

# High Performance Centre:

Restructuring Notions Around Gaming





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Restructuring Notions Around Gaming

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MArch Wits 2017

This document is submitted in partial fulfillment for the degree: Master of Architecture (Professional) at the School of Architecture and Planning, University of the Witwatersrand, Johannesburg, South Africa in the year 2017. Supervised by Gerald Chungu



## **Declaration**

University of the Witwatersrand, I , Ceri David Laird, 477441 am a student registered for the course Master of Architecture (Professional) in the year 2017, I hereby declare the following:

I am aware that plagiarism (i.e. the use of someone else's work without permission and/or without acknowledging the original sources is wrong. I confirm that the work submitted for assessment for the above course is my own unaided work except where I have stated explicitly otherwise. I have followed the required conventions in referencing thoughts, ideas, and visual material of others. For this purpose, I have referred to the Graduate School of Engineering and the Built Environment style guide. I understand that the University of the Witwatersrand may take disciplinary action against me if there is a belief

that this is not my unaided work or that I have failed to acknowledge the source of the ideas or words in my own work.

## **Acknowledgment**

In completing this document, I would like to thank my mom and dad for always being there, giving me the opportunity to achieve my dreams and being a constant form of reassurance throughout all my university years.

To my friend Bobby, thank you for always helping me late at night even though you were just as stressed as I was, for always having my back and being my idea man.

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## **Abstract**

The aim of this master thesis is to explore alternative ways in which gaming and technology can be seen, not only in Johannesburg but on a world wide scale.

This comes in the form of a new school as part of Wits, interactive museum, game development centre and a facility to develop professional gamers. With Braamfontein already under massive growth in this sector and its centralized location, it is a perfect spot to facilitate this thesis. The aim is to restructure the notions people have about gaming, the industry and the future. Further positive strengthening of the ideas by the placement of the building on the site, and working with the relation to the landscape in a new technology orientated understanding of place and identity.

## Glossary

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**AI:** the capacity of a computer to perform operations analogous to learning and decision making in humans, as by an expert system, a program for CAD or CAM, or a program for the perception and recognition of shapes in computer vision systems.

**Arcade:** an establishment, public area, etc., containing games of a mechanical and electronic type, as pinball and video games, that can be played by a customer for a fee.

**eSports:** competitive tournaments of video games, especially among professional gamers.

**First Person:** game which you control a character from inside their body and see through their eyes.

**LAG:** to fail to keep up with, used when talking about the connection between computer and server. The delay between your input and the response inside the game.

**LAN:** of or relating to Local Area Network a system for linking personal computers and workstations with each other in order to share data, devices, programs, etc.: usually confined to one office, building, or home.

**LAN Party:** a gathering of people with computers or compatible game consoles, between which they establish a LAN connection between the devices using a router or switch, primarily for the purpose of playing multiplayer video games together.

**LoL:** of or relating to League of Legends a computer game developed by Riot Games.

**Online:** connected by computer to one or more other computers or networks, as through a commercial electronic information service or the Internet.

**Server:** a computer that makes services, as access to data files, programs, and peripheral devices, available to workstations on a network.

**Sci-fi:** of or relating to science fiction.

**Third Person:** game where you control a character or characters from a higher perspective overlooking the characters.

**VR:** a realistic and immersive simulation of a three-dimensional environment, created using interactive software and hardware, and experienced or controlled by movement of the body.





# History of Gaming:

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## History of Games

Games being an integral part of all cultures have been around since the ancient human past, and are one of the oldest forms of social interaction to date. Bringing order to playing style and allowing people to go beyond physical activity and immediate imagination. Some features of games include; personal enjoyment, elements of fiction, competition, prescribed goals, uncertainty of outcome, elements of chance, separate place and time and agreed upon rules.

Generation after generation pass their games and styles on. They capture and showcase the current world-views and ideas of their cultures. Some games became pastimes for the elite and royalty, with some even featuring in court culture and given as gifts. Games not only bring people together and create a bonding experience, they

also can be used as teaching tools or markers of social status. Games like *Senet* and imbued in mythic and ritual religious significance, was a ball game from the Mesoamerican era. *Gyan chauper* and *The Mansion of Happiness* created by George Fox in 1843 were used to guide moral and divine teachings, while Shatranj and Wéiqí (Go) developed in ancient China more than 2500 years ago developed military and mental skills.

