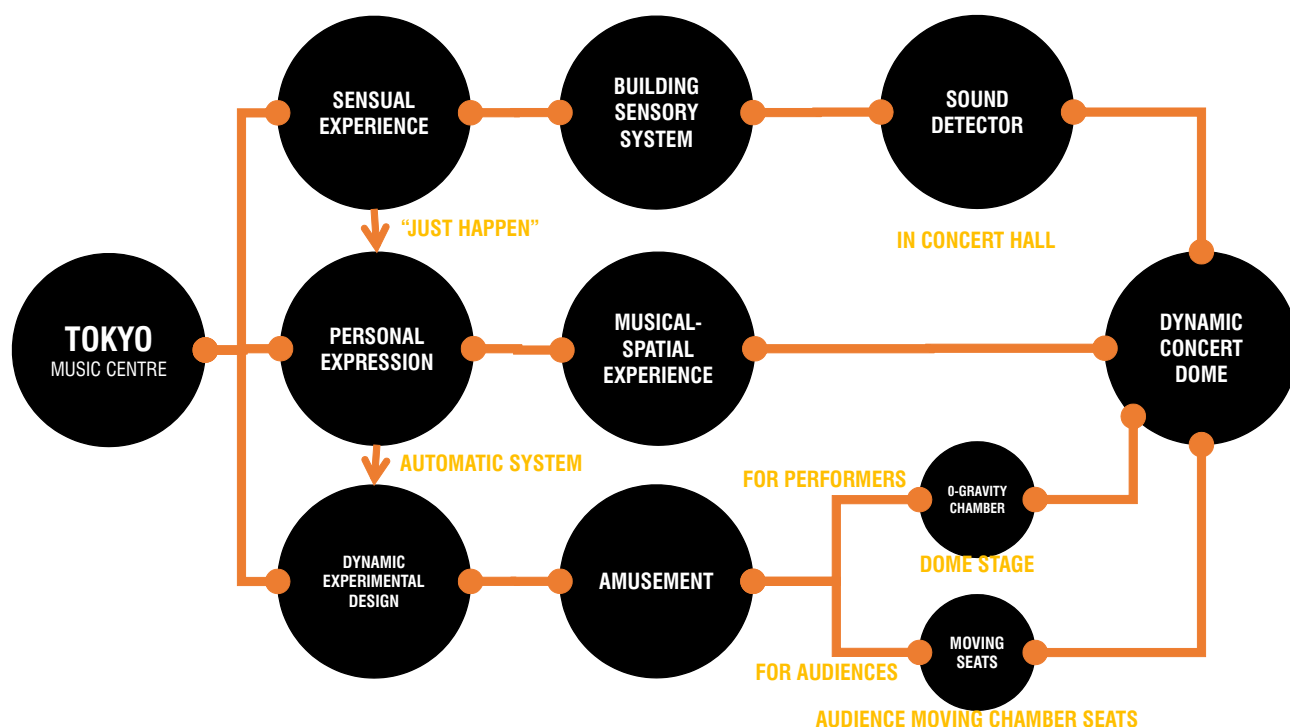
Goals

- Designing Music Center on limited land with a large capacity
- Applying building technologies as a tool to create space expressions and experience on the design.
- Designing Synesthesia approach became the basis in designing and its implications to the building and its users

DESIGN SCOPE

Scope of design consist of two aspects, meso and micro. Meso aspects is the design adaptation to the Harajuku urban context. While micro context of the design is synesthesia approach which is manifested in the application of technology in the building.

PROBLEM SOLVING MAP



Tokyo Music Centre design responds three aspects: Sensual Experience, Personal Expression, and Dynamic Experimental Design. Synesthesia Design Approach positioned the building as a Synesthete by equipped the building with Sensor System: Sound Detector.

A s Synesthete, the building also has personal expression to what it hears. In this context, the building express it into dynamic moving space.

The dynamic and experimental culture of Harajuku implemented on the design by giving 'amusement' for audiences and performers. musement for audiences which is manifested in the Audience Moving Chamber with Sound Detector and Magnetic Levitation technologies. Amusement for musicians embodied in the floating music performance dome stage with Zero Gravity Em-Drive technology. PThe fusion of the technologies provide dynamic 360-degree viewpoints from audiences to music performances.

The Three Aspect of Design Focus manifested in the design as an actualization of the dynamic Harajuku culture and music art.

DESIGN
LOCATION &
SITE
STUDY

TOKYO: *The Face of The Country*

Tokyo is the capital of Japan and considered as the most populous metropolis in the world. Tokyo is one of the 47 prefectures in Japan, and consists of 23 districts and several towns and villages in the west of central Tokyo.

Before the 1868 Tokyo known as Edo. Since 16th century, Edo was the political center of Japan where Tokugawa Ieyasu established his feudal government there. For several decades later, Edo became densely populated city. Then after the Meiji Restoration in 1868, the royal and government center moved from Kyoto to Edo, which was renamed Tokyo (Eastern Capital).

Besides being the center of government, Tokyo also became the face Japanese culture, where the modern culture develops dynamically in the midst of preserved traditional culture. Because of the uniqueness of Japanese culture in Tokyo, the city has become the most popular tourist destination in Japan. Tokyo not only offers traditional culture tours, but also shopping, and other modern entertainment.



According to *Nature and Principles of Tokyo Visions for Art and Culture*, Tokyo is a city with the cultural diversity, where traditional meets modern, east meet west, which makes Tokyo developed uniquely without forgetting the spirit of the Japanese warrior. Tokyo puts arts and culture as Urban Tool that makes the city continues to grow into a dynamic city and mature.

Tokyo Games in 2020 is an event for the city to promote arts and culture internationally. Through the event, the next vision is to introduce Tokyo as World Class Cultural City with all its uniqueness.

Harajuku, Shibuya: *Center of Young and Modern Culture*

HARAJUKU is the area around Harajuku Station on the Yamanote Line, Shibuya District, Tokyo. Shibuya district itself is a Western Tokyo region known for its Youth Fashion and Culture, where the trend of modern Japanese fashion and entertainment born in the each pedestrian streets of Shibuya district. Shibuya is also a center of entertainment, shopping, dining and nightclubs. According to japan-guide.com, one of the most famous and become 4th ranked of 74 tourist destinations in Tokyo is Harajuku.

Harajuku is the birthplace of Harajuku Culture, the modern culture that started since the end of World War II in Japan, where the youth of Japan began to recognize the Western culture from American soldiers who lived in Japan and began to experiment with their looks as a form of their self-expression. Harajuku Style appears to be highly personal, unique and experimental. Japanese teens freely express themselves with their appearance and gathered in the Harajuku area, especially in Takeshita Street.

There are some general streams on Harajuku Style:

VISUAL KEI is an extreme gothic style, full of details, bold make up and hairdo, and use extremes fashion items, like Victoria gown for men, etc. This style commonly used as band style concept and rock musicians, so that there are many Visual Kei Band from Japan like: The GazettE, Alice Nine, X Japan, etc. Just like its name, this style focus on showing its visual images and dramatic costumes to attract attention. Visual Kei began to emerge when Japan experienced major changes after World War II, which some 'wasted' community expressed their depressed through fashion. Much of them was men wearing woman clothes and make-up, and also act as a lady. Through their appearances they express politics satire to psychological pressure.

LOLLITA is a style influenced by Victorian and Baroque fashion style. Wearing lace dresses, bows, and porcelain doll liked hairdo.

DECORA & KAWAII are the styles focus on childish and cute side on its appearances. Came from 'decoration', this style uses bright colors, bows, laces, accessories, or even big dolls on it. In Japanese 'kawaii' means cute. So that this style want to show the childish side and cuteness by the outfits.

GYARU derived from 'Gal', is a childish and girly style just like typical American girls that have been adapted to experimental Harajuku style. Easily recognized by extreme tanned skin. bold make-up with white eye shadow, facial gems, bright colored outfits, nail arts, and accessories.

GANGURO almost the same like Gyaru, but uses more branded accessories and fashion items to show of wealth.

