

IT PARK, COMILLA



BY

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ABSTRACT

The idea of IT Park speaks to a method towards technology, research and development. As data innovation has been apparent as the top need segment by concepts making move from agro to modern economy to data economy, most IT Parks are being established to give a scope of framework ,administrations to make a proficient workplace for advancement of IT, hardware, information transfers, business and services. The proposed IT Park at Comilla is conceived as an incorporated, ultra-present day techno township that would be intended to draw in a portion of the extensive transitional organizations and to serve the world-class business undertakings. The goal of this project is to make world-class leader on feature It information. So we tried to understand how does it work in other countries, what will be the benefit from this IT park and does it work through studies . By survey,we found the importance of building this IT park so we may facilitate the increasing number of IT graduates every year passing from comilla.The implication of this project would be to invent a perfect and workable environment which help to make expert innovators to give their idea for country development.

ACKNOWLEDGEMENTS

First I would like to thank Allah S.W.T for the blessing and opportunity that he provided for me to finish my final year project. I would also want to take a moment to remember my parents for bearing with me all this time with patience, tolerance and love.

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CHAPTER ONE
INTRODUCTION

1.1 INTRODUCTION

In this age of modern technologies Bangladesh being a recent developing country, is trying to develop more in the sector of information and technology. Bangladesh Hi-Tech Park authority is hard at work developing the appropriate infrastructure and skilled manpower needed to facilitate a world class business environment for high industrial growth and new business development in the IT sector. At present, Bangladesh has a sizeable unemployed and educated youth group. For Creating Employment opportunities in IT sector, the necessity of developing infrastructure is needed which will eventually will establish an environment for innovative companies and increase foreign and local investments. This IT industry will be the topmost revenue earner for the country in the coming days. So, there should be no doubt about the necessity of this project, as it benefits the part of the country which will help our country to flourish the economic growth.

1.2 PROJECT BRIEF

Hi-Tech Park

Location: Lalmai, Comilla

Comilla Sadar South, DattapurMouja

Site area: 10.68 acres

1.3.1 THE CLIENT

The government decided to develop Hi-Tech Park, IT training center and incubation center in Lalmai, Comilla. The Ministry of Science and Information & Communication Technology (ICT) is working with this project. Bangladesh Hi-Tech Park authority is working hard to develop this project.

1.3.2 THE SPONSERS

Ministry of Science and Information & Communication Technology

Government of the People's Republic of Bangladesh

Foreign NGO's

1.3.3 IT PARK PROGRAMS

The proposed Hi-Tech Park have the programs that can meet the demand of global Hi-Tech manpower of IT Industry. This park is started with these following facilities-

I. Multi-tenant Building

II. Dormitory Building

III. Electromechanical Facilities

IV. Canteen & Amphitheater Building

V. Technology and Business Incubation center

VI. Specialized labs of Universities and Training centers

VII. Training Centre

1.4 Project Background

Bangladesh is one of those few potential nations that smartly harness its strengths while utilizing information technology to leap into the digital age and go on to become one of the strongest economies of the world. Bangladesh is progressing at an unprecedented pace to become the next IT destination. Bangladesh has taken massive initiatives over the last few years for the development of ICT infrastructure by engaging the mass people including private sector and foreign investment. The preliminary theme for WCIT-2021 is “Fulfilling the Promise of the Digital Age: Meet Digital Bangladesh” as the global IT/ITES Service Location. (Rahman, L. (2015) Digital Bangladesh: Dreams and reality, The Daily Star, (part 1))

The synergy of the Hi-Tech Park is quality human resources, recent development of infrastructure, Government policy, youth engagement, and mass awareness for digitalized lifestyle has made an economic opportunity for the desired investments. Government has taken initiative to build 12 Hi-Tech parks in 12 districts of the country. Comilla is one of them. The site is located in Sadar South, Dattapur Mouja. This part is situated on the countryside of Comilla district. This Hi-Tech Park will be a self-reliant and sustainable part of the district. It will be like a city within a city. According to the census conducted in 2011, Average literacy 53.3%; number of male 49.37%, female 42.64% population. Main sources of income of Comilla district is Agriculture 47.31%, non-agricultural laborer 2.54%, industry 1.25%, commerce 15.78%, transport and communication 4.05%, service 11.80%, construction 1.48%, religious service 0.35%, rent and remittance 4.83% and others 10.61%. Employment rate is 58% of which household worker are 31 %. (Bureau of Statistics, 2011)

Comilla has a lot of heritage and historical sites from the Buddhist period to till date. Moreover, the Khadi cloth, varied sweetmeats and other crafts has made Comilla a notable district among other big cities of Bangladesh. While the demand of IT enabled services is increasing all over the world, even in Bangladesh, however Comilla having potential is still lacking in this sector. The government of Bangladesh emphasizes the importance of a comprehensive Master in order to achieve a notable development in the

ICT sector. If the notable factors of Comilla are utilized under this sector, then it can initiate regional development through synergistic linkages between startup industries and prominent tourism forces.

1.5 PROJECT RATIONALE

This project has a significance to develop a better business zones and IT industries in Comilla, Bangladesh. This will not only create a business district but also boom economic and technological aspects in Comilla.

1.6.1 SIGNIFICANCE OF THE PROJECT IN NATIONAL CONTEXT

This development of IT industries will benefit in the economic growth of Bangladesh. It will create compatible market in international market and it can improve our IT knowledge which will help in creating new job opportunities in the locality, which will eventually play role in decentralization of job sector in terms of national level. Moreover, this will help us to establish a brighter future.

1.6.2 SIGNIFICANCE OF THE PROJECT IN LOCAL CONTEXT

Development of IT Park will have great impact on Comilla's social life and economy. Besides it will create a great and consistent job opportunities for local people. It will impact on their environment and life style.

1.7 Project Objectives

The main objective is to create an international standard business and IT zone. To contribute in Comilla's economy through these amenities. To facilitate the young

generation of this area with IT knowledge and technology based training should be the major concern of this project. Therefore, to build up an entire IT hub which provides all kind of facilities to run this business and IT sector.

1.8 Scope and Limitation

Scope

This is a new concept in terms of Bangladesh as well as in terms of technological aspects of the country. As a result this will have Influence in terms of economic growth.

Limitations

To emphasize Lack of similar kind of project in Bangladesh for which majority of people in this area are not aware of the kinds of facilities of IT-Park can provide.

1.9 Challenges

Significantly it is hard to maintain international standards and guidelines as this is a new kind of project in the context of Bangladesh. Furthermore, huge architectural designs within the topography of Comilla are a new challenge. To understand the perspective of the users and their age group should be a concern.

CHAPTER TWO
LITERATURE REVIEW

2.1 GENERAL DISCUSSION ABOUT IT-PARK

2.2.1 Definition of IT-Park

In modern day world, the term Hi Tech is referred as an innovation towards technology. This also signifies the highest advancement in technology. Besides, Information technology (IT) is the use of any computers, storage, networking and other physical devices, infrastructure and processes to create, process, store, secure and exchange all forms of electronic data. In addition, IT-Park can be addressed as an umbrella term where people deal with new IT innovations, advanced technologies and revolutionary infrastructure to build a better tomorrow. (Mayer(2001)JOURNAL: High Tech Specialization: A Comparison of High Technology Centers)

2.2.2BACKGROUND OF TECHNOLOGY

To write about the background of technology comes the history of the invention of tools and techniques. Human evolution is directly interrelated with the invention of tools and techniques. Technology can be referred as a method of ranging from as simple as language and handmade tools to the complex genetic engineering and information technology that has appeared since the early 1980s. "The term technology comes from the Greek word techne, meaning art and craft, and the word logos, meaning word and speech. It was first used to describe applied arts, but it is now used to describe

Advancements and changes which affect the environment around us".(Cortright and Mayer,2001, JOURNAL High Tech Specialization: A Comparison of High Technology Centers)

To create new things, new knowledge has enabled people. And these are conversely; many scientific activities are made possible by technologies which contributes humans

in traveling to places they could not previously reach, and by scientific instruments by which we study nature in more detail than our natural senses allow.

According to UNESCO, we first began speaking of the use of computer in education back in the 1970's, when the level of technology made it possible to consider such ideas. By the late 70's, the size and price reductions of computer technologies made it feasible to begin bring them into schools. (UNESCO, 2005)

Over the next decade or so, computers were followed by printers, floppy disk drives, scanners and the first digital cameras. That was the first time we began to use the term IT, or Information Technology, to describe computers and the various peripheral devices they used. By the late 1980's, computer networks were also being installed in schools. This paved the way for the internet and the World Wide Web to make their way into educational environments. As the popularity of websites, web-based search engines, and email rose, a new term was coined: ICT. ICT, or Information and Communication Technology, refers to the many forms of technology which makes it possible for people to send and receive information with others all over the world. Today, the air around us is literally full of thousands of pieces of data. ICT is the means by which we can transmit, detect access and reply to this information. It consists of such technologies as television, radio, telephone (both fixed line and mobile phones), computer, satellite systems and network hardware and software; as well as the equipment and services associated with these technologies, such as videoconferencing, e-mail and blogs.

2.2.3ROLE OF TECHNOLOGY IN CONTEMPORARY WORLD

Information and Communication Technologies (ICTs) play sequentially rising role in the way we communicate with the outer world, take lessons and live. The tuff motto is to effectively lessen the harmful effects of these technologies in such a way that it becomes able to serve the interests of learners and the larger learning community. UNESCO primarily declared that ICTs can pay subscription to universal access to education, learning equality, the confirmation in the policy of quality learning and

teaching, teachers on field skill development as well as improve education system, governance and administration provided the right mix of rules, technologies and capacities are in place. ICT allows for greater access to information and communication, leading to sustainable development. Thus, in developing nations, ICT has the potential to close the gap between the economic gap between technological “have” and “have not” areas. “Developments in information technology and globalized media mean that the most powerful military in the history of the world can lose a war, not on the battlefield of dust and blood, but on the battlefield of world opinion.”

2.2.4 CONCEPT OF HI TECH PARK

The science or technology park concept arose in USA in early 1950's when parks were being developed to accommodate high technology industry. Most of these parks happened due to the initiatives from various universities. On recent days, because of the success of the “Silicon Valley” model, more hi tech parks are being established all over the world. Furthermore, public and private agencies attempt to promote the Hi-tech route to economic development. (Clarke, 1985)

2.2.5 HI TECH PARK AND BANGLADESH

Bangladesh being a recent developed country is home to

As a developing nation Bangladesh relies heavily on imported technology, and within the sectors of education, economy and technology, lags behind other nations. (Academic journals ICT). The sustainable development of Bangladesh will depend upon the employment of science and technology, which will lead to the investment in ICT to promote economic and political sustainability. To date, ICT is entering into Bangladesh but is still in its primary stages of integration and adoption into the existing technology infrastructure, and although ICT could potentially improve the educational systems that already exist in Bangladesh, due to certain shortcomings is having difficulty reaping the

benefits. According to the Technology Achievement Index (TAI) mandated by the UNDP Human Development Report in 2001, for Bangladesh, "the achievement value for creation of technology and diffusion of recent innovations is negligible in comparison to 72 countries included for TAI computation." The other two dimensions involving diffusion of old innovations and human skills the values are very low as well. (The role of science and technology education) Additionally, an ICT policy has been formulated for Human Resource Development (HRD) stating that Bangladesh must "prepare itself to compete effectively in the global ICT market" (ICT in vocational teaching/learning). IT industry is one of the fastest growing industries in the world. The IT industry is growing and is playing an increasingly prominent role in Bangladesh's economy. This industry serves both domestic and international markets. There are over 800 registered software and IT companies in Bangladesh. There are a few hundred more small unregistered companies.

The present Government of Bangladesh declared a vision to build 'Digital Bangladesh' by 2021. The term 'Digital Bangladesh' has four interrelated components: (a) Digital Government (b) Digital Education (c) Digital Business and (d) Digital Citizen. Computer Literacy and the availability and use of computers and ICTs are integral to the Digital Education component of the Digital Bangladesh, which requires restructuring the education system to ensure equity in terms of access to quality education (Raihan, 2009). So, this vision will come into light if the nongovernment organizations integrate ICTs into Education sector alongside of Government initiatives.