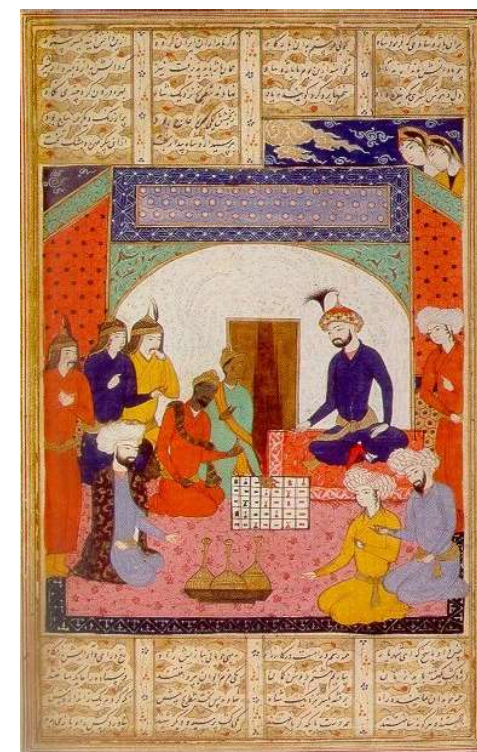
Johan Huizinga wrote in his 1938 book, *Homo Ludens*, that:

**“games were a primary condition of the generation of human cultures”**

(Johan Huizinga. 1938)

Johan Huizinga a Dutch cultural historian saw how games were used for complex human activities like art, war, language, philosophy and law.

He noted that the playing of games “is older than culture, for culture, however inadequately defined, always presupposes human society, and animals have not waited for man to teach them they’re playing.” (Johan Huizinga. 1938)



III.1 Indian Ambassadors present Chaturanga to Khosrau I, from "A treatise on chess", 14th century, [https://en.wikipedia.org/wiki/History\\_of\\_games](https://en.wikipedia.org/wiki/History_of_games)



**Mediterranean and Mesopotamia:**



III. 2 A Senet gameboard and game pieces from the KV62 tomb of Tutankhamun—originally from Thebes. [https://en.wikipedia.org/wiki/History\\_of\\_games](https://en.wikipedia.org/wiki/History_of_games)



III.3 Royal Game of Ur, southern Iraq, about 2600-2400 BCE. [https://en.wikipedia.org/wiki/History\\_of\\_games](https://en.wikipedia.org/wiki/History_of_games)



III. 4 Board game with inlays of ivory, rock crystal and glass paste, covered with gold and silver leaf, on a wooden base. [https://en.wikipedia.org/wiki/History\\_of\\_games](https://en.wikipedia.org/wiki/History_of_games)



III. 5 Ludus duodecim scriptorum table in the museum at Ephesus, an ancestor of Backgammon. [https://en.wikipedia.org/wiki/History\\_of\\_games](https://en.wikipedia.org/wiki/History_of_games)



III. 6 Modern reconstruction of the Roman board game, Ludus latrunculorum (The bandits' game or the soldier's game), Museum Quintana of Archaeology, in Künzing, Germany. [https://en.wikipedia.org/wiki/History\\_of\\_games](https://en.wikipedia.org/wiki/History_of_games)

Middle East:



Ill. 7 Shatranj set, glazed fritware, 12th century. [https://en.wikipedia.org/wiki/History\\_of\\_games](https://en.wikipedia.org/wiki/History_of_games)



Ill. 8 A Persian miniature illustrating the poem Guy-o Chawgân ("the Ball and the Polo-mallet") from the Safavid dynasty. [https://en.wikipedia.org/wiki/History\\_of\\_games](https://en.wikipedia.org/wiki/History_of_games)

India:



Ill. 9 Hindu deities Shiva and Parvati playing chaupar, ca. 1694–95. [https://en.wikipedia.org/wiki/History\\_of\\_games](https://en.wikipedia.org/wiki/History_of_games)

East Asia:



Ill. 10 A pair of Eastern Han dynasty (25–220 CE) ceramic tomb figurines of two gentlemen playing liubo. [https://en.wikipedia.org/wiki/History\\_of\\_games](https://en.wikipedia.org/wiki/History_of_games)



Ill. 11 A screen painting depicting people of the Ming dynasty playing Go, by Kanō Eitoku. [https://en.wikipedia.org/wiki/History\\_of\\_games](https://en.wikipedia.org/wiki/History_of_games)