COSPLAY derived from costume play, is a way to dress like anime, manga, or video game characters. Cosplayer would also immitates the attitudes and behavior of the character they performed. The pictures beside show a man cosplayed as Cloud Strife, a character from well-known Video Game Final Fantasy VII. His appearance pay attention on costumes details of the real character from the game. Not only the costume, cosplayer would also immitates the make up and hairdo as similar as possible with the character. The last picture shows a cosplayer girl make up details from female Titan character of Attack on Titan anime version.



Visual Kei. Source: idbite.com
Lolita. Source: idbite.com
Decora & Kawaii. Source: Travel Japan Channel
Gyaru. Source: idbite.com
Ganguro. Source: idbite.com
Cloud Strife Cosplay. Source: idbite.com
Female Titan Cosplay. Source: idbite.com



Besides Harajuku Cultures activities of the youngsters, this area also provide another tourist destinations. Besides Takeshita streets and Omotesando that filled by stores, restaurants and cafe, there are so many malls like: Omotesando Hills, LaForet, Tokyu Plaza, Daiso, Oriental Bazaar, Kiddy Land, Louis Vuitton, dsb. The modern culture that grow side by side with the preserved traditional culture showed by the existence of Meiji Shrine and Togo Shrine, where the Togo shrine itself is located near Takeshita Street, the center of youngsters of Harajuku culture gather.

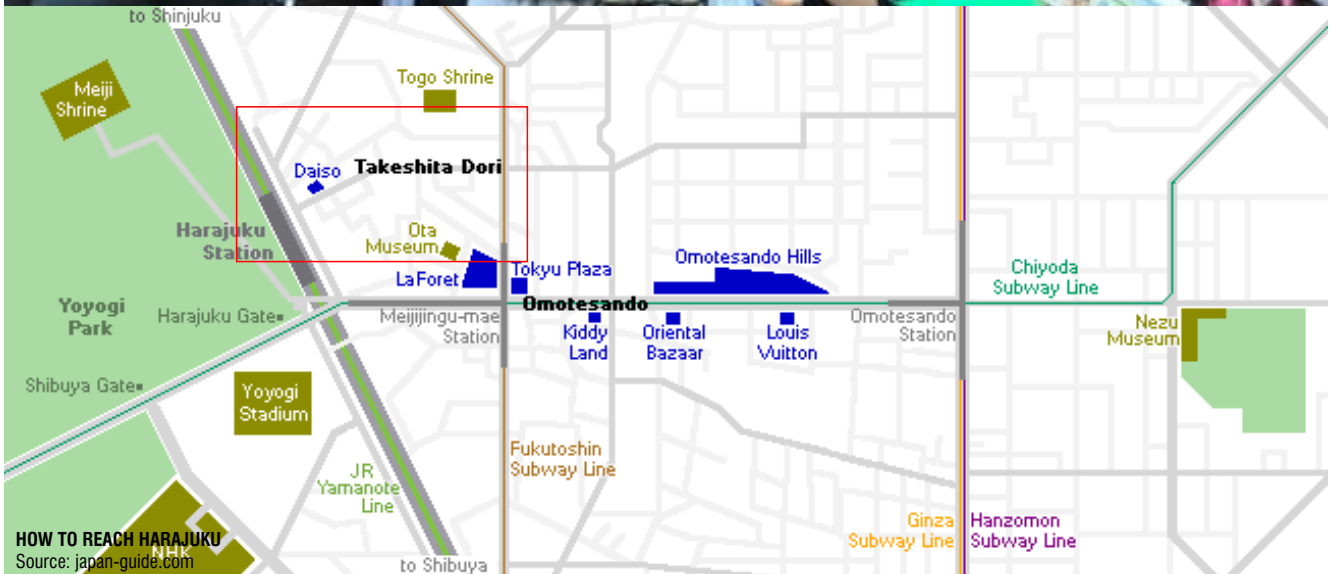
We can find culture and education tourism in Nezu museum that shows Eastern Asia arts; Ota Museum of Art that exhibits Ota Seizo's Ukiyo-e paintings; and also NHK Studio Park that offers broadcasting education tours.

In an architectural standpoint and area planning, Harajuku is not really dense. Traditional and modern characteristics showed by the buildings there, but there are much public green area on Harajuku Kenzo Tange's Yoyogi Stadium surrounded by Yoyogi Park, the largest park in Tokyo consist by pools, picnic areas, sport area and other outdoor activities space.

The open green space will also found near Yogo Shrine and Takeshita Street which is the site of Tokyo Music Centre project.



Takeshita Street
Source: japancultureview.japan-shop.com



HOW TO REACH HARAJUKU
Source: japan-guide.com

Location and Site: Takeshita Street. Meiji Street/305

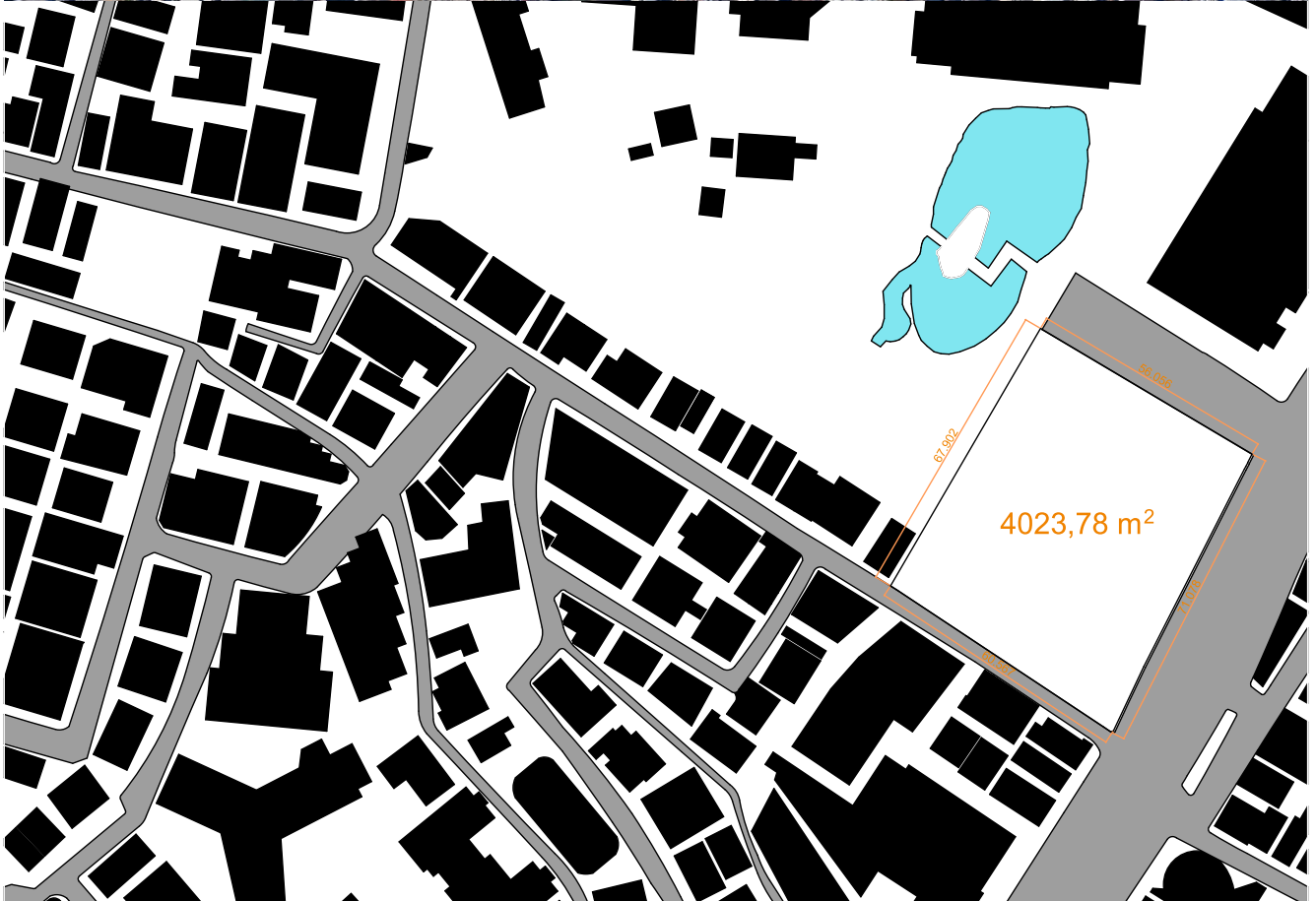
Tokyo Music Centre Project site located in Harajuku, Shibuya district, Tokyo, on the intersection of Takeshita Street and Meiji Street/305. Takeshita Street is a 400 meters long pedestrian street in front of Harajuku station, connected the street in front of the station with Meiji Street. Takeshita Street is the centre of youth activities in Harajuku, especially on the weekend. On the other day, this pedestrian street also filled by tourists. Meiji street is a main road filled by bigger malls like Omotesando.