2.2.6 INITIATIVE IN TERMS OF CREATING HI-TECH PARK

Bangladesh is also initiating to step toward the same path with vision of integrating ICT into its education system. With the support of BRAC under TQI-SEP (Teaching Quality Improvement in Secondary Education Project), the Government of Bangladesh introduced a pilot study of eLearning of Math in Secondary Schools in Gazipur and Comilla from 2009. In order to provide e-Learning for the deprived secondary students of rural Bangladesh, Ministry of Education formally capitalized Mobile ICT Lab of TQISEP on 23rd February, 2010. A total number 17 Mobile ICT Labs in 17 Cars (14 Microbuses & 3 Four Wheel Drive Pickups for hill tracks, haor areas and remote areas) will move all over the country to introduce e-Learning system with the teachers and students of one thousand schools by December, 2010. Each lab contains five laptops, five wireless internet modems, two digital cameras, multimedia projector, webcam, printer, pen drive, interactive board, e-Learning CD, speaker, generator etc. This initiative will ensure primary ICT knowledge as well as ICT based education for the students and also enhance the teaching capacity of the teachers. (The Daily Samakal, 2010). Healthcare availability in Bangladesh is greatly disparate. "All significant public and private institutions, including most medical colleges, hospitals, clinics, laboratories, drug stores, are established in the capital city or at the division level and thus the rural population are inherently deprived of specialist services in general" (Bangladesh Health System Review). There is one doctor for every 3000 people and a consistent 20% vacancy rate for certified healthcare professionals, reflecting the dire lack of qualified personnel in the healthcare field (Bangladesh Healthy System Review). Furthermore, only about 5% of doctors are licensed; the remaining 95% are informal doctors who use modern medicine, but, since they are untrained, often miss prescribe medication and end up harming patients (Role of Village Doctors'). In rural areas, one community clinic for every 6,000 people provides no-cost treatment. Clearly, the health system has room for improvement. ICT can help. When applied to healthcare, ICT takes the form of telemedicine. Telemedicine, according to the WHO, is the delivery of health care services at a detachment expected at the diagnosis, treatment, and prevention of sickness and injury by using information and communication technologies" (Telemedicine: Opportunities in Development). This definition is very broad because

telemedicine can be found in several different forms: video conferencing, “store and send” (take a photo of a patient and send via email), or remote monitoring of vitals or other signs.

2.2.7 LIMITATIONS AND POSSIBILITIES IN HI TECK PARK SECTOR

The main barriers to wide implementation of telemedicine include poor internet connection, startup costs, and infrastructure. However, Telemedicine would provide more thorough and comprehensive access to healthcare to the Bengali population, particularly those in rural areas. Telemedicine would be especially effective in Bangladesh in connecting rural patients with specialists in Dhaka. In addition, telemedicine consultations with specialists would be more affordable for patients, as there is no need to travel to the capital city or pay the high premium charged by the specialist. Telemedicine can also provide education for local doctors, especially given that most have not received formal training. To conclude, ICT is the backbone of any digital initiative. To ensure the transparency, responsibility and liability at all levels of civilization and public facilities, the idea of Digital Bangladesh, covers the IT use for management, administration and governance. To develop the whole nation and the probable number of human resources by ensuring basic needs., Bangladesh need to appear the idea of Digital Bangladesh.

CHAPTER THREE
SITE ANALYSIS

3.1 SITE LOCATION AND ZONING

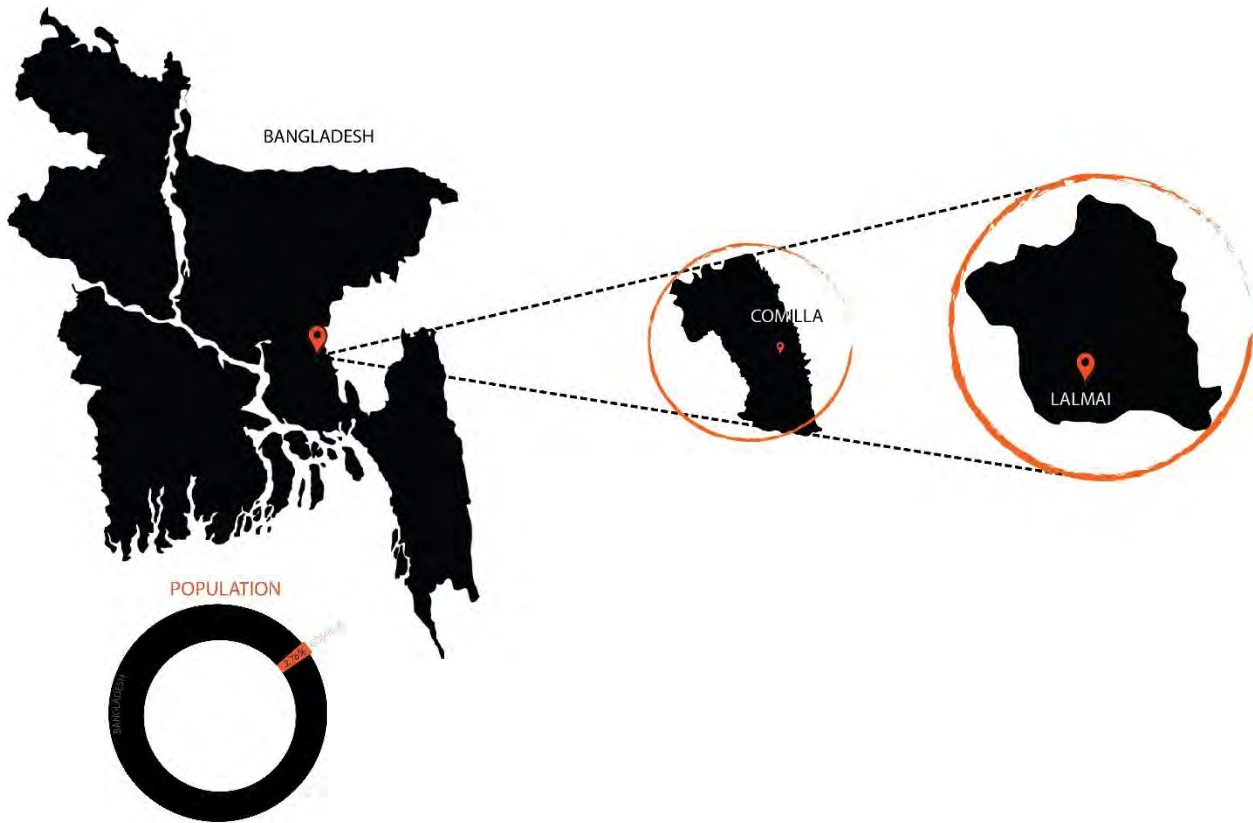


Figure: Location Diagram (Source: Author)

Name of the Project: ITPark, Comilla

Site: Lalmai, ComillaSadar South, DattapurMouja

Site area: 10.68 acres

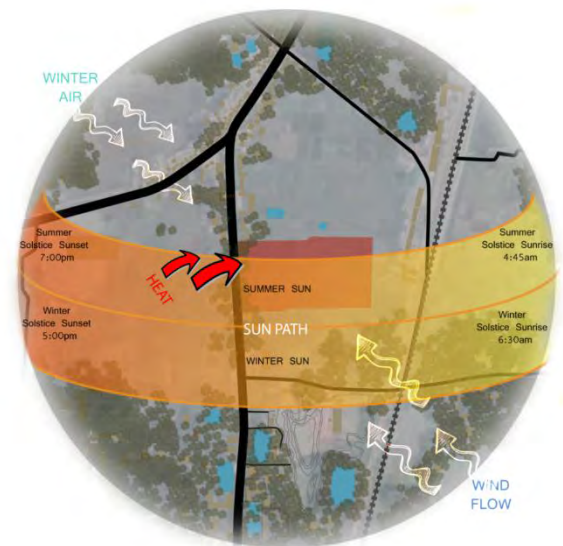


Figure: Sun Path Diagram (Source: Author)

3.2. SITE SURROUNDINGS

The site is situated 8 km away from Comilla-Chittagong highway. The site is particularly situated beside Comilla-Chadpur highway. Another road named Lalmai-Laksam passed by the site. The land is primarily surrounded by paddy field, trees and localities with village residences. On the node of the Comilla-Chadpur highway is Doinik Comilla office, Bangladesh Betar office, Lalmai Bazar, Lalmai Bus stop, Lalmai train station, fuel pump station and other civic amenities. In addition, there are few mosques around the site. As it is just beside the highway, lots of auto mobile engineering workshop and enterprises are there. Within a short distance from the site, a branch river of Gomati river flows by.

3.3 HISTORICAL AND SOCIAL BACKGROUND

As the site is situated in Lalmai Thana of comilla district, the historical lalmai hill is situated within 13 km range of the site. Moreover, different temples from early Buddhist period, e.g Lalmai temple, chandimura temple are there . Fragments of fossil wood are more plentiful in the southern part of the hill range than the northern one. So, the traces of these lands can be found from early Buddhist period. However, in recent years with the establishment of Lalmai bazar in this area, locality started growing up. Recently in 2009, with the establishment of Bangladesh Betar comilla branch, social communication enhanced here. (BANGLAPEDIA)

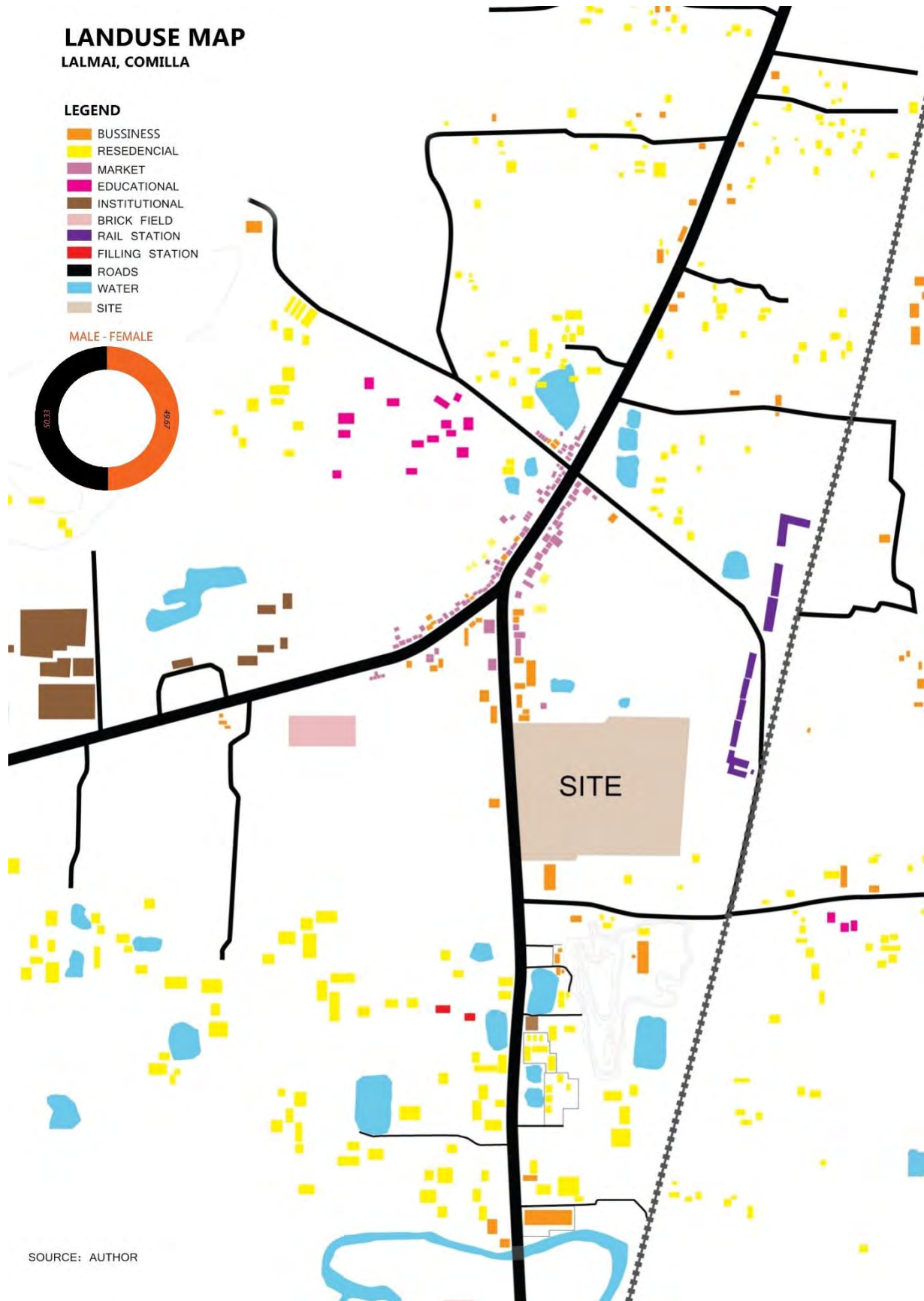
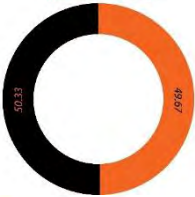
LANDUSE MAP