Ill. 12 Xiangqi game pieces dated to the Song dynasty (960-1279) [https://en.wikipedia.org/wiki/History\\_of\\_games](https://en.wikipedia.org/wiki/History_of_games)



Ill.13 Shogi, Go and Sugoroku; Japan, 1780. [https://en.wikipedia.org/wiki/History\\_of\\_games](https://en.wikipedia.org/wiki/History_of_games)



Ill. 14 Early Rattanakosin period Makruk set with pieces made from albino and black water buffalos' horn. [https://en.wikipedia.org/wiki/History\\_of\\_games](https://en.wikipedia.org/wiki/History_of_games)



Ill. 15 The Xuande Emperor (1425-1435) of the Ming dynasty playing Chuiwan. [https://en.wikipedia.org/wiki/History\\_of\\_games](https://en.wikipedia.org/wiki/History_of_games)



Ill. 16 Pit marks supposed to be ancient Gebeta (i.e. mancala) boards in the base of an Aksumite stele, Axum, Ethiopia. [https://en.wikipedia.org/wiki/History\\_of\\_games](https://en.wikipedia.org/wiki/History_of_games)

## Africa:



## Americas:



III. 17 Patolli game being watched by Macuilxochitl as depicted on page 048 of the Codex Magliabechiano. [https://en.wikipedia.org/wiki/History\\_of\\_games](https://en.wikipedia.org/wiki/History_of_games)



III. 18 Sak Ch'een, lord of Motul de San Jose c.8th century, dressed as a ball player. [https://en.wikipedia.org/wiki/History\\_of\\_games](https://en.wikipedia.org/wiki/History_of_games)

## European:



III. 19 Hnefatafl reconstruction. [https://en.wikipedia.org/wiki/History\\_of\\_games](https://en.wikipedia.org/wiki/History_of_games)



III. 20 Christian And Muslim Playing Chess. Libro de los juegos. [https://en.wikipedia.org/wiki/History\\_of\\_games](https://en.wikipedia.org/wiki/History_of_games)



III. 21 Medieval illustration of tabula players from the 13th century Carmina Burana. [https://en.wikipedia.org/wiki/History\\_of\\_games](https://en.wikipedia.org/wiki/History_of_games)



### **'Modern' style of Board Games**

Majority of board games currently in circulation have been adapted to suit the current era of style. Rules change and so do the pieces, they have to keep adapting to stay relevant and interesting for consumers to enjoy.

Today board games are still a vital part of social interaction. They allow a group of people to step away from electronics and enjoy a face to face form of entertainment. With so many options there is something out there for every mood or situation.

The 15th century saw the development of modern chess in Italy and Spain, the Queen, originally only allowed to move one square diagonally was transformed into its agile piece you see today. Books and theory started to appear as well in writings such as Repetición de Amores y Arte de Ajedrez (Repetition

of Love and the Art of Playing Chess, 1497) by Spanish churchman Luis Ramirez de Lucena.

Adolf Anderssen was the first ever winner of the international chess tournament which was held in 1851 in London. Not long after, in 1886, saw the start of the Official World Chess Championship which was won by Wilhelm, Steinitz and held in the United States. After that chess continued to grow and soon became a professional sport by the 20th century with clubs, tournaments, publications and player ratings.

Go and Shogi are the professional level board games played in Japan and China. Just this year saw the first AI program beat the world's top ranked GO player, Ke Jie lost to Google's AlphaGo in this historic and ancient game.

In 1997 in London the very first exhibition of a Mind Sports Olympiad was organized. This included modern and traditional board games. Backgammon, Risk and Scrabble are included in the list of professional board games played at world championships.

### **Commercial Board Games**

While the board game industry is smaller than that of video games, it has been on a steady climb since 2012. (Dan Jolin, 2016, The Guardian) There are a lot of pros to board games : Ability to play them anywhere, without power, teaching kids about life and strategy, induce a healthy competition, relaxing and enjoyable, facilitate interaction and pressure-free socialization, all while bringing family and friends closer together.

Snakes and Ladders, a popular board game played throughout the world is an adaption of the Ancient Indian game of *Pachisi*. The game was developed to teach lessons of karma, the right and wrong, with snakes representing vices and ladders virtues.