Street View on Site. Source: ac-ca.org (2015)

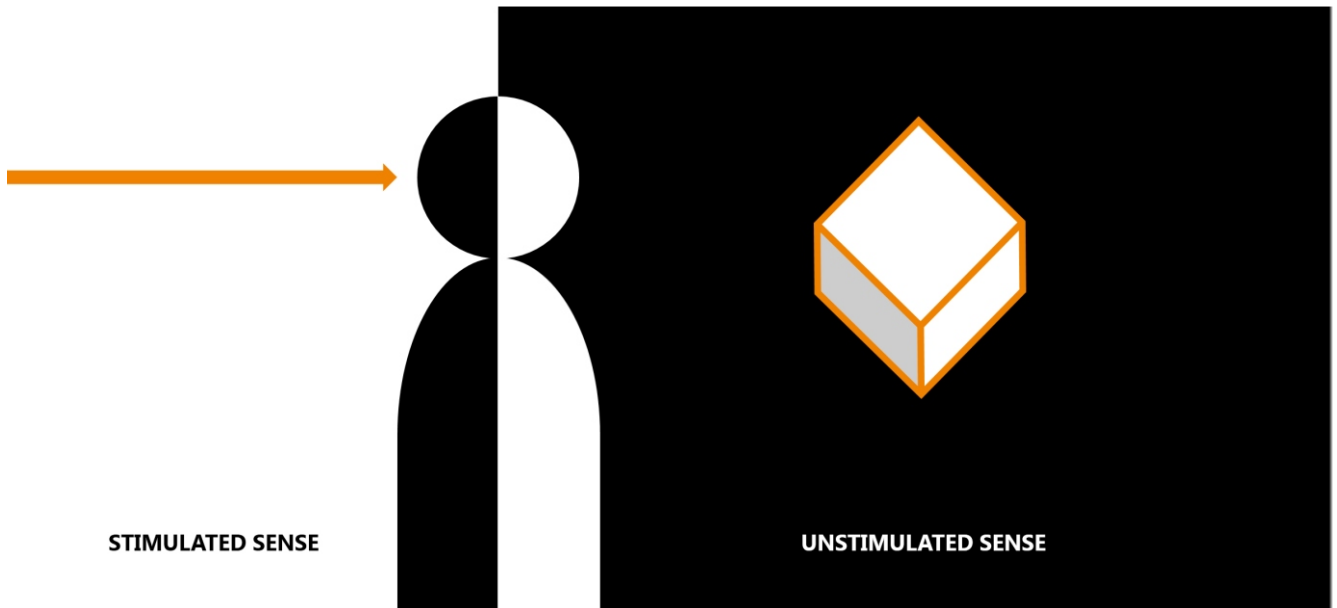
Site located on the northern side of Takeshita street and on the southern side of Togo Shrine entrance from Meiji street. Tehsite is a brown area side by side with green area around Togo Shrine. This location can be accessed by foot from Harajuku station, by walking down Takeshita pedestrian street. Or by bus where the bus stopping is in the eastern side of the site.





4023,78 m² wide with 70 meters long of outer side face Maiji street and 60 meters face Takeshita street on the south. The northern side is 56 meters long entrance pedestrian of Togo Shrine from Maiji Street. There's quite wide open green space on the west side of the site.

**DES
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Synesthesia. Source: Susiani (2015)

Synesthetic Perception: The Union of Human Senses

Synesthesia is a neurological condition which stimulation of one sensory or cognitive pathway leads to automatic-involuntary experiences in a second sensory or cognitive pathway. For example, is the case of grapheme-color synesthesia, a person sees letter Pas Yellow color. The Letter P is on the sensory level, or as a stimulant. Yellow color as an experience that just show up automatically. This would apply otherwise on the same person, that is if the person sees yellow color then he read the letter P automatically.

There is no certain way to diagnose Synesthesia ability on a person. Richard Cytowic, MD formulates standards that could serve as guidelines to determine a person whether has synesthesia or not:

Involuntary. The experience just somehow happen, not actively considered in the brain.

Projected. The image or experience on secondary perception terproyeksikanis projected outside the body, not in mind.

Always Same Everytime. The perception that come up will always the same. For example letter P is yellow, and yellow is letter P.

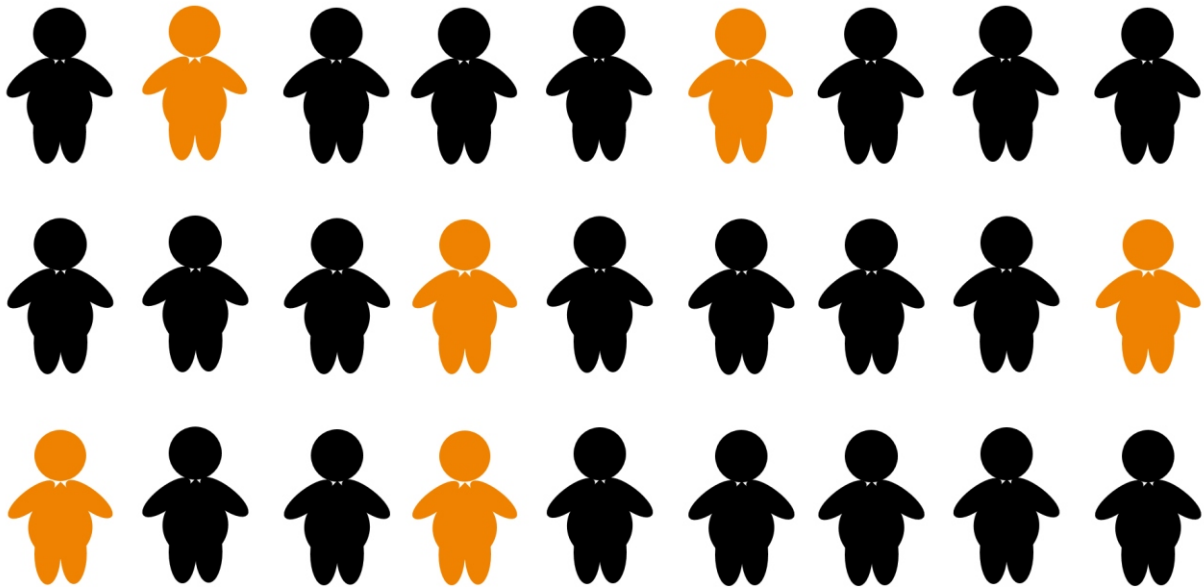
Generic. The perception receives is general, not something complex. For example, when a person hears Messiaen's music piece he'll experience some squares moving in line projected outside his body, not a complex picture with much details.

Memorable. It involves more than one senses, so the memory that come from the stimulation will last longer. The memory from the second sensory or the unstimulated one would stronger than the stimulated one.

Emotional. Sensual perception can affects emotion, so the effect that come out from the multiple experience can also bring certain emotions.



Identifying Synesthesia. Source: OpenMind.com, schema by Susiani (2015)



Who Has Synesthesia.

Source: TedEd Youtube.com, Schema by Susiani (2015)

In addition, Cytowic also conducted a survey to formulate anyone who tend to have the synesthesia:

Women. Most of the Synesthete in America is woman.