LALMAI, COMILLA

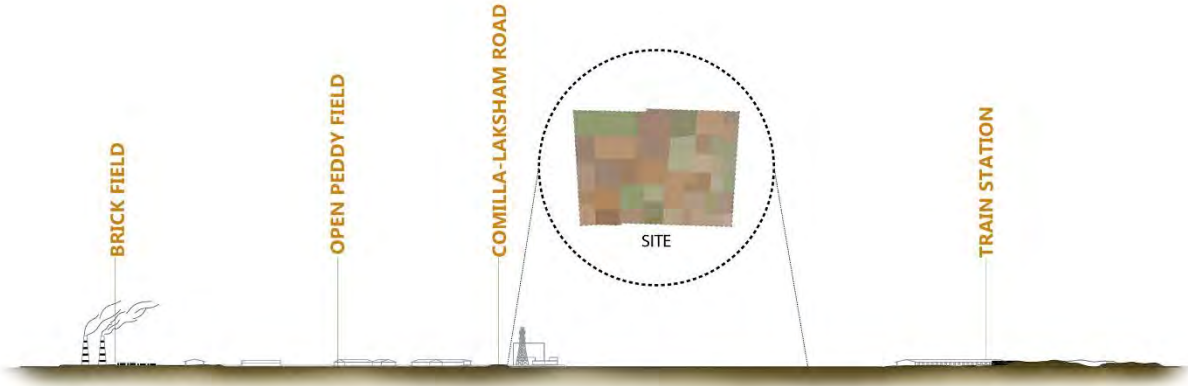
LEGEND

- BUSSINESS
- RESEDENCIAL
- MARKET
- EDUCATIONAL
- INSTITUTIONAL
- BRICK FIELD
- RAIL STATION
- FILLING STATION
- ROADS
- WATER
- SITE

MALE - FEMALE



SOURCE: AUTHOR



EXISTING SITE SECTION

Figure: Existing Site Section (Source: Author)



Figure: Site Surroundings (Source: Author)

3.4 SITE PHOTOGRAPHY



Figure: Site Photography(Source: Author)



Figure: Site Photography(Source: Author)



Figure: Site Photography(Source: Author)

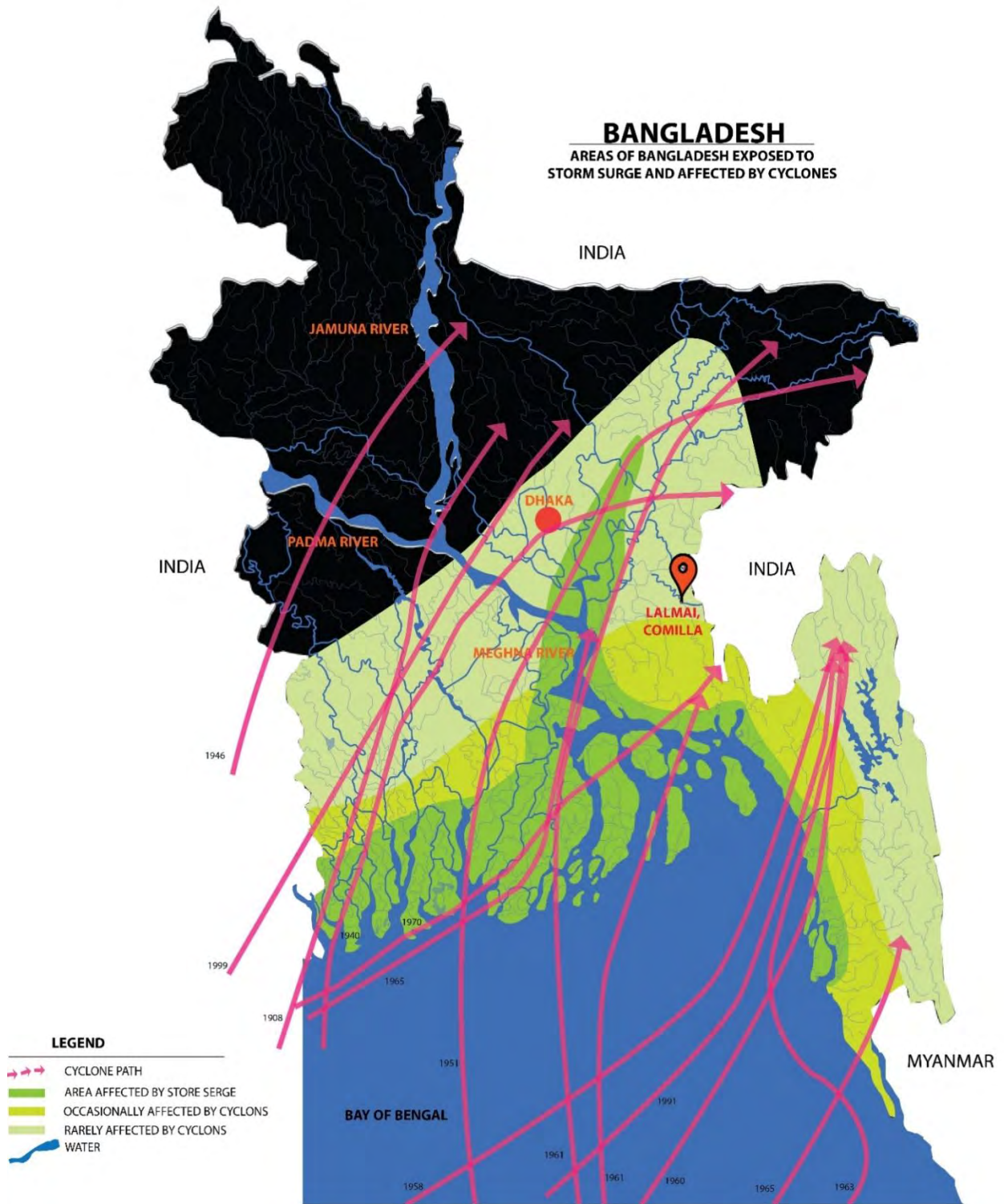


Figure: Climatic Consideration (Source: Author)

3.5 SWOT ANALYSIS

Strength:

The site is just adjacent to the Comilla-Chadpur highway which makes the communication easier. Another strength is Lalmai Railway Station in just on the opposite side of the site. Moreover the District level bus stoppage is within 100 meter of the site .These makes accessibility and transportation mode strong enough

regardless the site is situated outside from the main city .Lots of trees are there along the periphery of the site.

Weakness:

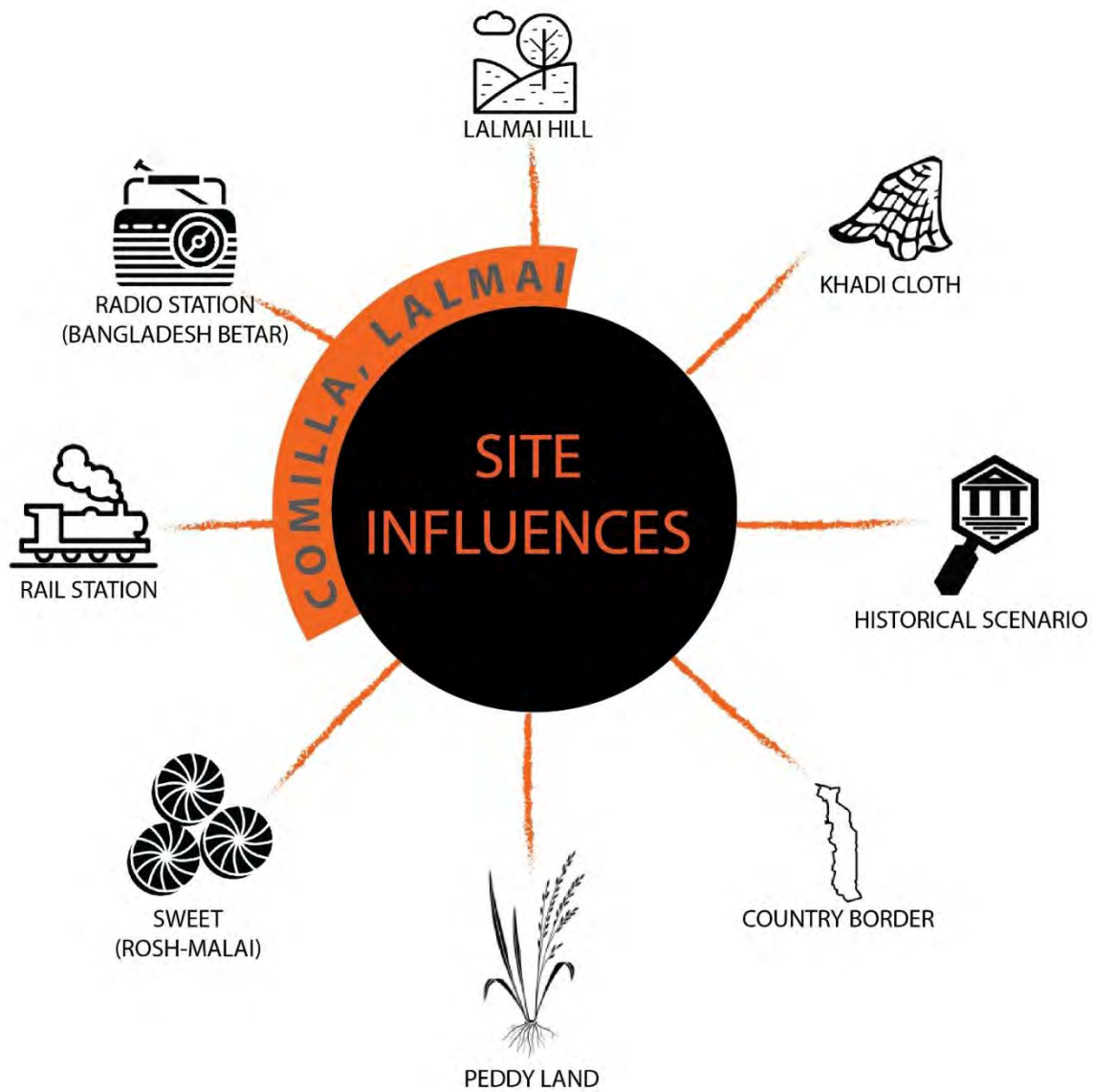
There is no hospital, police station and fire station within 200 meter range of the site. Lack of pedestrian path is an issue. No civic amenities are there just adjacent to the north and south side of the site.

Opportunity:

Lalmai technical training institute and Bangladesh Betar Office is just beside the site. This will help in education and communication sector after the establishment of the park. Trees will act as sound barrier. Furthermore there are mini local industries surrounding the site.

Threat

There are few brick kilns near the site which creates environmental pollution. After the execution of the hi tech park, there can be radiation because of high installation of technological things.



CHAPTER FOUR

PROGRAM DEVELOPMENT

4.1 Program Requirements from Client

In this chapter we will know the program details with the given requirements from the client. The proposed IT Park should have programs that can meet the demand of IT manpower for the global IT industry. The probable functions of the IT Park are:

- I. Multi-tenant Building
- II. Dormitory Building
- III. Canteen and Amphitheater
- IV. Electromechanical Facilities
- V. Technology and Business Incubation Centre
- VI. Specialized Laboratories for Universities on IT

If the project is done successfully, it can accommodate around 60,000 people. Government is providing training facilities for those who want to start new business. There are rentable spaces to accommodate IT businesses at only 10T.K. per SFT. Also, there are free spaces of 1 year for newly started IT businesses.

4.2 Program Analysis

Multitenant Building: The term "software multi-tenancy" refers to software architecture in which a single instance of software runs on a server and serves multiple tenants. To illustrate, a tenant is a group of users who share a common access with specific privileges to the software instance. With a multitenant architecture, a software application is designed to provide every tenant a dedicated share of the instance - including its data, configuration, user management, tenant individual functionality and non-functional properties.

Business Incubation Centre: Generally A business incubation center is established to help new and startup companies to develop by providing services such as management training and office spaces. Moreover in this IT park project, business incubation centers may house corporate, government or university labs to very small companies.

Dormitory: To illustrate, A dormitory is a communal quarter of an institution. In this dormitory infrastructure, a tenant or researcher may stay and continue their work.

Specialized Laboratories for Universities on IT :With the establishment Specialized Laboratories of, the government is taking imitative to provide quality and improved IT education to various colleges and universities in Comilla.