Most of the earliest games released in the USA were based on Christian philosophy. Among these games

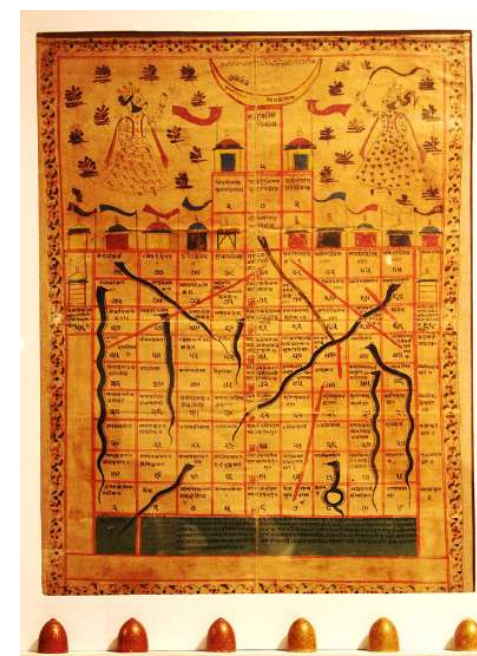
where: *The Siege of the Stronghold of Satan by the Christian Army* (W. & S. B. Ives .1843) and *The Mansion of Happiness* (George Fox . 1843).

*The Checkered Game of Life* was a radical change to this concept of faith will get you everything you need in life. The game was based on material success where achievements such as tertiary education, marriage and getting rich had advantageous outcomes in the game.

*Monopoly* is based on *The Landlord's Game*, designed by Elizabeth Magie, it was intended to "illustrate the economic consequences of Ricardo's Law of Economic rent and Georgist concept of a single tax on land value." (Elizabeth Magie. 1888)

*Salvo*, published in 1931 dates to before World War 1 where Russian

Officers played the game on paper, it is now known as *Battleship*.



Ill. 22 Gyan chauper, Late 18th Century Jain game board on cloth in the decorative arts gallery of the National Museum of India. Acc. No. 85.312. [https://en.wikipedia.org/wiki/History\\_of\\_games](https://en.wikipedia.org/wiki/History_of_games)



Ill. 23 The Game of the District Messenger Boy (1886) encouraged the rags to riches idea that a lowly messenger boy could ascend the corporate ladder to become president. [https://en.wikipedia.org/wiki/History\\_of\\_games](https://en.wikipedia.org/wiki/History_of_games)

## Card Games

Card games are any game that is played using playing cards as the primary device. The advantage of a card game is you only need a single deck of cards to be able to play countless games. There are a small handful of card games that have standardized rules but most games vary in rules based on region, culture and person.

Originating during the 15th century, card games have been constantly adapted and changed, with new games being created ever since the first book of rules, Complete Gamester came out. Twenty-one the start of Blackjack can be found in a book dating back to the mid-16th century. Poker dates to 1833 and was a popular game amongst soldiers during the American Civil War. In 1970 as a result of the World Series of Poker, casinos started to include

the game at their establishments. 2009 gave rise to The International Federation of Poker which became the controlling organization of all Poker tournaments.



III. 24 British soldiers playing cards in France, 1915.  
[https://en.wikipedia.org/wiki/History\\_of\\_games](https://en.wikipedia.org/wiki/History_of_games)

## Miniature Wargaming

Miniature wargaming is a form of turn based gaming that is played on modeled terrain with miniature figurines. The game could however be played with counters on a simple table top. The games idea is to simulate a battle in which each of the players is a general commanding his/her army in a quest to become victorious over the enemy.

*The king's Game*, a German chess variant, created in 1780 by Helwig was played on a varying terrain of 1 666 square blocks with pieces representing modern military units. *Kriegsspieler* a war game developed by the Prussian's, used dice to determine the players chance or "friction", a score keeper was also present to keep track of results. After their victories against France and Austria, many countries including Japan, Russia, France and Britain started

using Wargamming as a training tool.



III. 25 H. G. Wells playing Little Wars. [https://en.wikipedia.org/wiki/History\\_of\\_games](https://en.wikipedia.org/wiki/History_of_games)



## Role Playing Games

Played by a group of people, each person takes on a role of an imaginary character that enters a predetermined story, usually generated by the referee, and proceeds to engage in adventures.

*Dungeons & Dragons*, one of the most played RPG board games was initially developed from Wargames back in 1971. Played on a standard board with the option of different “map” iterations the participants begin by choosing a character and his back story. The players must work together through a story created by the game master (many different stories are available Online) and using dice to decide each outcome.