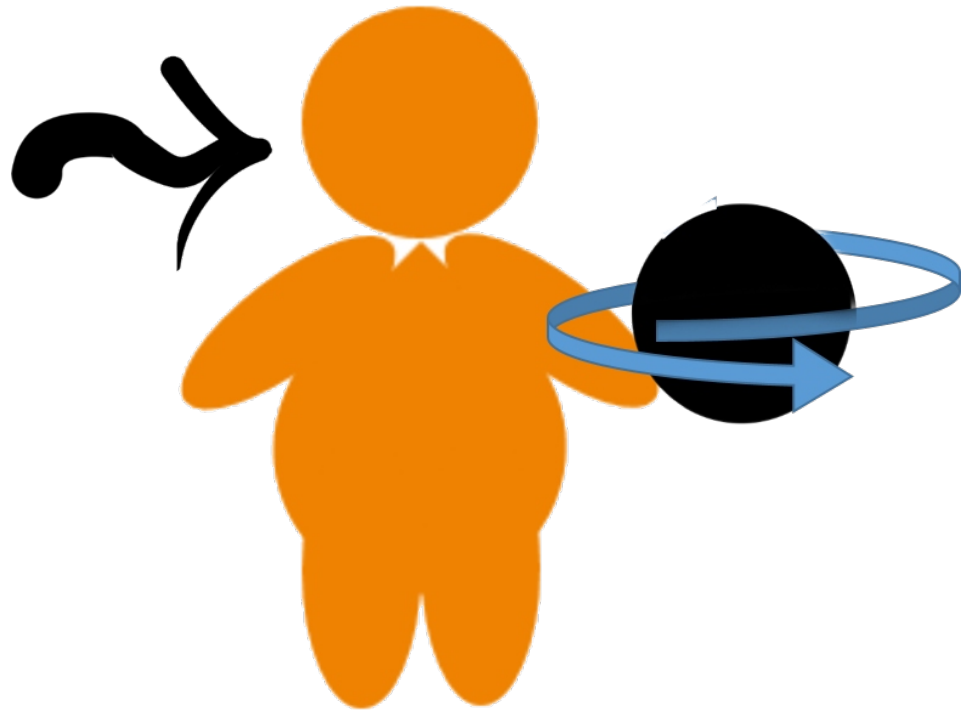
Left-handed, in general population.

Neurologically Normal, does not have the shortcomings of nerve. The possibility of intelligence capability above average.

In one family, the possibility of inherited via the X chromosome

The survey prove that Synesthesia is not a disease and can be inherited genetically. According to the scientists, this was caused by the connection between the sensory nervous system with other sensory nervous system. Neurons and synapsis that are 'supposed' to carry information in one sensory nervous system 'cross over' to other sensory nervous system.

However, Cytowic further stated that the assumption is not correct. Actually the human sensory system does not work separately, but simultaneously work together. That's why actually every person is synesthete, but we are just unaware because we accustomed to separate the one and the other sensory system and too dominated by the visual.



In this project, Synesthesia approach puts the building as synesthete, which is as a subject that has the ability synesthesia.

In designing the Tokyo Music Center, the function x to y illustrated with musical to spatial. So the Music Center building 'hear' man-made musical work with sensor technology, and then express it automatically becomes kinetic-spatial experience, the Audience Moving Seats.

This idea was born from the perception of Japanese that sees anything as a living being.

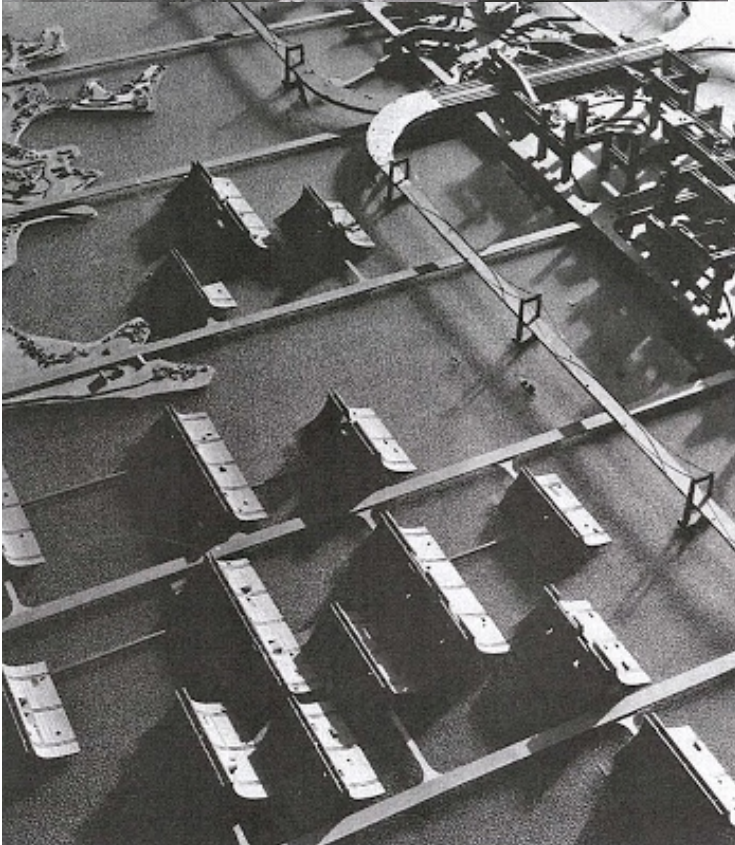
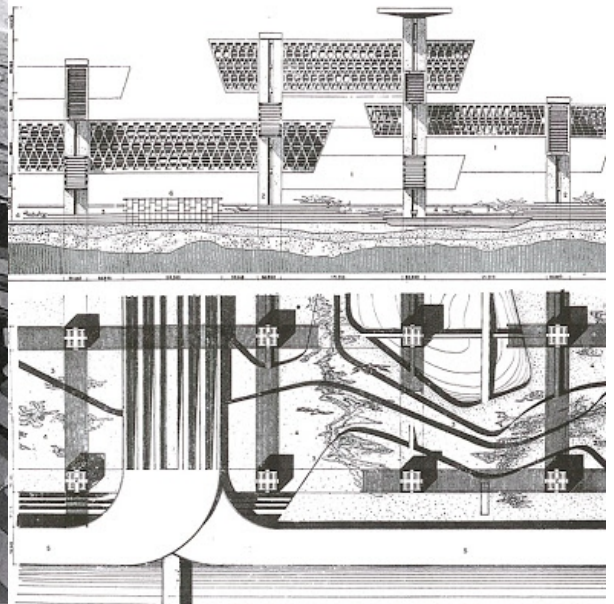
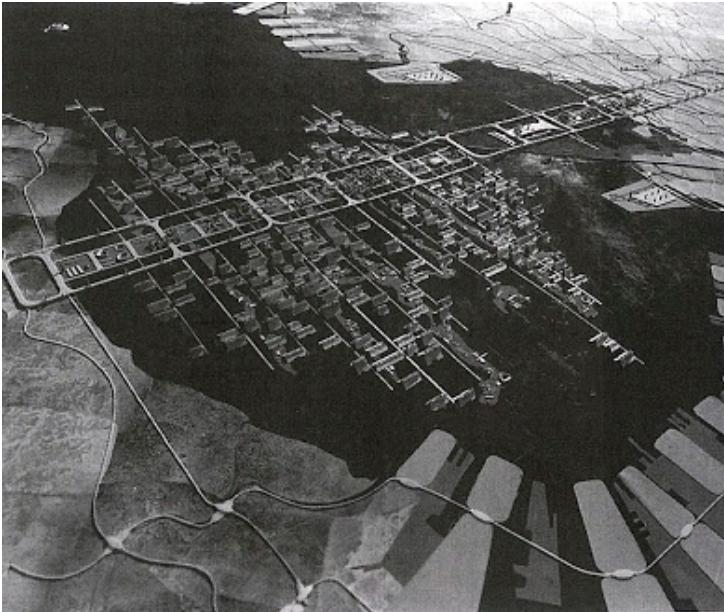


PLAN FOR TOKYO. KENZO TANGE
Source: architecturalmoleskine.blogspot.com

Metabolism Architecture: *Architecture as A Living Organism*

Metabolism Architecture is the idea to see Architecture as a living being. Taking the term of biology concepts, metabolism idea describes a work of architecture or town that has the ability like living beings that continue to grow, reproduce and transform in response to environmental conditions.

The principles commonly found in the metabolism architecture building is not static but dynamic. It's organic, always changing and growing. And the most important is adaptive to the surrounding environment and always considers the land expediency.



Metabolist Movement pioneered by Kenzo Tange in 1960 was later inspired a architectural paradigm shift development from Age of Machine into the Age of Life. Japanese architects at that time such as Kisho Kurokawa, Kikutake Kiyonori and Fumihiko Maki developed metabolic architecture in their works.