4.3 Detailed Programs

I. 7 Storied Multi-tenant Building(7x15000)=1,05,000sft

- Conference Hall(7 x 2800 sft) = 19600 sft
- Server Room(7 x 500 sft)= 3500 sft
- Multiple Office Cubicles (7 x 10000 sft) =70000 sft
- Lobby+ Reception (7 x 300) = 2100 sft
- Waiting Room (7x 500 sft) = 3500 sft
- Pantry (2 x 60 sft) =120 sft
- Kitchen (2 x 1000 sft) =2000 sft
- Administrative offices (7 x 400 sft) =2800 sft
- Toilets (7 x 300 sft) = 2100 sft

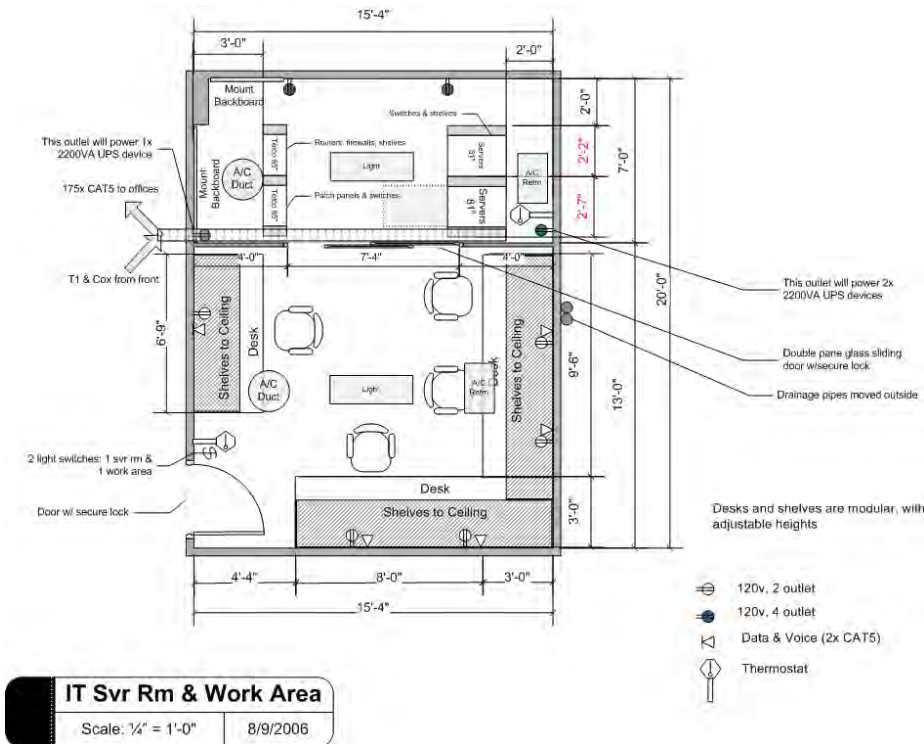


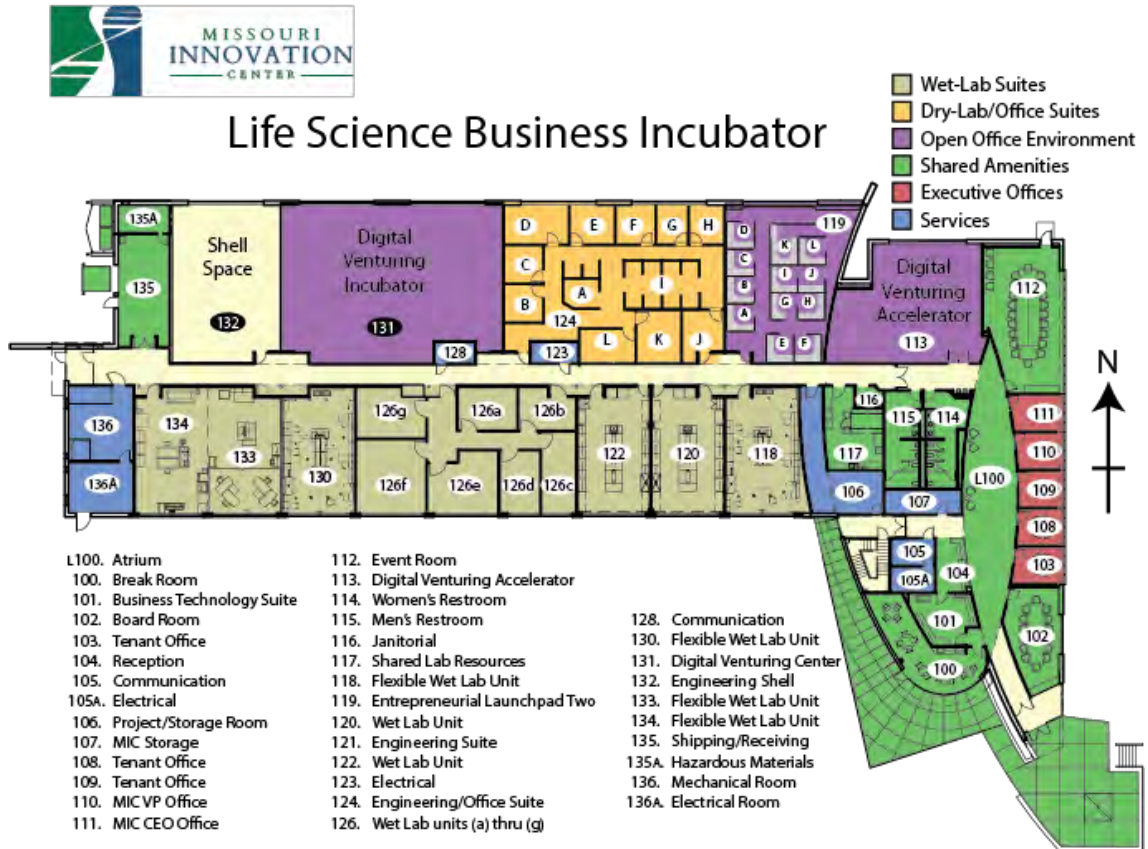
Image: Plan of a server room

Source:

- II. 3 Storied Dormitory Building(**3x6000**)=**18000sft**
 - Rooms (80 x 130sft)=11050 sft
 - Indoor games room = 800 sft
 - Prayer room= 500 sft
 - Dining Hall=2000 sft
 - Kitchen =1000 sft
 - TV room= 500 sft
 - Office Room=300 sft
 - Store Room = 750 sft
 - Toilets =600 sft

- III. 3 Storied Canteen and Amphitheater(**3x7000**)=**21000sft**
 - Kitchen=1500 sft
 - Cafeteria =12500 sft
 - Amphitheater = 7000 sft
- IV. Electromechanical Facilities
- V. 6 storied Technology and Business Incubation Centre (**6x6000**)=**36000sft**
 - Graphics Design
 - Android Mobile Operation
 - SE-8 Programming
 - Web Application Development
 - Network and Server administration
 - Core Hard work and Operating System
 - BPO, E-Commerce
 - L, Administration
 - SQ
 - Oracle

- Government Employee Training Centre
- Specialized (High Speed Internet) laboratory



VI. Specialized Laboratories for Universities on IT

- Computer Labs
- Writing room
- Gallery
- Server room

Total Built area – 1,80,000 sft

Other Relevant Programs for the Site:

- Surface car parking and Underground car parking
- Open courtyards for interaction/plaza
- Pedestrian walkways connecting each infrastructure
- Security Rooms



Image:Diagram of major prgmms



Image:Diagram of detail programmes

CHAPTER FIVE

CASE STUDY

5.1 Case Study I(National)

Sheikh Hasina Software Technology Park

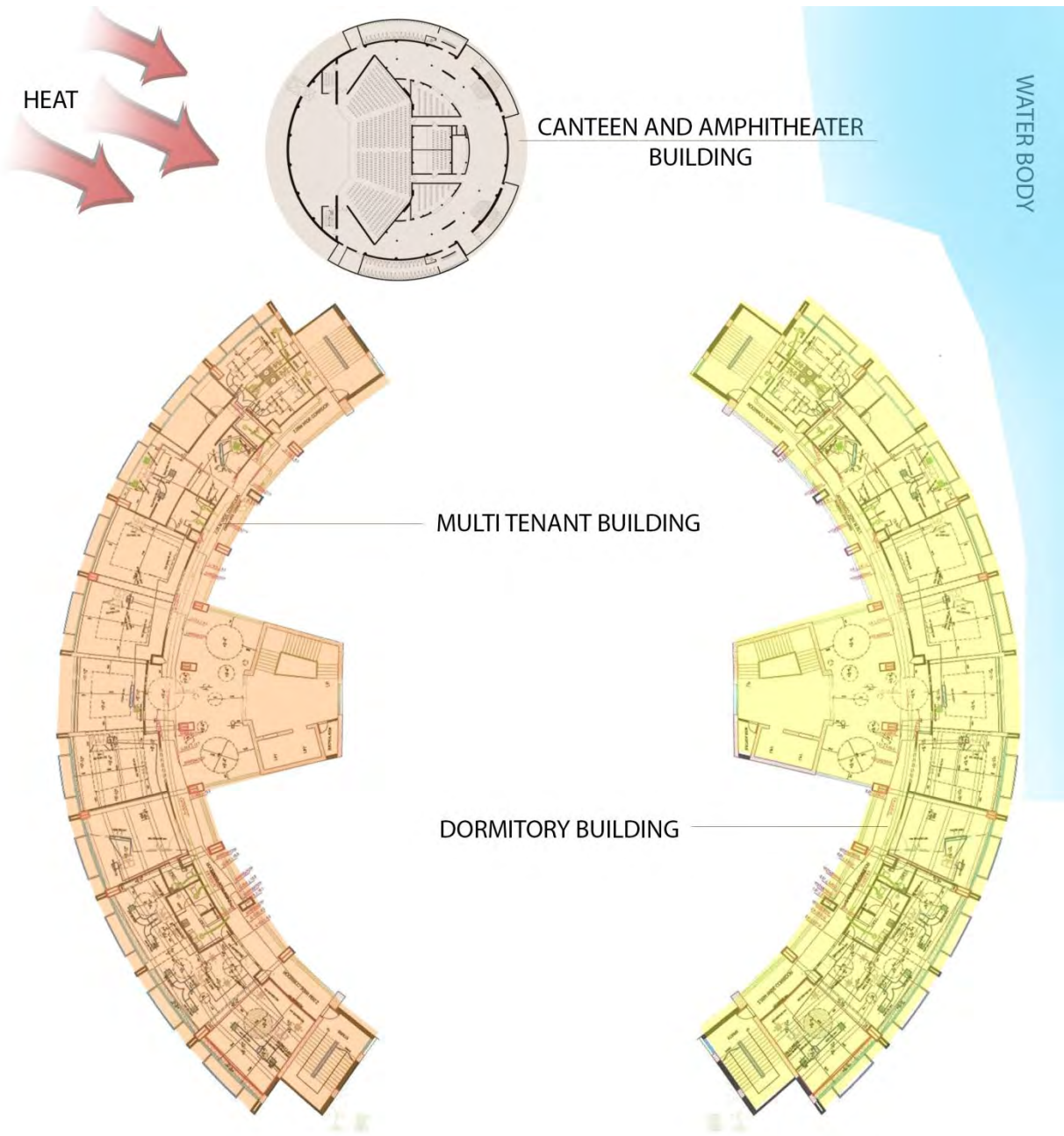
Bejpara, Jessore



For creating software and IT facilities Bangladesh Government took initiatives to make 12 HI tech Parks in different districts. Business incubation facilities for newly started companies/firms are accommodated by the government. This park has business incubatory, multi-tenant Building, specialized labs, High speed internet facilities, international 3-star quality dormitories, research centers, training centers, gymnasium, canteen and amphitheater building, Conference room, Dining and cafeteria, public amenities etc. This Hi-Tech Park has its own substation for ensuring 24x7 nonstop power connection and highly mechanical ventilation system.