Ill. 26 D&D game in progress. [https://en.wikipedia.org/wiki/History\\_of\\_games](https://en.wikipedia.org/wiki/History_of_games)

## Outdoor Games

The most popular outdoor sports to date were developed in Europe. Tennis in France, Golf from Scotland, Cricket in England as well as modern football and soccer being standardized by English public school students. These sports spread throughout the world during the influence of the British empire and their colonization.



Ill. 27 The new grounds of The All England Lawn Tennis Club at Church Road, Wimbledon during The Championships in 1922. [https://en.wikipedia.org/wiki/History\\_of\\_games](https://en.wikipedia.org/wiki/History_of_games)

## Electronic Games

In 1947 inventors wrote “Cathode ray tube amusement device” (Thomas T. Goldsmith, Jr. and Estle Ray Mann, 1947) on a United States patent registration document, this is the first reference to a digital gaming device. Throughout the 1950’s and 60’s the majority of digital games were hosted on university mainframe computers and were not accessible to the public. It was only from the start of the ’70’s the public accessible arcade machine started to pop-up in malls and larger establishments. Magnavox Odyssey was released in 1972, a gaming console designed for household use.

The arcade and household gaming industry was on a steady climb with each new generation of console spiking the public’s interests. 1983 saw the abrupt hold on this climb as the North American video game hit a crash. The however didn’t stop

developers and inventors from trying again a few years later. The next generation of consoles revitalized the industry and saw Japan take over as the new dominating region for this industry.

During this era huge leaps were taken with the introduction of the personal computer, online gaming and early LED hand-held devices.

This is where my Thesis will primarily be focused on. The growth of the gaming industry in South Africa and its professional aspect.



III, 35 1972 Magnavox Odyssey, [http://digitalspyuk.cdnds.net/14/50/768x576/gallery\\_gaming-magnavox-odyssey-console.jpg](http://digitalspyuk.cdnds.net/14/50/768x576/gallery_gaming-magnavox-odyssey-console.jpg)

## Evolution of gaming and its community

In 1940, Dr. Edward Uhler Condon unveiled the first example of a gaming machine at the New York World's Fair. During its six months on show, the machine was played by more than 50 thousand people and won roughly 90 percent of them. The game was a repurposed version of Nim, an ancient Mathematical game.

*Brown Box* the first commercial games system was designed by Ralph Baer and was released in 1967 by himself and his team. The system designed using a vacuum tube-circuit, allowed (when attached to a TV) two players to choose from 1 of 7 games, which included: checkers, ping-pong and sports games. The system also allowed for additional accessories such as a light gun and a golf club for shooting games or a putting game.

"The minute we played ping-pong, we knew we had a product. Before that we weren't too sure." (Ralph Henry Baer, 1972)

In 1972 preceding Atari by only a couple of months saw Magnavox release their system the Magnavox Odyssey a first for digital home entertainment.

Sadly, after around 300 000 console sales from 1972 to 1975 Magnavox was discontinued, said to be over bad mismanagement and poor marketing (their sales weren't enough to keep the company afloat) Regardless, this was the birth of electronic gaming. (<http://www.vgchartz.com/>)

### The Arcade scene and Atari's rise:

Nolan Bushnell, known as the godfather of gaming, founded Atari

in 1972 and began the long journey towards a large-scale gaming community. With Atari moving forward with their in-house game development a second industry was being created around the 'arcade'.

*Pong*, the first real digital game, Atari began to sell arcade machines all around the world. Seen in bowling alleys, bars and shopping malls tech-heads realized that these machines would be the next big thing and between 1972 and 1985 saw new companies forming and developing games for this expanding market.

### The roots of Multiplayer gaming as we know it:

With many restaurants and establishments wanting to capitalize on the new craze, video game console started to be installed in most shops.

This started a competition amongst players who could record their scores and initials on screen and with each new player trying to obtain top spot. The systems were limited to only allowing one player at a time and the only way to determine if you were better than another player was through your end game score.

*Empire*, a strategic turn-based game launched in 1973 and allowed players to compete on separate screens with up to 8 players total. During the period 1973 to 1985 a record 300 thousand hours of game play was recorded. After the massive success of their first game PLATO released what is regarded as the first 3D multiplayer game, *Spasim*, a 32-player space shooter. The game however was limited to larger audiences who could afford the system and accessories like Universities, but PLATO was one



Ill. 28 Starting position of a game of Pong . <http://www.tacticalgaming.net/hq/news/wp-content/uploads/2014/09/PONG.gif>



Ill. 29 Group of friends enjoying arcades during the 70's. <https://s-media-cache-ak0.pinimg.com/originals/09/07/fd/0907fd8edbd7188eac387a9c462c0351.jpg>



of the first companies to head for the Internet and Online multiplayer.