The work that started Metabolism Architecture known to the world is the City Planning Proposal of Tokyo by Kenzo Tange, such as floating on the water city that across Tokyo Bay to avoid pedestrians streets and vehicles.

PLAN FOR TOKYO. KENZO TANGE

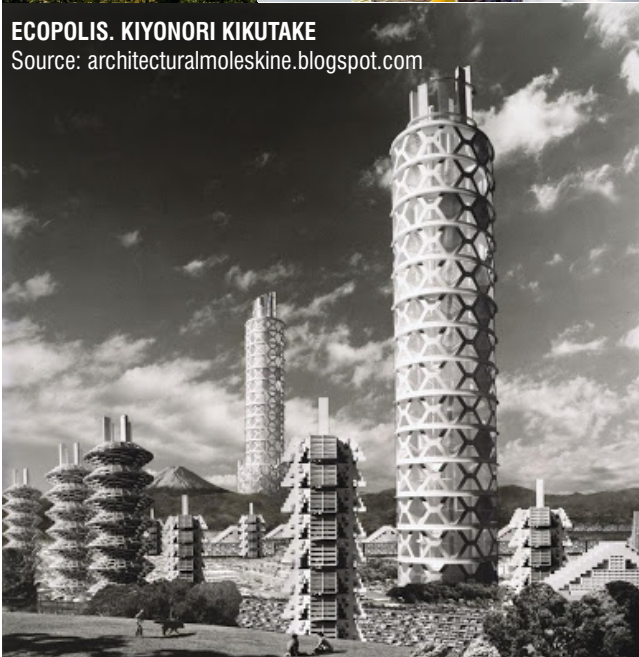
Source: architecturalmoleskine.blogspot.com



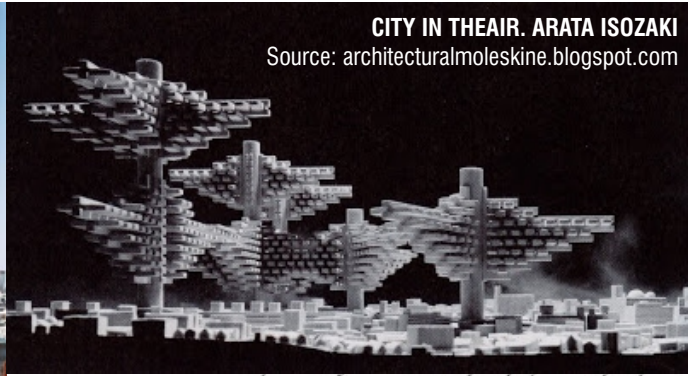
NAKAGIN CAPSULE TOWER. KISHO KUROKAWA
Source: architecturalmoleskine.blogspot.com



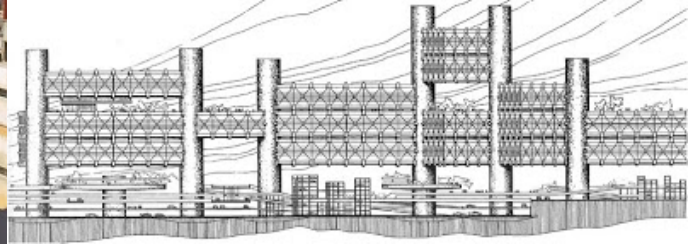
EXPO TOWER. KIYONORI KIKUTAKE
Source: architecturalmoleskine.blogspot.com



ECOPOLIS. KIYONORI KIKUTAKE
Source: architecturalmoleskine.blogspot.com



CITY IN THE AIR. ARATA ISOZAKI
Source: architecturalmoleskine.blogspot.com



Most of the metabolic architecture utilize the modules that are connected to the central core, mimicking cells way of life. One of the most known metabolic architecture development is Kisho Kurokawa's Nakagin Capsule Tower work in 1972, or better known as the capsule hotel, the hotel with module hotel rooms that is connected to a central core for circulation, electricity, water, etc.

Kiyonori Kikutake also designed the Expo Tower, the tower for a panoramic view with geodesic ball modules. Kikutake also uses Metabolism Architecture for his Ecopolis.

Arata Isozaki designed the residential rose high above the city in the form of modules that are connected with the mega columns

Metabolism Architecture is the way of the Japanese see the architecture, that the building is a dynamic living things and grow.

In this design, Synesthesia approach sees the building as living being who live and feel what is around it and express it actively. Metabolism Architecture support the basic concept of this design and as the precedent of land expediency in Japan.

Building Sensor System that is used for this Tokyo Music Centre project is Sound Detector.

Sound Detector

Sound detector is a sensor device to capture sound and transmit it into electrical signals. Sound detector has been used in architecture, such as safety locks, housing elements control through voice commands, etc.

Sound detector is quite simple, it needs a microphone or receiver to capture the sound. The captured sound is routed to an audio amplifier. The audio amplifier strengthens the raw signals received in order to be detected by a microcontroller. The microcontroller then translates sound into electrical signals in order to give commands to kinetic elements.



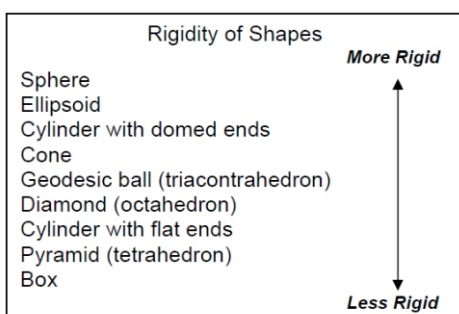
Bentuk silinder dengan ujung dome efektif dan hemat material karena bentuknya yang kuat
Source: gnbvalves.com

Zero-Gravity Dome: Vacuum Chamber and EmDrive, Musical Performance in 'Outer Space'

Vacuum Chamber created by humans as an imitation or simulation of being in aerospace. Nowadays Vacuum Chamber has been created with certain forms for the sake of design. According to Ken Harrison, Vice President Engineering of GNB Corporation who focuses on the production of vacuum chamber, the manufacture of large size and low cost vacuum chamber may be done by considering the following things:

Controlling Deflection

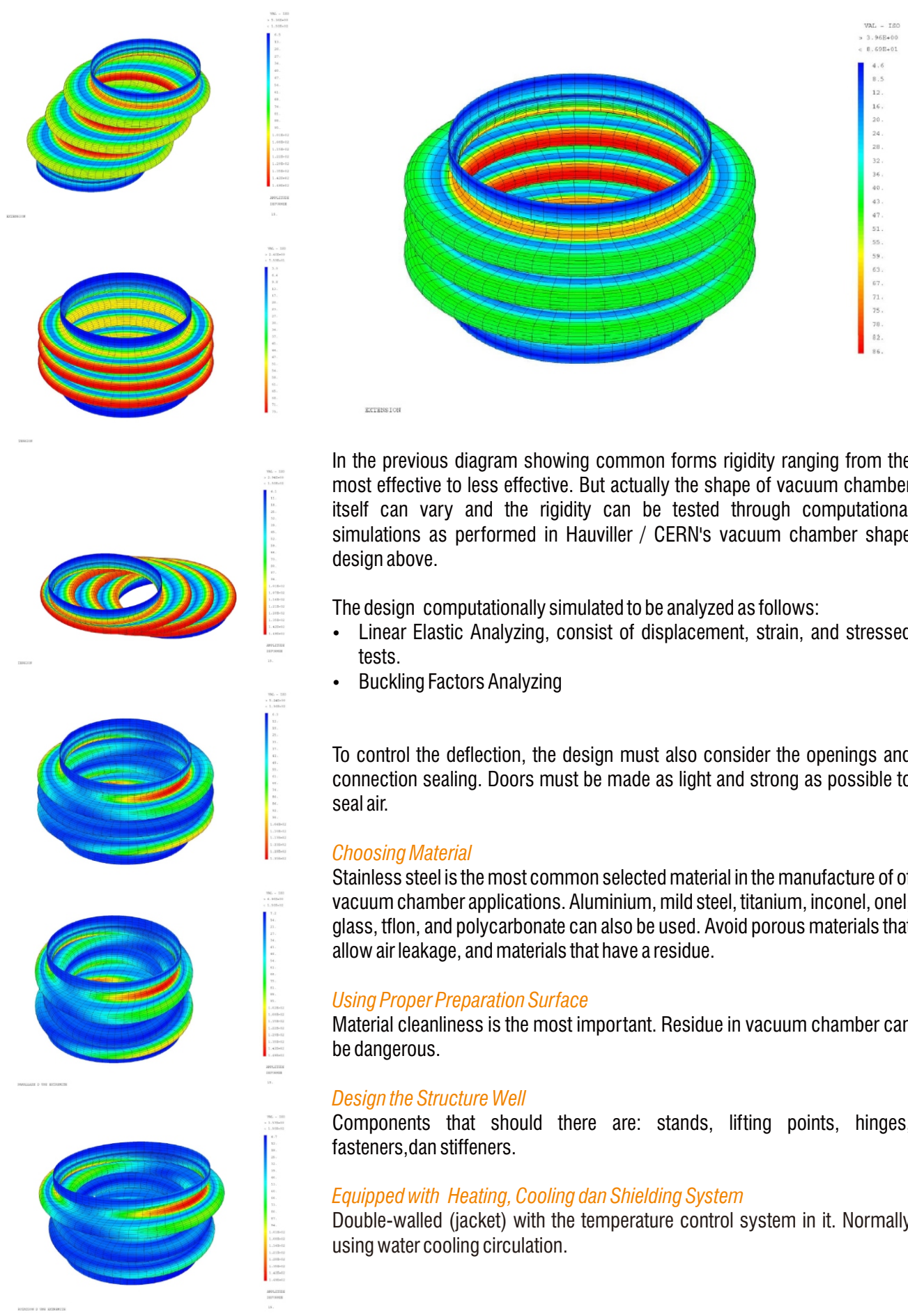
In the of vacuum chamber, the pressure should be kept. Forms of vacuum chamber should be able to face large pressure. Forms can be varied. Strong form would be easier, but the weak form (variable) can be assisted with a stiffener (structure).