Image: Masterplan of Sheikh Hasina Software Technology Park



HEAT

CANTEEN AND AMPHITHEATER BUILDING

WATER BODY

MULTI TENANT BUILDING

DORMITORY BUILDING

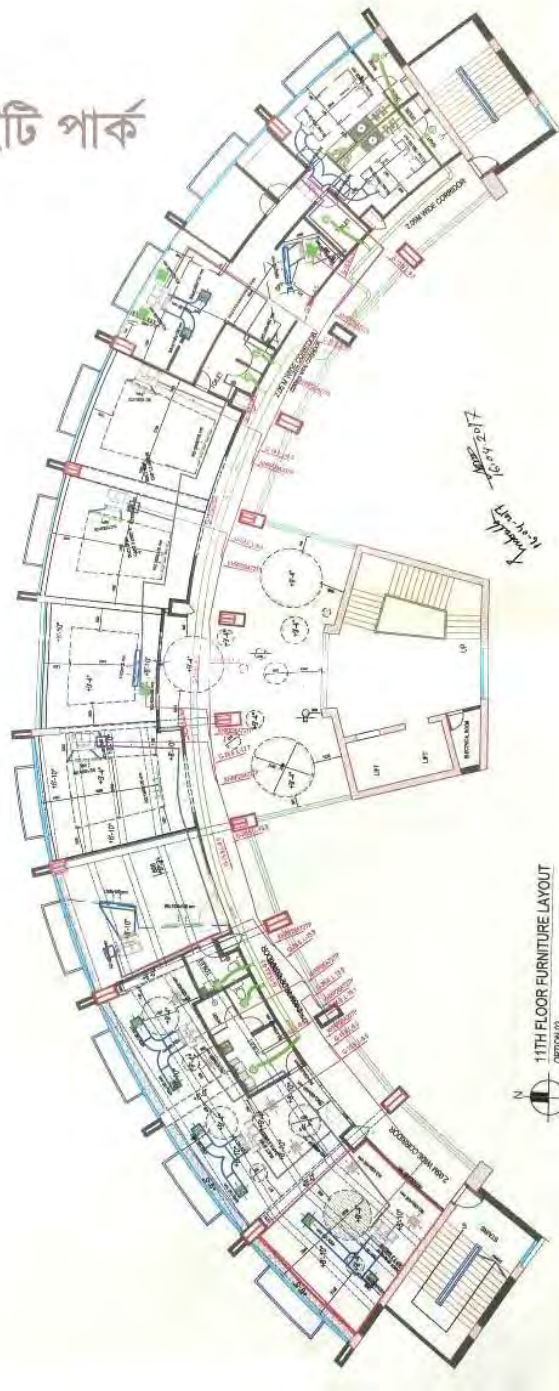


SHEIKH HASINA SOFTWARE TECHNOLOGY PARK PLAN

যশোর আইটি পার্ক

WIND

যশোর আইটি পার্ক



The construction had started on February,2014. The total area of this project is 12.13 acres. It has highly modern facilities accommodated in it. In this HI Tech Park there is highly developed Tele-communication system, very fast Broadband internet. Uninterrupted power/water/gas connection. It has got a huge water body of 5 acres. In this Park there already 55 IT companies have rented to enhance the IT sector in country

and to attract local-foreign investors. More 20 companies will be provided spaces to develop more. This Hi-Tech Park is opening new era for countries IT sector, freelancing or outsourcing. Beside that it is creating 12000 job opportunities for the local peoples.

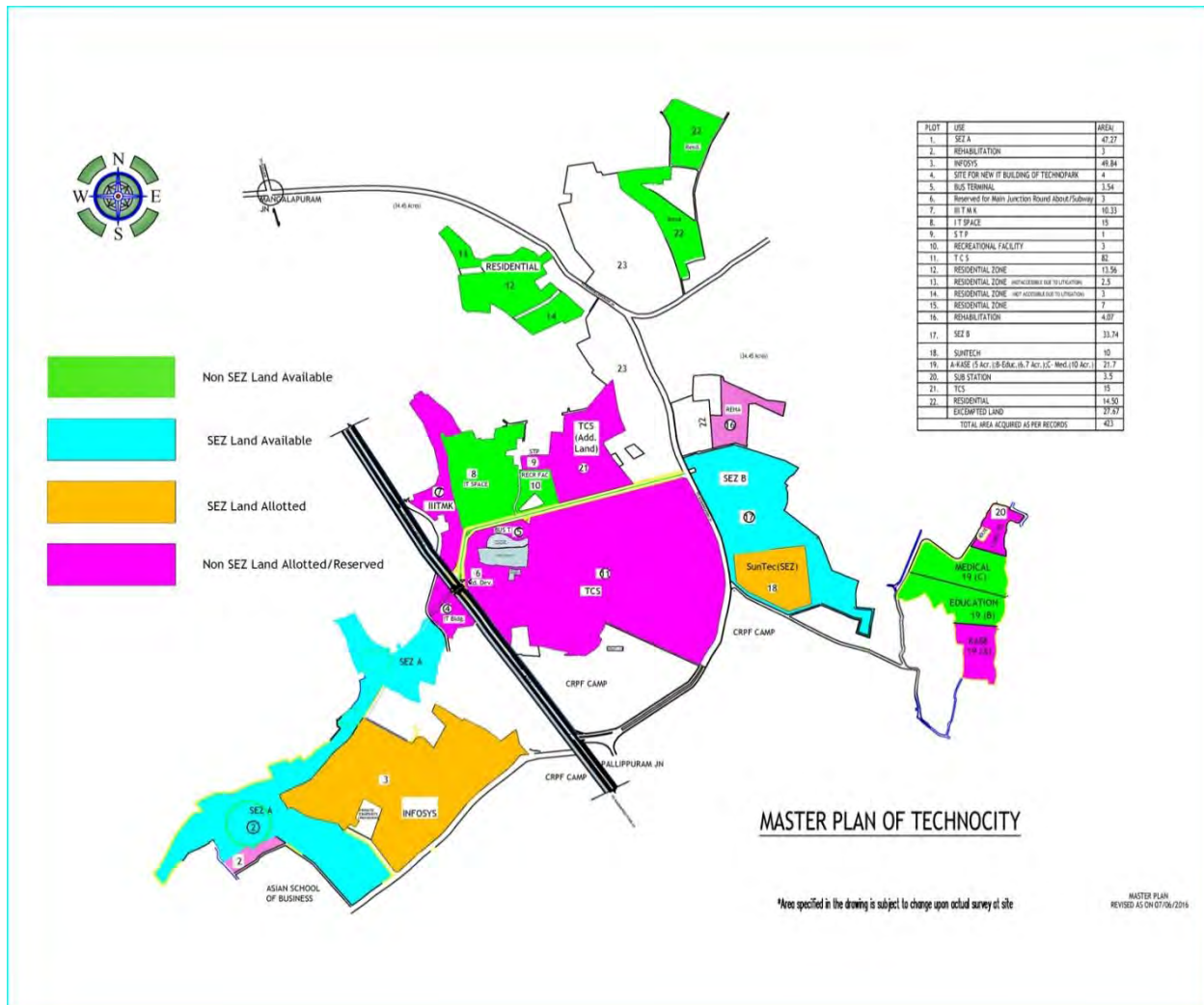
According to ICT Ministry if this type of projects is being successful, then before 2021, Bangladesh will get 100% internet penetration, 90% e-service, in total 20 lacs job opportunities, 5 billion ICT export.

Findings:

1. The building vertically rises high to accommodate maximum number of office tenants, giving scope to the young IT experts expand their career.
2. The dormitory rooms are of three-star quality standard.
3. The design of the multi-tenant building lacks sustainability as it is fully made of glass, which gains a lot of heat.
4. The overall design lacks synchronization with the environmental context of Jessore, being too much contemporary in terms of building materials.

5.1 Case Study II(International)

Technopark, Trivandrum



Technopark, Trivandrum consists of two educational and research institute. This Technopark is infrastructure service provides 9.33 Million sqftarea. Technopark intends to offer all the infrastructure and provision amenities required for IT and

IT/Electrical companies to function. Here the government ensures business incubation facilities for newly started companies/firms. This park consists dozens of buildings intended for software development. Also there are dormitories for. For the personnel

working in the park, Government also provides some social infrastructures. Along with these, this park provides office spaces and also provides all utilities as well as high speed internet connection. This Technopark is has uninterrupted power supply and ambient air-conditioning for all buildings.



Findings:

1. The project created a lots of job opportunities.
2. The roofs and material of the building harmonizes with the climatic condition of Kerala.
3. This HI-Tech Park helped in the decentralization by creating international quality job opportunities for the Trivandum, Kerala.

5.3 Case Study III (International)

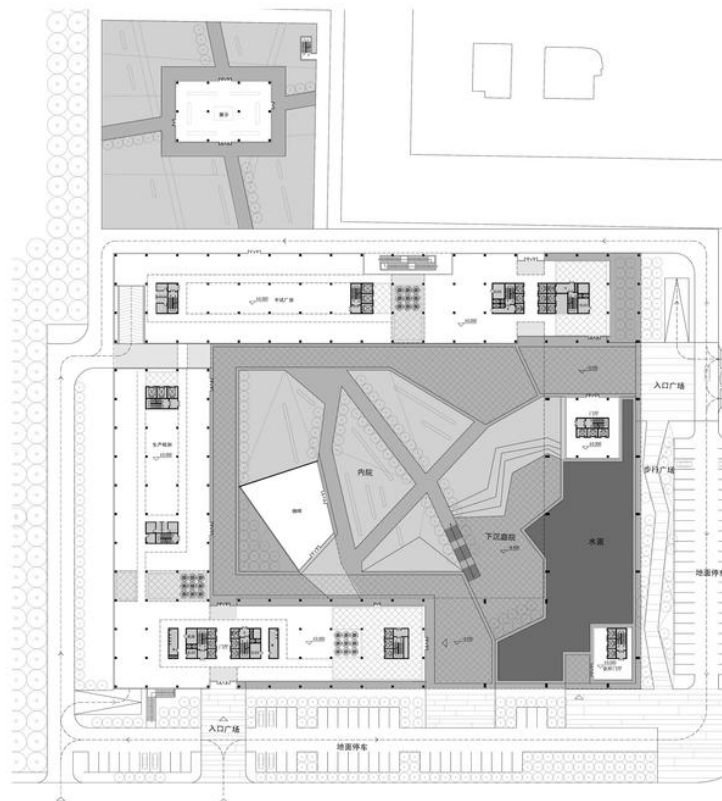
Invetronics Tech Park

Location: Hangzhou, China

Built year: 2016

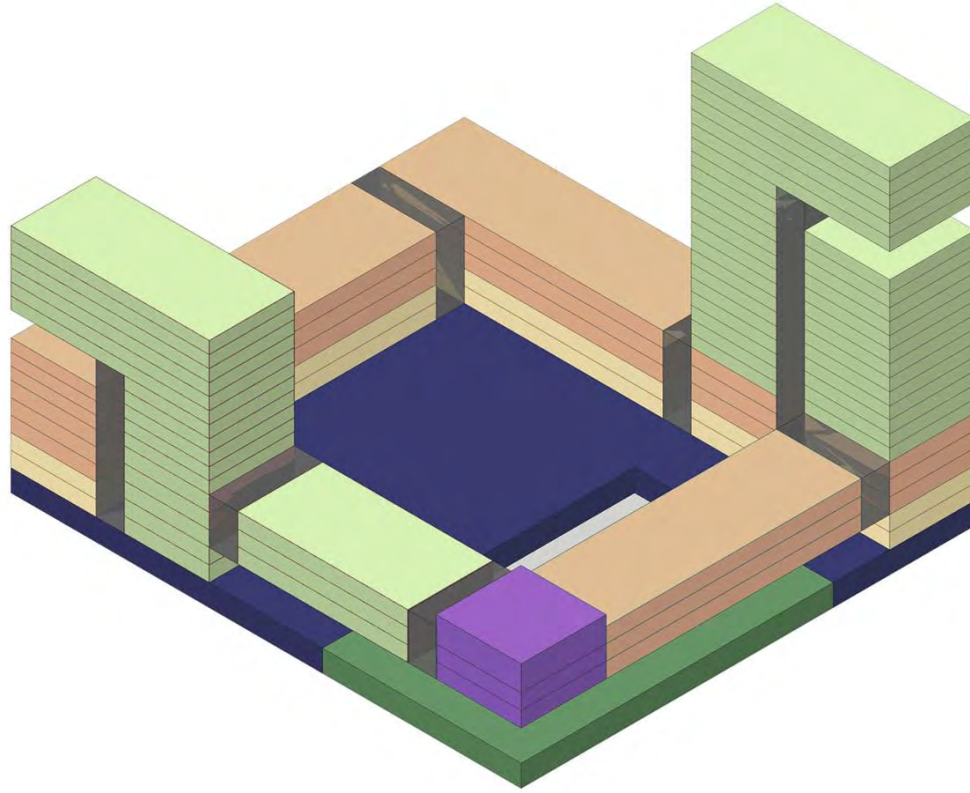


Traditionally, our impression about plant is simple and noisy. However, we hope to break the existing recognition of traditional plant in the design for the headquarter buildings of Inventories Group, a hi-tech enterprise which stands out in LED. We try to combine the multiple collision thoughts in the age of internet, merger with diverse functional space, and make it into a mixed type headquarter building integrating production, office and scientific research.



The design starts from the demand for diverse functions. It integrates the diverse functional spaces, including the large dimension space for production, the dedicated space for R&D, ordinary office space for administrative use and the high-end club which represents the image of the enterprise headquarters. It also tries to blur the boundary among different functional blocks through complex and diverse functional organization,

thus to break the barrier among different strata, to gather people of different working posts, and to create more collision possibility for people in it.