This was still early stages and the likelihood of seeing a gaming console in 80% of households was a far reach for some to see.(<https://techcrunch.com>)

### Home gaming becomes a reality:

With the growth of gaming consoles in restaurants and commercial spaces, the 70's also saw the arrival of mass produced consoles and personal computers. With Intel releasing the first microprocessor, game designers took a massive leap forward with their creation of games.

*Gunfight*, a human to human based shooter burst onto the scene and wowed arcade goers with its new style of gameplay, incorporating a

control for movement and another for aiming, which had not been seen before.

The Atari 2600 a console that allowed game developers the freedom to push all boundaries of design with the cartridge slot. This gave them the freedom to design a game without limitations, code it onto a cartridge and sell it separately to the console itself. It was so successful that sales jumped from 250 thousand to 2 million from 1977 to 1980. (<https://techcrunch.com>)

Gaming magazines also started to be printed and this created a community where gamers could interact and learn about all things gaming.

### The age of Personal Computers and community integration:

With more and more companies trying their hand at game and console development, 1983 saw a massive market crash with regards to video games. This was due to unpopular and poorly designed games being released, with multiple titles just being rip-offs of each other. The gaming industry needed a change, and personal home computers had something new to offer.

Apple 2, Commodore 64 and Commodore Vic-20 released at an affordable price and marketed as "sensible option for the whole family" during the early 80's, with a more powerful processor allowing gamers the ability to play more advanced 3D games. With Bill Gates having created his own game and included in the systems BASIC a code program allowing the users to create their own games, everyone was getting



III. 30 Atari 2600, released September 11, 1977. [https://cdn.geekwire.com/wp-content/uploads/2017/04/7382-Atari-2600-3-4-view-600\\_7703F70F4.jpeg](https://cdn.geekwire.com/wp-content/uploads/2017/04/7382-Atari-2600-3-4-view-600_7703F70F4.jpeg)

involved. You would even see gaming magazines publish codes for people to input and use in their own designs.

These early computers including the Atari ST console which granted players the ability to pair their devices to each other and allowing cross-platform multiplayer games to be enjoyed. The computers were hooked up from the MIDI-out of one computer to the MIDI-in of another, designed to have up to 16 players connected together, users reported that the game was only able to handle 4 at a time before it started to crash. Even though it seemed like a disaster this was a major milestone, and with the release of *DOOM* in 93 saw a massive leap for multiplayer games.

Network based multiplayer games took off with the release of *Pathway to darkness* and later *Quake*. Affordable

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network cards and the release of Windows 95 allowed more home computers to be connected together thus increasing the popularity of multiplayer games over private networks and giving birth to “The LAN Party”. (<https://techcrunch.com>)

LAN development and later the Internet allowed gaming to be more of a social experience rather than a solely individual entertainment tool. CERN published the World Wide Web software on the public domain on April 30 1993, it would however still be years until the Internet could handle the massive amounts of people and gaming it currently sees today. (<https://home.cern/topics/birth-web>)

### The move to Online gaming on consoles:

Atari, Sega and Nintendo made several attempts to break into the “Online” gaming world between 1993 and 1996. Limitations with Internet providers and cost lead to the idea falling short. Sega’s Dreamcast machine was a fully dedicated Internet console with a built in 56 Kbps modem and allowed users to “download” and play games over the telephone cable. (<https://techcrunch.com>)

This revolutionary system paved the way for future consoles such as the Xbox in the mid 2000’s but ultimately cost the company large amounts of money as they were the one footing the bill for the “downloads”.



III. 31 Friends enjoying a LAN Party at a residence during the 90's. <https://i.warosu.org/data/vr/img/0026/25/1440066048599.jpg>

Noted by tech experts as being ahead of its time, the idea brought forth MMORPG style of games. (<https://techcrunch.com>). *Runescape* in 2001 allowed millions of players from around the world to connect to a server and play with each other over the Internet. The game also included a chat feature making it more social than just a regular game.

#### **The modern age of gaming:**

The massive advancements in technology allowed gaming to progress at such an alarming rate that it is hard to keep up with the new technology. Each new improvement and design in games, far exceeds their predecessor that even now we have 51% of the world's population having access to the Internet and 26% of the population playing video games.