Source: gnbvalves.com

Sphere or ball shape most effective in minimizing the use of materials and deflection. This form is also most effective and remove the air cleaner because it does not have a corner. But in terms of space, this form not optimal when applied with the other functions in it.

Another most effective forms is cylindrical with rounded edges as shown above because more material-efficient.



In the previous diagram showing common forms rigidity ranging from the most effective to less effective. But actually the shape of vacuum chamber itself can vary and the rigidity can be tested through computational simulations as performed in Hauviller / CERN's vacuum chamber shape design above.

The design computationally simulated to be analyzed as follows:

- Linear Elastic Analyzing, consist of displacement, strain, and stressed tests.
- Buckling Factors Analyzing

To control the deflection, the design must also consider the openings and connection sealing. Doors must be made as light and strong as possible to seal air.

Choosing Material

Stainless steel is the most common selected material in the manufacture of of vacuum chamber applications. Aluminium, mild steel, titanium, inconel, onel, glass, tflon, and polycarbonate can also be used. Avoid porous materials that allow air leakage, and materials that have a residue.

Using Proper Preparation Surface

Material cleanliness is the most important. Residue in vacuum chamber can be dangerous.

Design the Structure Well

Components that should there are: stands, lifting points, hinges, fasteners,dan stiffeners.

Equipped with Heating, Cooling dan Shielding System

Double-walled (jacket) with the temperature control system in it. Normally using water cooling circulation.

Gravity is a pulling force of the planet. On the surface of the Earth, normal gravity acceleration is $9,8 \text{ m/s}^2$, or commonly known as 1 g. Further from the Earth, smaller the acceleration. There's still gravity on 120 to 360 miles away from the Earth. The gravity value on 250 miles away from Earth surface is just 88.8%

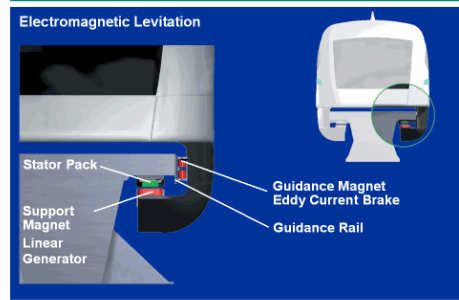
In the outer space, the 'fall' of an object is not 'falling down' from above, but move around the planet with the same velocity. It is called Parabolic Arc Vomit Comets. When two objects 'fall' with the same velocity, the thing would look like floating on the space. The spacecraft, astronaut and objects in it are moving with same *rate* so that the astronaut and the objects around him will seem floating. That occurrence called Micro-Gravity or *free fall* move that close to 0 gravity.

Zero-Gravity technology has been developed. The more modern, the more space simulation inventions that applied by humans. One that developed by NASA's NBL (Neutral Buoyancy Laboratory) is BCD (Buoyancy Compensating Device), a kind of astronaut clothing equipped with air outlet-inlet regulator to regulate buoyancy in water pool. BCD used as an aerospace simulation to NASA's spacemen candidates.

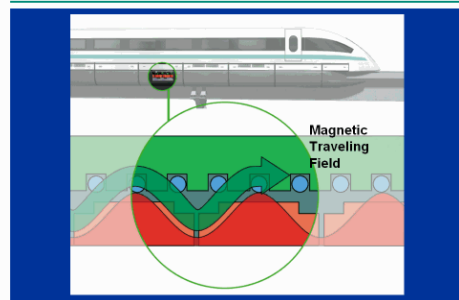
NASA also has anti-gravity research center in Brookpark, Ohio, a Drop Tower to test Micro-Gravity. Drop Tower is 100 and 500 feet depth Vacuum Shaft where the 330 kilograms test-object is dropped and calculated its travel time.

Besides NASA, Zero-Gravity technology was also developed by the Chinese Military since 2007. It is called EmDrive. EmDrive was invented by Roger Shawyer, an astronomer from England. EmDrive uses Microwave energy to make object floats. Em Drive is using electrical power and continue to develop up to now for Chinese Military and public interest.

System Components



Propulsion Principle



Source: TransRapid International



HSST-100L vehicle on elevated test track in Nagoya City

(Chubu HSST Development Corp.)

Magnetic Levitation: Audience Moving Seats

Magnetic Levitation technology is a transportation technology that is using electrical magnetic power to move train car on the magnetic rail. On Japan, MagLev can be found in Super Fast Train Shinkansen.