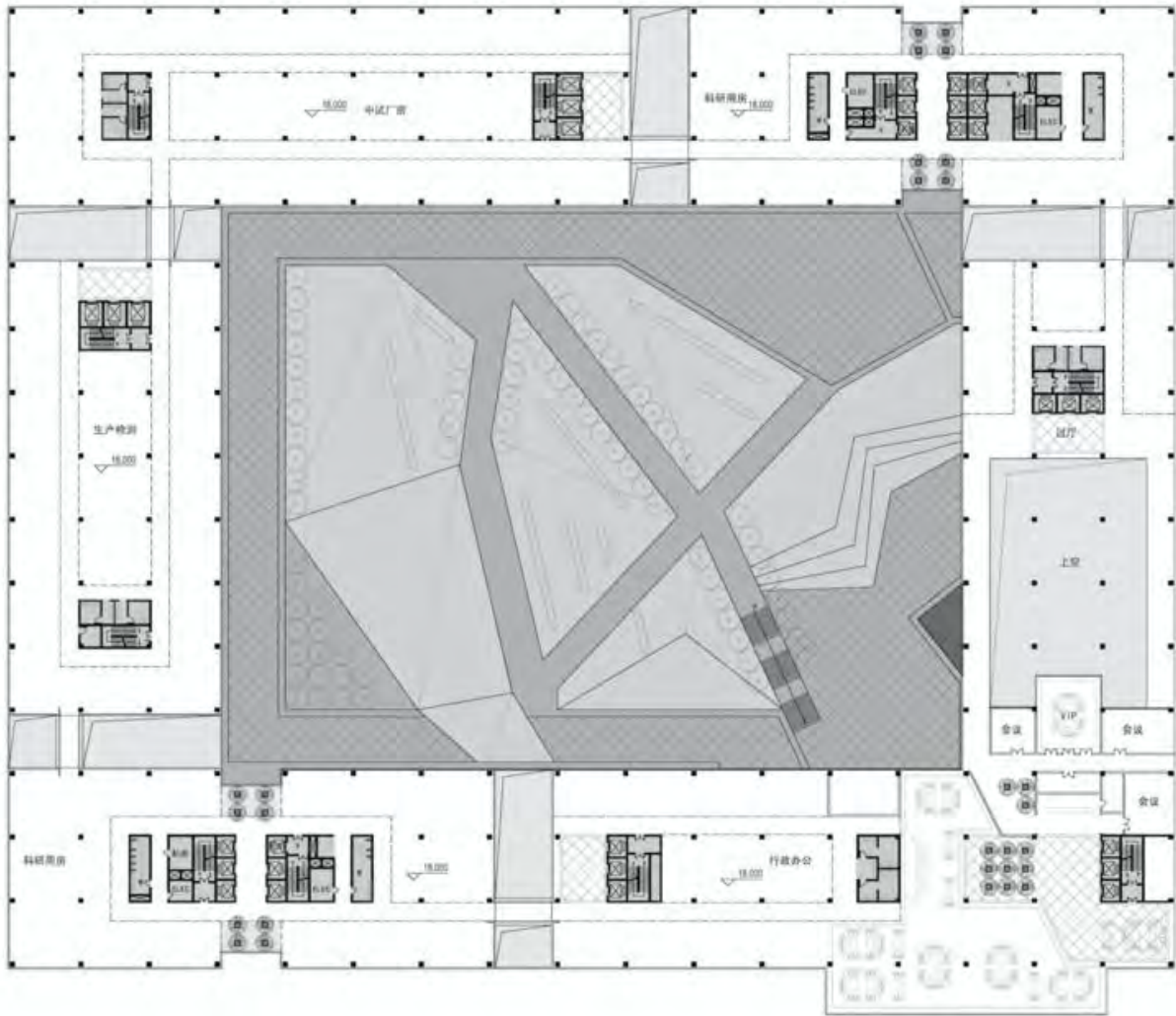
The design takes two groups of connected flowing dimensions as prototype, and incorporate the feeling and experience during temporal and spatial transformation, thus to have the relatively abstract architectural intension obtain concrete expression. The two blocks of distinct white and black engage and interweave with each other. White represents the first line production team which is of great vigor while the black is the down-to-earth R&D team which is sober and prudent. The transparent glass blocks among them are just like a kind of invisible adhesive, implicating the independence and

connection

of

the

two.



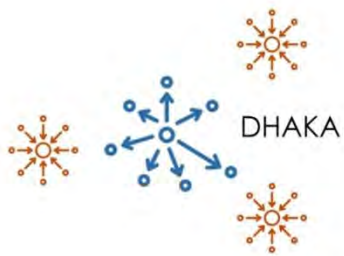


CHAPTER: 06

CONCEPTUAL STAGE AND DESIGN DEVELOPMENT

6.1. Concept & Design Considerations

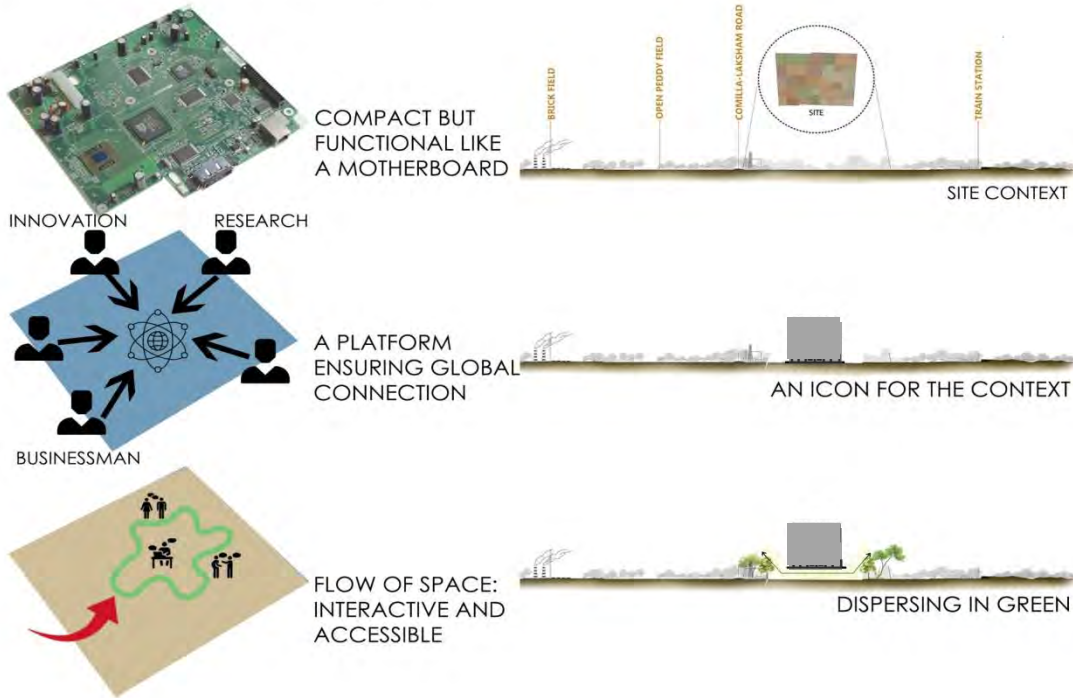
DECENTRALISATION



CREATING A HEALTHY BALANCE OF DEVELOPMENT

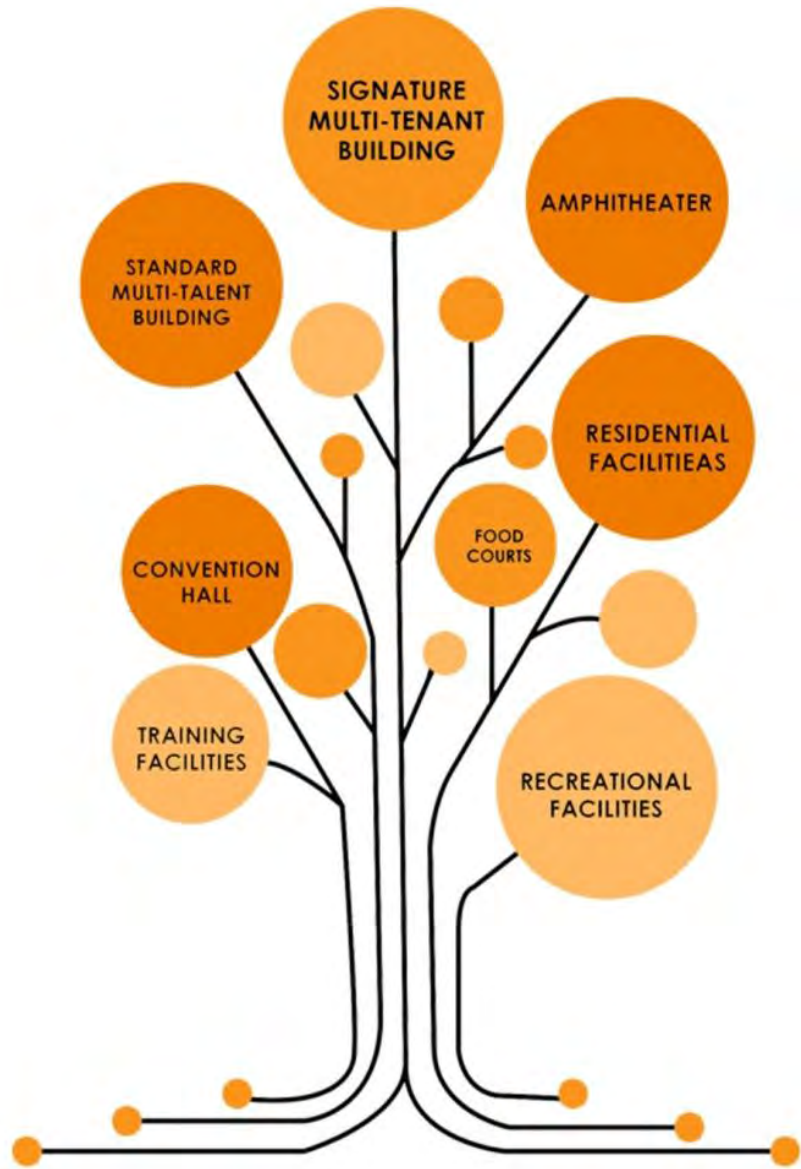


IDEAS AND CONSIDERATIONS:



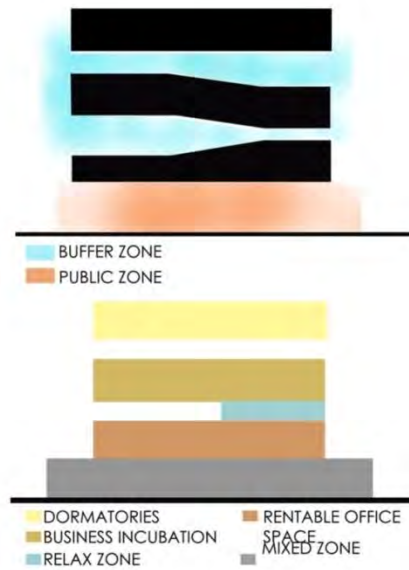
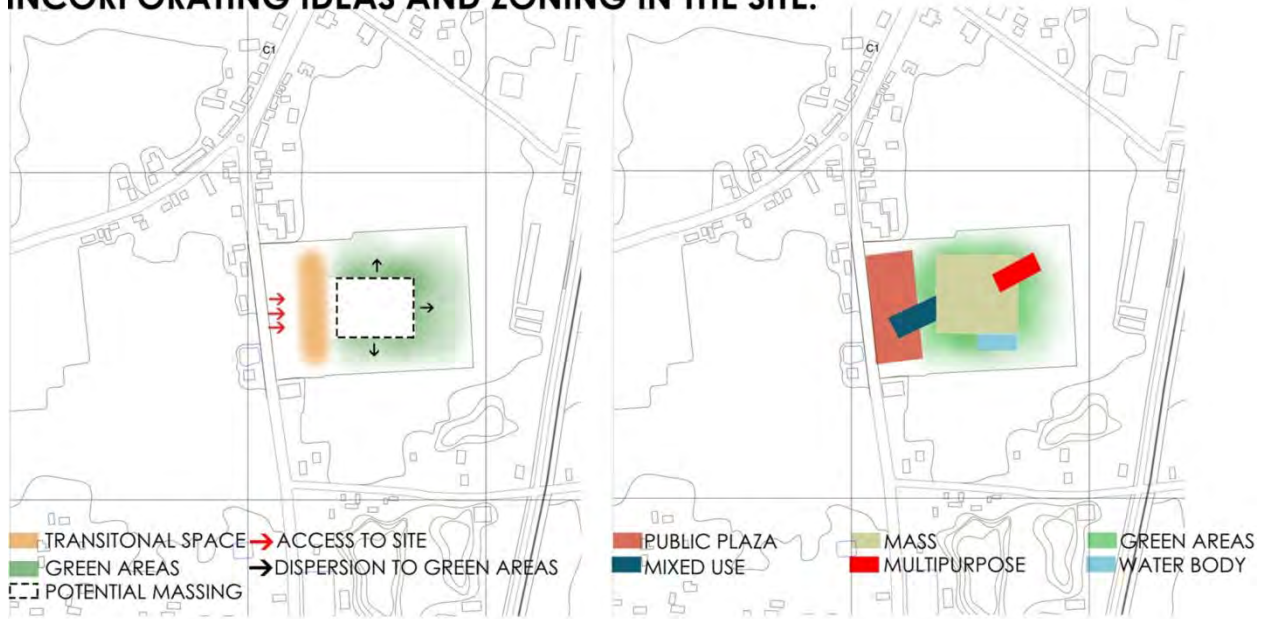
6.2. Program development