Online stores began to show up giving gamers a direct link to the latest games as they are released, and even better, right from the comfort of their homes. Communities, forums and applications are bringing gamers closer together, albeit through a virtual space, it is constantly growing. The ESA gaming report mentions that 54% of constant gamers report that gaming has improved their social skills with friends and family.

Most games now include an online multiplayer feature and some are solely Online. Game designers stress how important it is for a user to experience a game with friends and other people, they say it gives them a more immersive and fun experience.

“What I’ve been told as a blanket expectation is that 90% of players who start your game will never see

the end of it...” (Keith Fuller, an Activision employee.2014)

“Clans” became a regular thing inside multiplayer games, with competitions between clans being formed and larger communities developing. Clans, guilds or factions ranged from a couple of friends to thousands of members, each with a wide range of structures and goals.

#### **The move toward mobile:**

Since 2007 with the release of smartphones and app stores, gaming went through further change, it brought a new way for people to enjoy gaming and broke into the mainstream market allowing any person the opportunity to experience gaming. In 2015 mobile gaming, surpassed console gaming with regards to sales and creation.



Ill. 32 Player enjoying Virtual Reality device, Oculus Rift.  
<http://virtualrealitytimes.com/wp-content/uploads/2017/04/3044381-ocie.jpg>

Gaming demographics widened and mobile gaming pushed its way to the forefront of media with such a worldwide takeover. New websites, magazines and forums opened up all to talk about mobile games and the latest trends and tips for the industry. The industry was monopolized by a few companies but with mobile games being so easily accessible and affordable we have seen companies like Google and Apple slowly climb the ladder. Even start up companies have shot up with powerhouse releases such as *Angry Birds* and *Clash of Clans*.

#### **The future:**

The growth of mobile gaming has definitely been a pro for the gaming industry but with the limitations of smartphones games can only be so good. It is well suited to the busy

millennial who doesn't have time or a major interest in hardcore gaming. This is where you still see consoles in the lead and with each new generation games get more advanced.

The next generation of technology is VR, with the Oculus and Vive being released in 2016, gamers have been able to immerse themselves into their games. Fully immersive games are limited but the number grows each month with new releases. The devices allow you to "live" inside an interactive 3D world, where you control every part of the character with your own body movements. You can even meet up with friends in virtual bars or go on nature walks together without having to leave your home.

On the other side, we have had serious advancements in AI with Google's Deep Mind, Facebook AI

and even Elon Musk having his own style. Each having tackled real world players in Chinese board game GO and computer game *Dota 2*, with all AI's beating professional players.

These two advanced fields can bring together a completely new realm for gamers to experience gaming, with more realistic emotions and believable responses from NPCs. With the rapid growth in the field, by 2025 gaming will look completely different but it is sure to be an exciting journey.



III. 33 Competitor HTC Vive. [https://www.mlacom.si/modules/aktualno/uploads/htc\\_vive\\_mlacom.jpg](https://www.mlacom.si/modules/aktualno/uploads/htc_vive_mlacom.jpg)



## Game Theory

There are many different terms and words used for game theory. Mainly used by economist's game theory is "the study of mathematical models of conflict and cooperation between intelligent rational decision-makers." (David K. Levine, Department of Economics, UCLA. 1944). The rational part is very important to understanding how the theory applies to a wide range of behavioral relations. The theory is used as an umbrella term for the science behind decision making in computers, animals and humans.

Three other main branches:

Decision theory which can be seen as a single player vs nature. The essence lies in how beliefs are formed and in turn determine preferences. Assessing between preferences, then can be viewed as the maximization of the expected numerical utility which may

depend on a number of factors, but from the perspective of economists is often measured in monetary terms.

Related to these decisions is the use of Probability theory (used to represent the uncertainty of outcomes), and Bayes Law (to model how new information is used to revise beliefs).

General equilibrium theory is derived from the core of Economics - supply and demand and can be viewed as a specialized branch of game theory

Lately, the assessment of the political economy has evolved as a combination of general equilibrium theory and game theory in the sense that general equilibrium theory is used to model the behaviour of the private sector of the economy, whilst political behaviour such as voting and

government incentives are analysed using game theory.