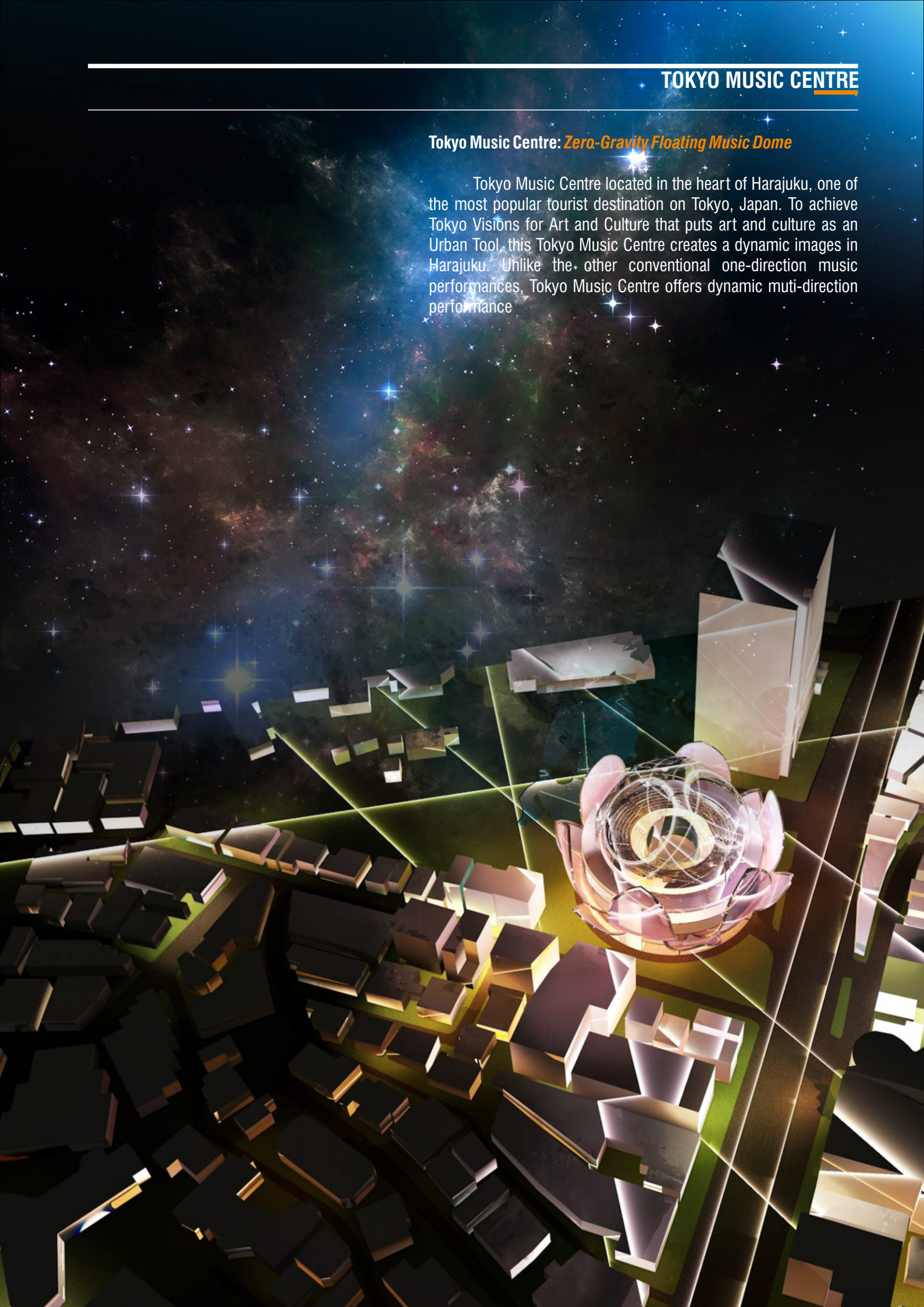
MagLev use Propulsion principles of magnet to lift and move weight to a direction on the magnetic track. Using electric power, this technology applied on Music Centre to move 2106 audiences on Audience Seat.

Tokyo Music Centre design project use actual and developing technologies. Sound-Detector will connected to Audience Moving Chamber that is moved by audial signal from musical instruments, while Zero-Gravity Dome stage with EmDrive technology will makes dynamic performance.

Tokyo
Music
Centre
ZERO-GRAVITY
FLOATING MUSIC DOME

Tokyo Music Centre: *Zero-Gravity Floating Music Dome*

Tokyo Music Centre located in the heart of Harajuku, one of the most popular tourist destination on Tokyo, Japan. To achieve Tokyo Visions for Art and Culture that puts art and culture as an Urban Tool, this Tokyo Music Centre creates a dynamic images in Harajuku. Unlike the other conventional one-direction music performances, Tokyo Music Centre offers dynamic multi-direction performance

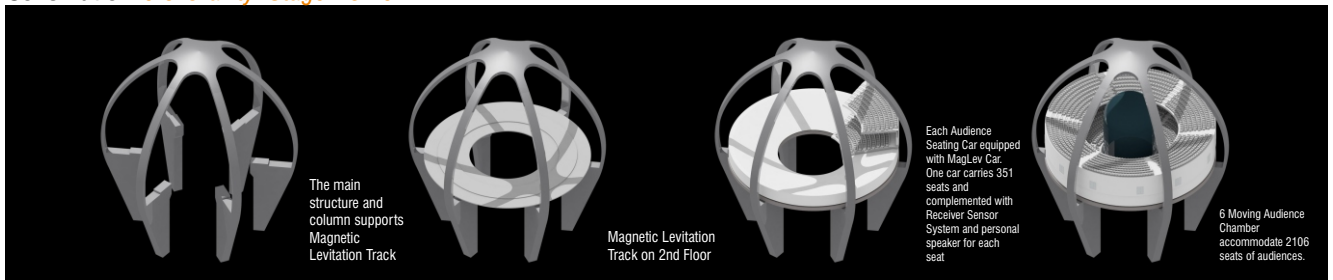




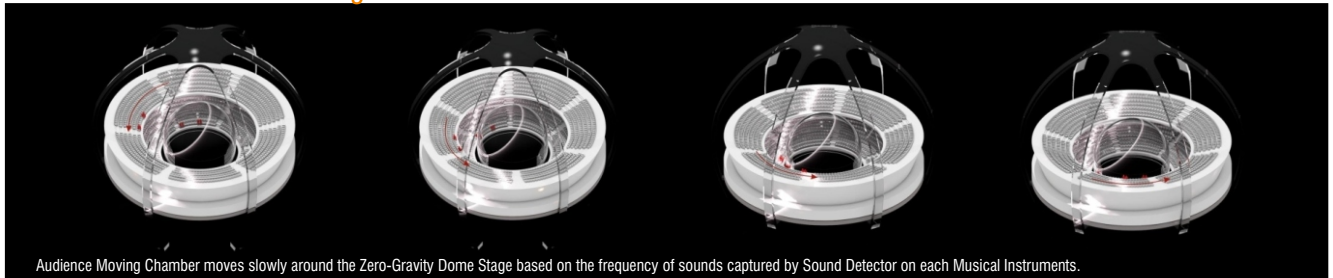
Zero-Gravity Dome Stage: Unlimited Stage Actions

With EmDrive technology, musicians will do floating performance in the Zero-Gravity Dome Stage. The capsule shaped dome decrease deflection and gives 360 degrees view from audiences. Glass and stainless frame materials reduce residues in the dome interior. The Dome equipped with Cooling System and Sensor System Room below it to support its functions.

Schematic: Zero-Gravity Stage Dome



Schematic: Audience Moving Chamber



Audience Moving Chamber: Music to Kinetic Synesthesia

Tokyo Music Center design concept using synesthesia approach with musical to spacial kinetic function, where the building hears the music performance from musical instruments through sensors and transmitting it into electrical messages. The message then stir Moving Audience Chamber around the Zero-Gravity Dome as a stage.

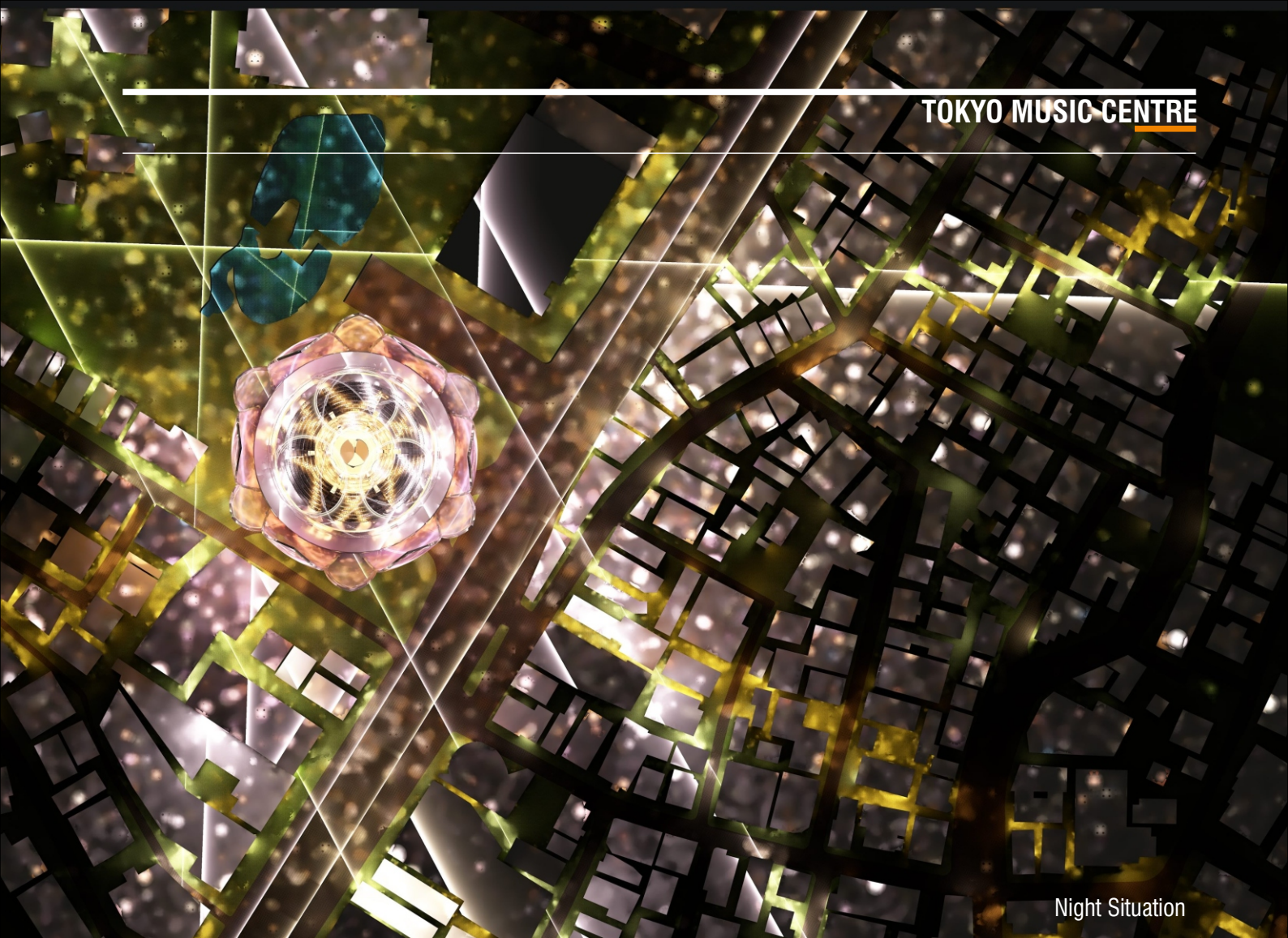
Audience Moving Chamber consists of six chambers with 351 seats on each chamber. Total 2106 seats will rotate slowly around the domestage with Magnetic Levitation technology.