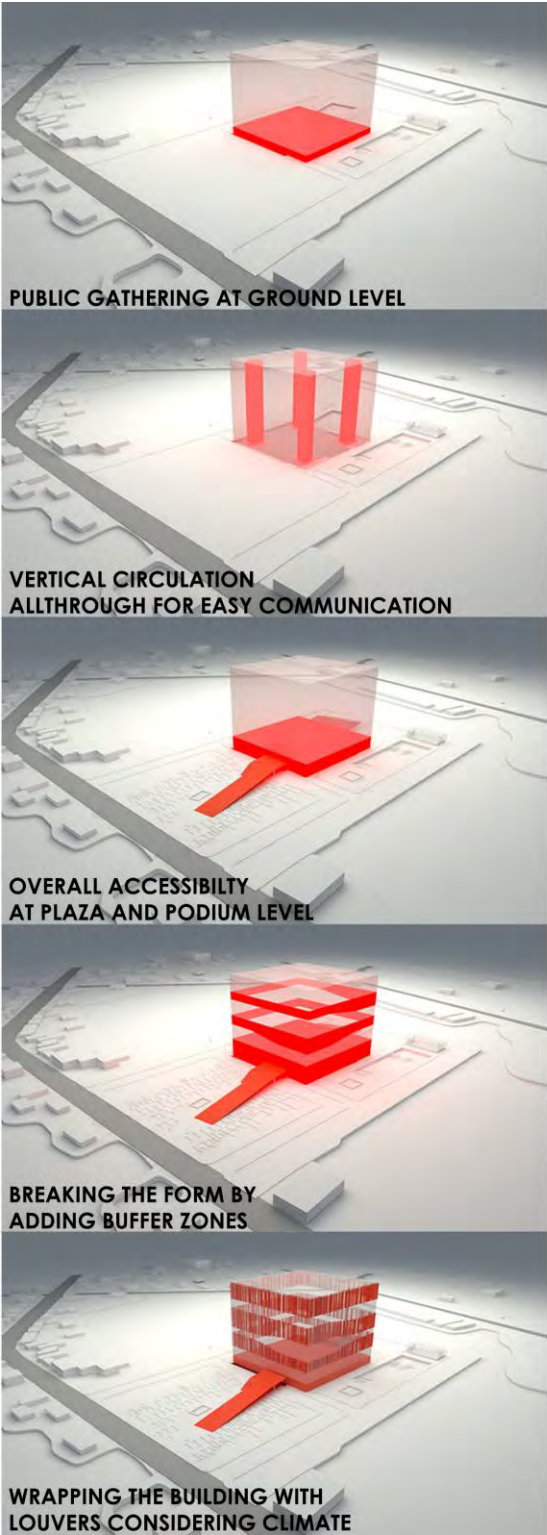


6.3. Conceptual sketch

INCORPORATING IDEAS AND ZONING IN THE SITE:



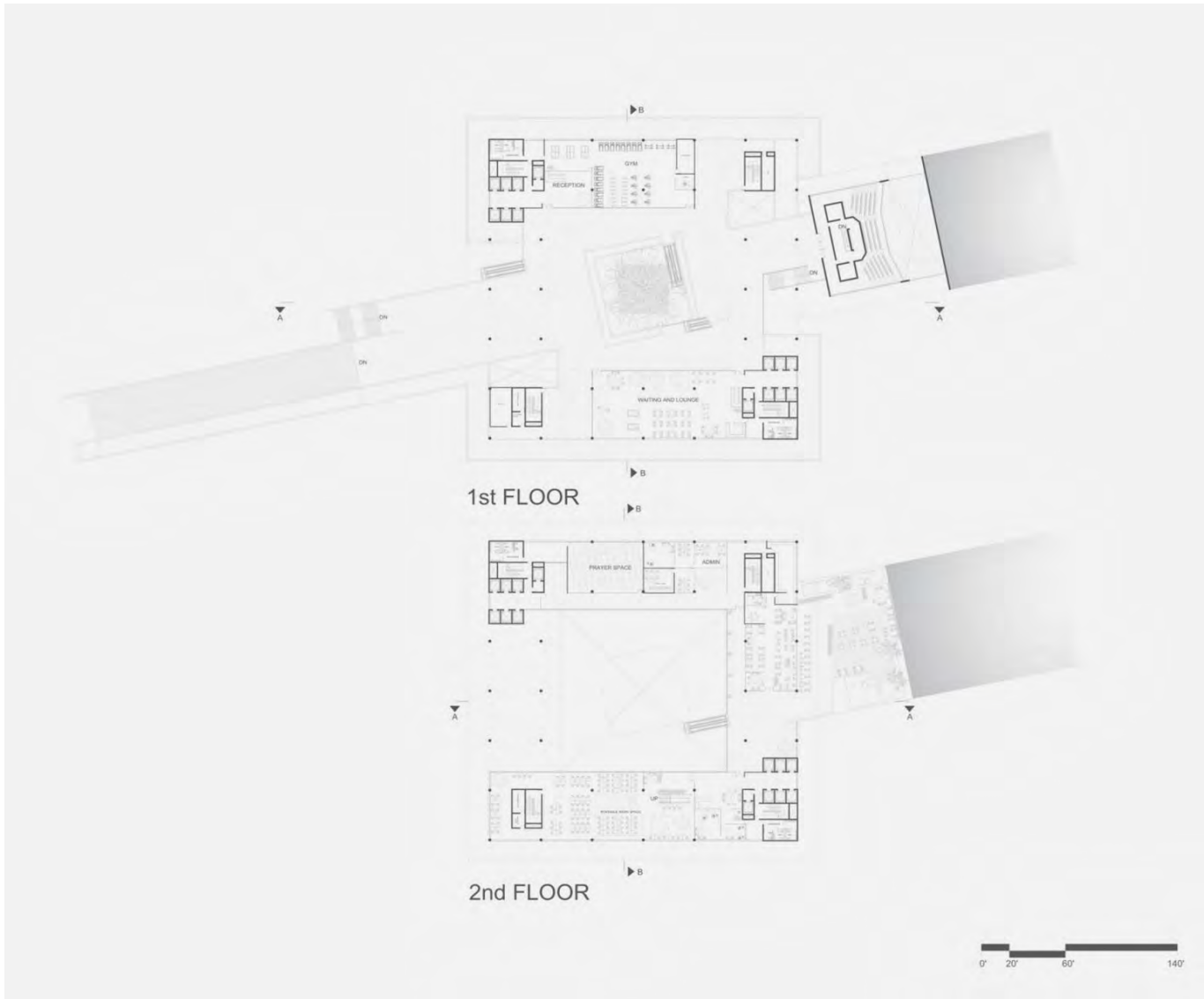
6.4. Mass development



6.5. Plans



GROUND FLOOR PLAN

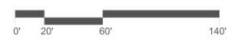


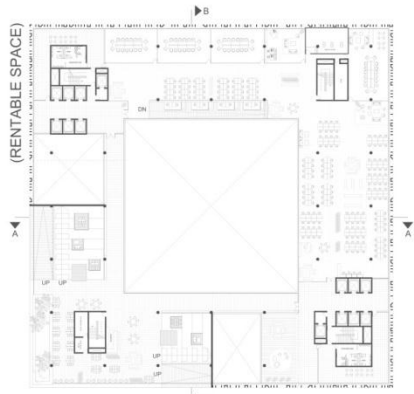


3rd FLOOR



4TH FLOOR





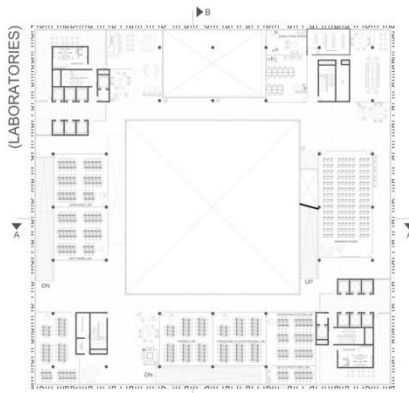
5TH FLOOR



7TH FLOOR

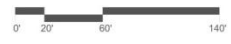
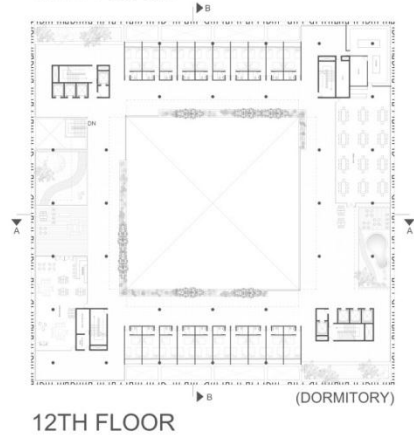


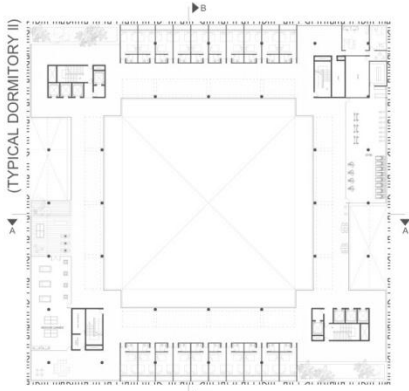
6TH FLOOR



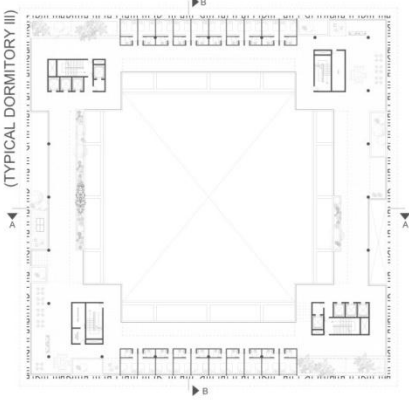
8TH FLOOR



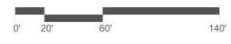




13TH FLOOR



14TH FLOOR



6.6. Sections and Elevations

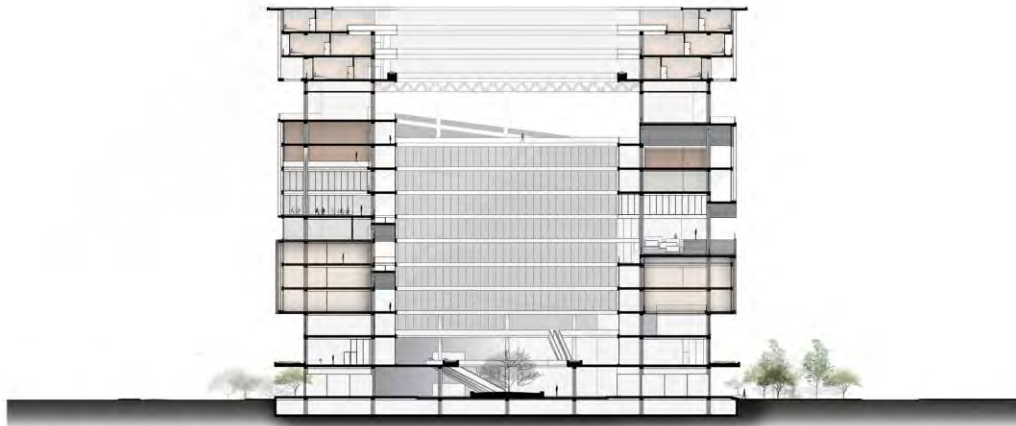


SECTION AA
SCALE : 1'-0"=1/16"

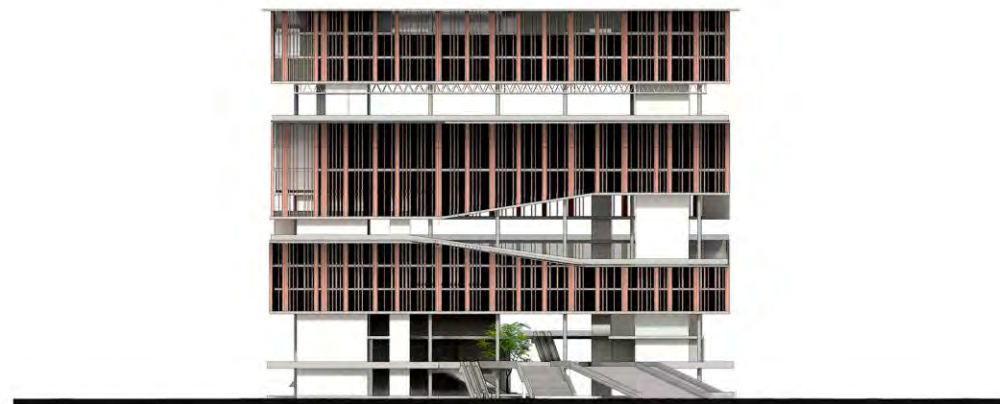


SOUTH ELEVATION
SCALE : 1'-0"=1/16"

6.7. Sections and Elevations

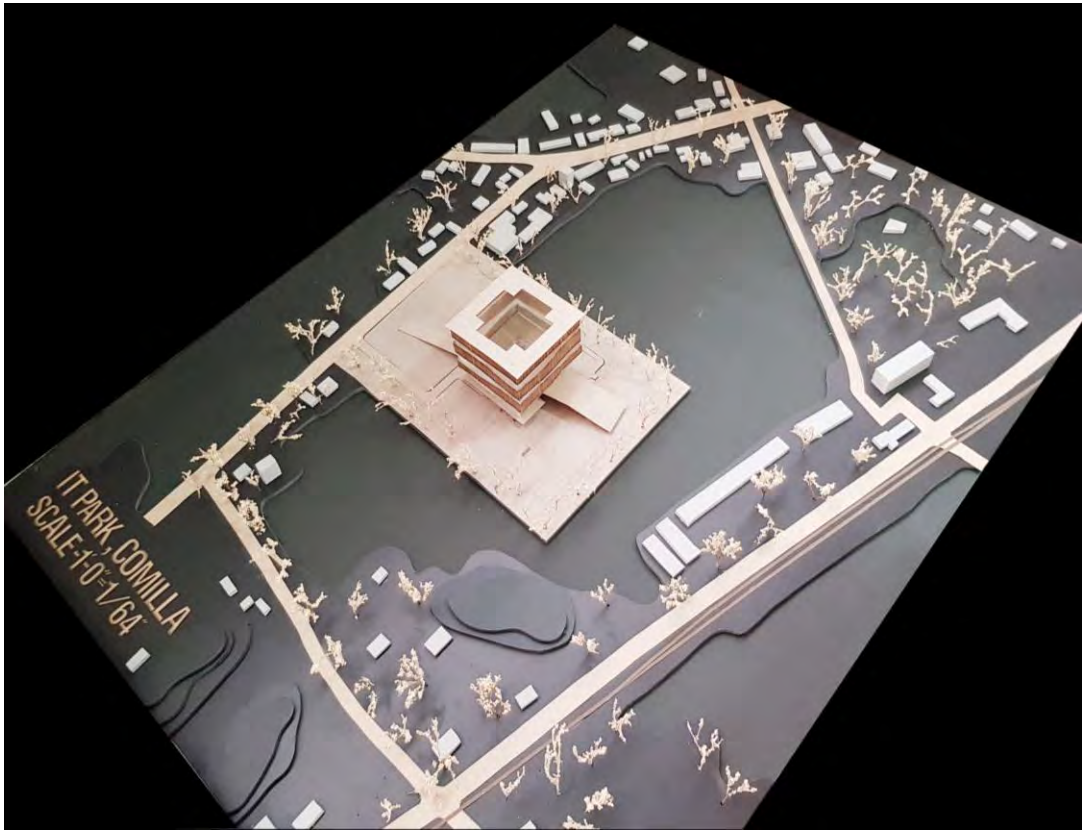
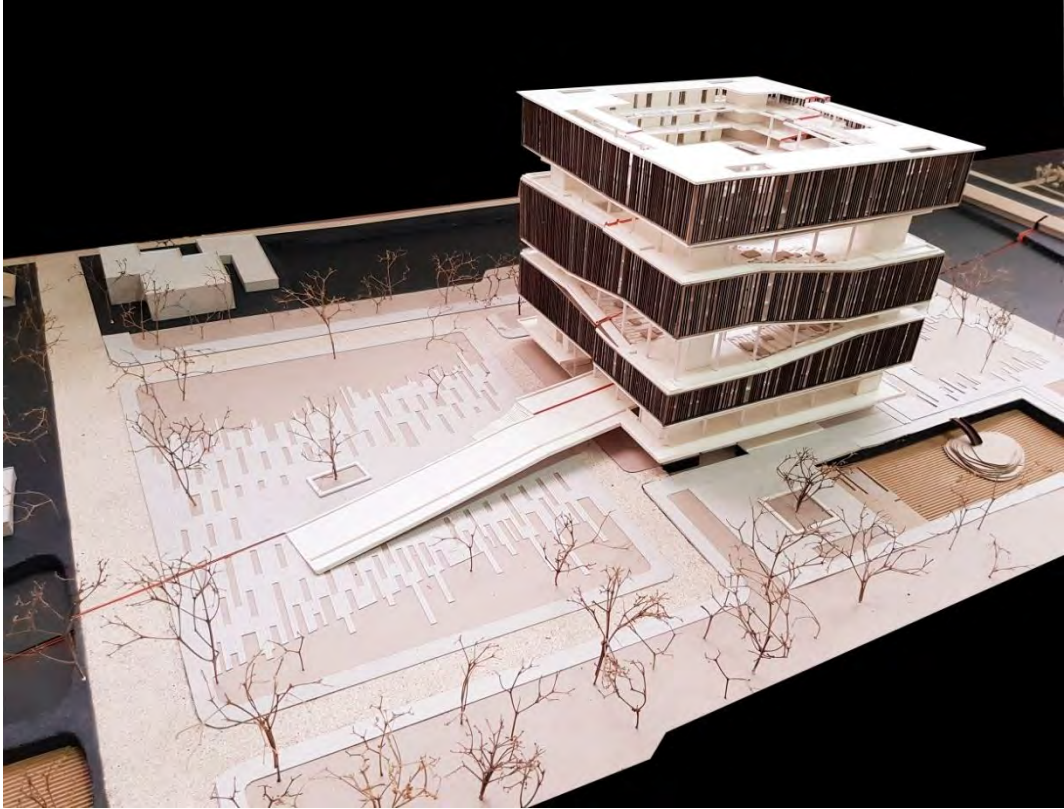


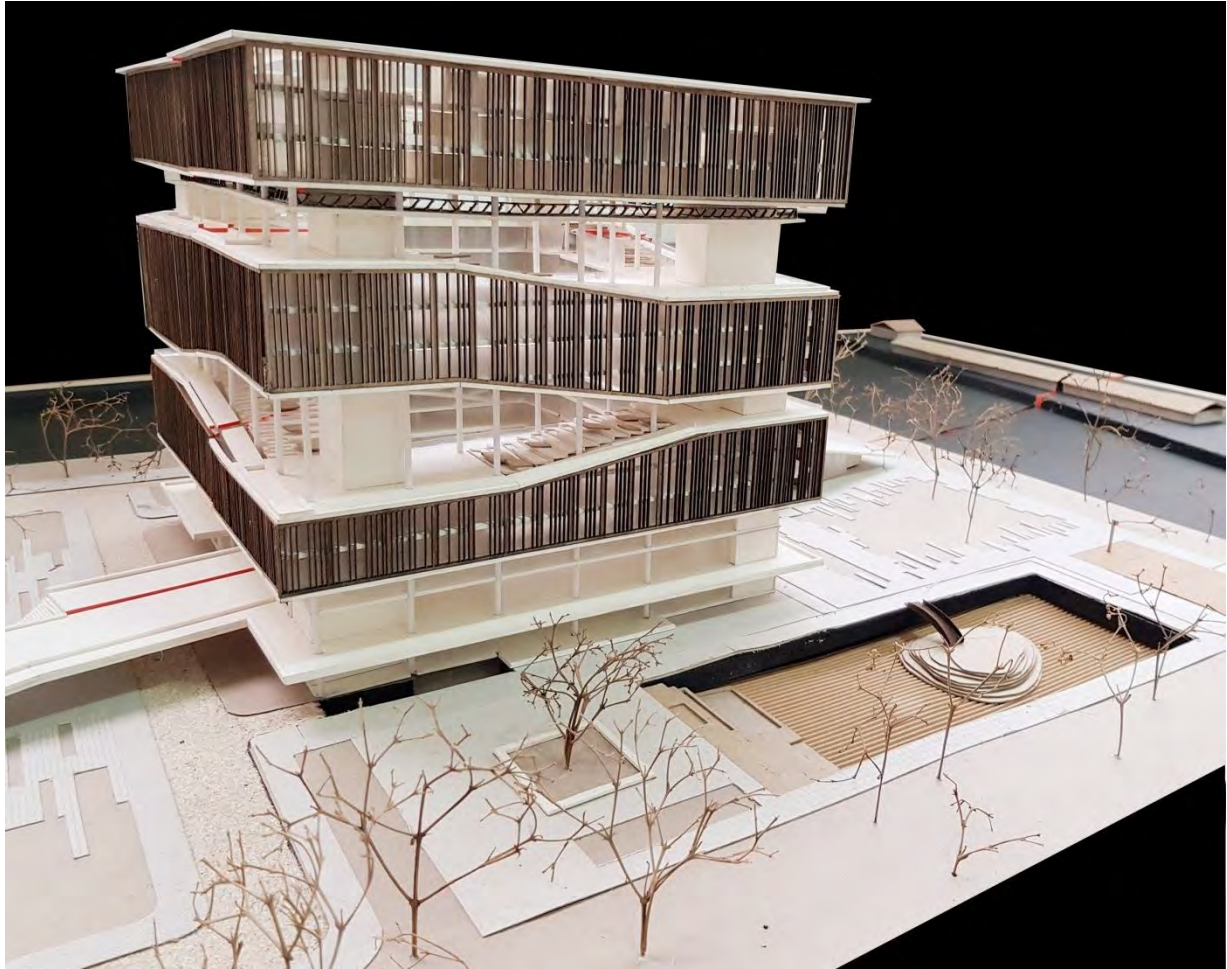
SECTION BB
SCALE : 1'-0"=1/16"



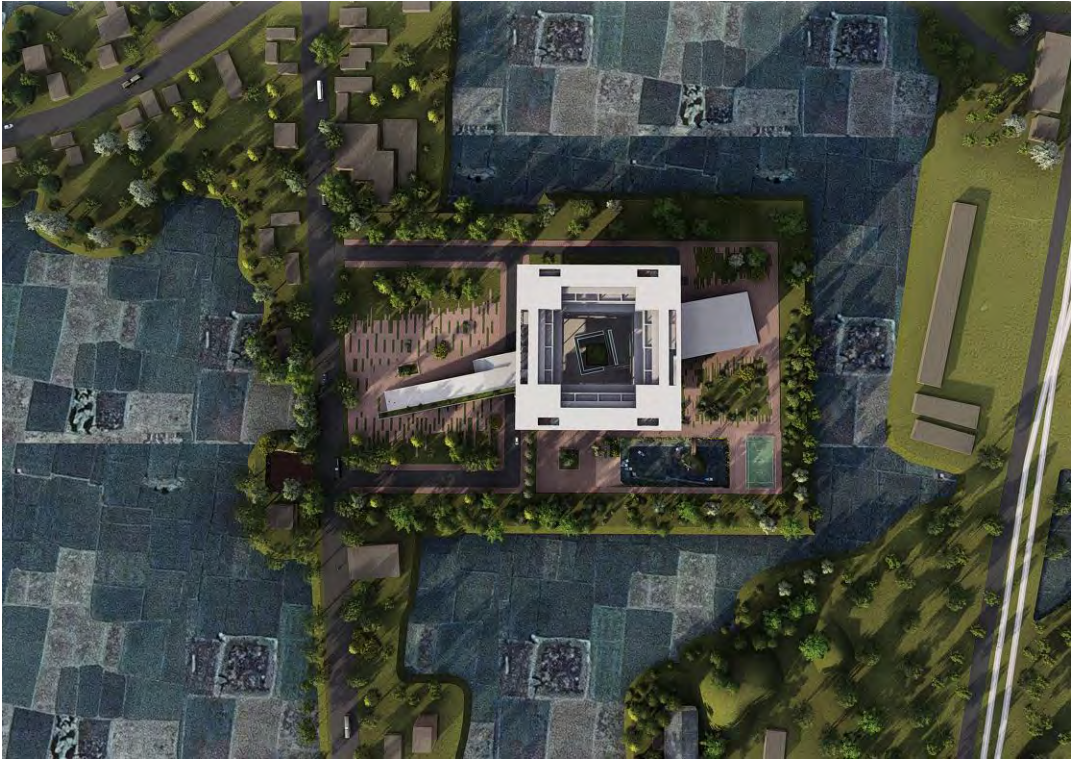
EAST ELEVATION
SCALE : 1'-0"=1/16"

6.8. Model Images





6.9. Top view and perspective



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