Dynamic concept responds to limited land, so that design plays a role on viewpoints and disengage from gravity. Viewpoint and 360 degree space experience makes enjoying music performances can also be perceived by the other senses, not only by visual and audial senses.



Concert Hall are transparent allowing the play of light and laser to the outside of the building. Visitors can also enjoy the view of the sky and Tokyo City while enjoying the performance.

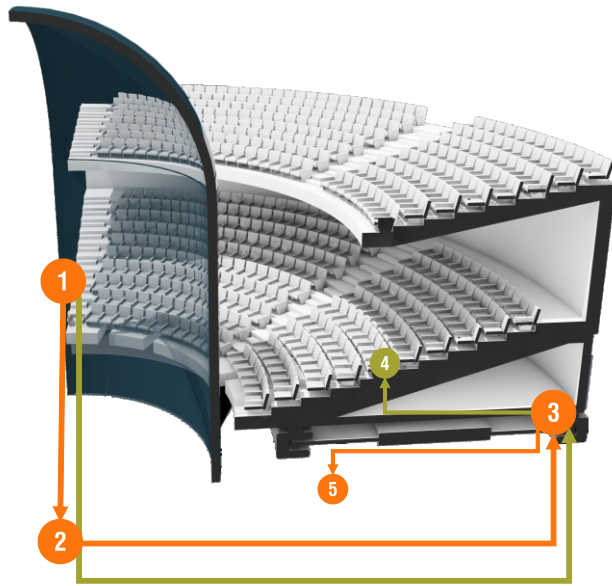
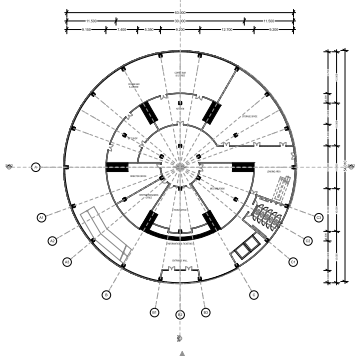
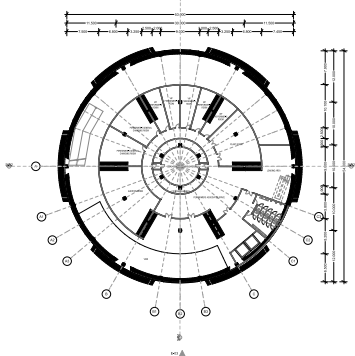
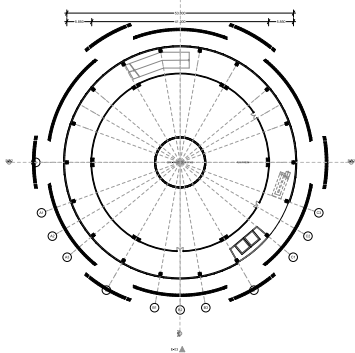
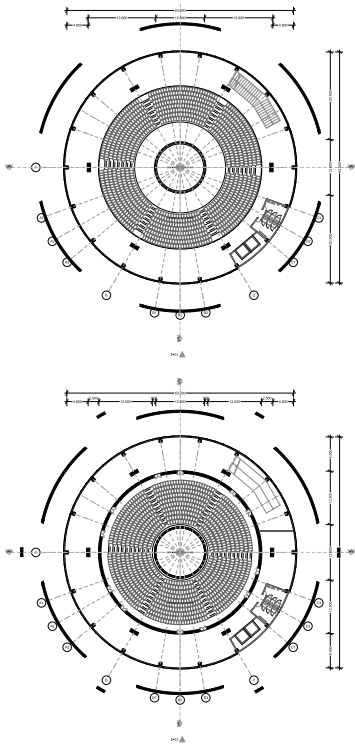
TOKYO MUSIC CENTRE



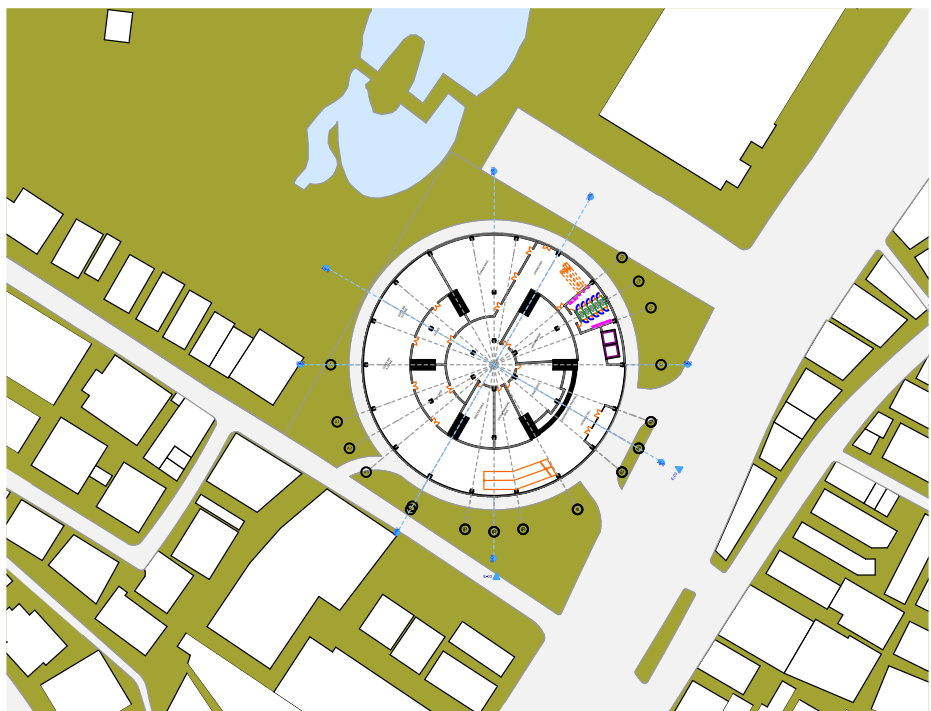
Night Situation



Daya Situation



- 1 Sound detectors captured audio signals from musical instrument.
- 2 Audio signal routed towards the transmission room to be translated into an electrical signal
- 3 Electrical signal is sent to the audience seating car
The sound of musical instruments forwarded to the audience seating car
- 4 The sound of musical instruments are distributed to each audience seat.
- 5 Electrical signal acts as a trigger to determine the direction and speed of Audience Moving Car rotation.



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