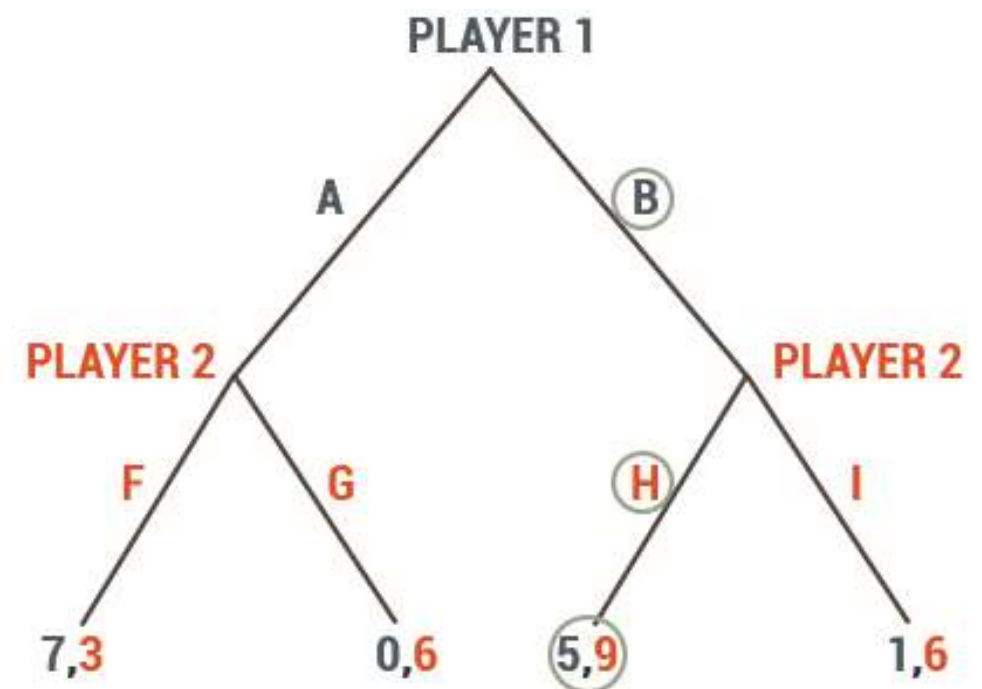
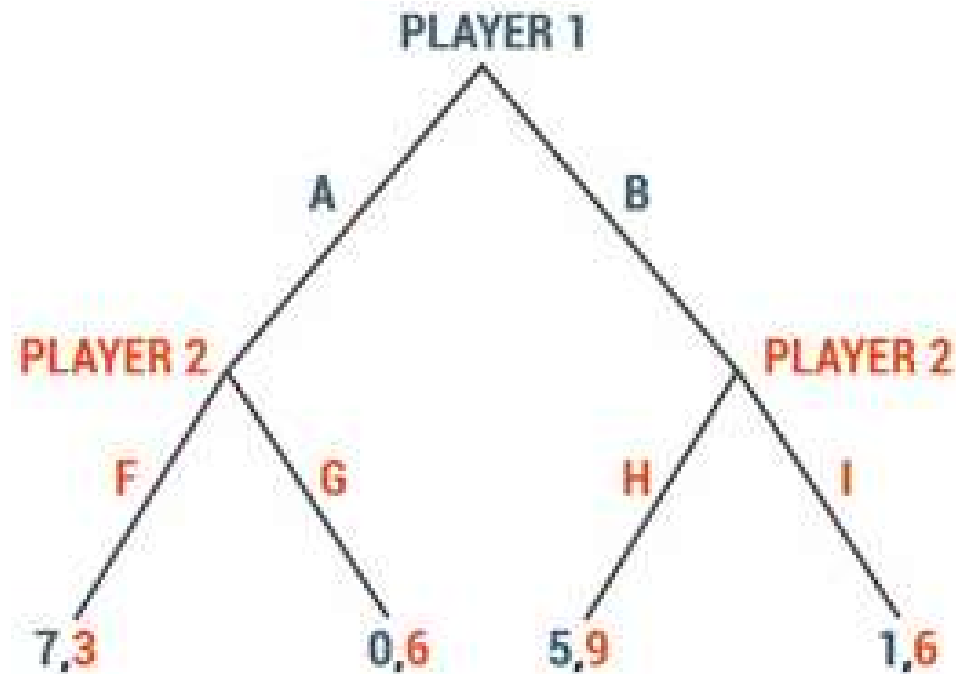
According to Levine, "Mechanism design theory differs from game theory in that game theory takes the rules of the game as given, while mechanism design theory asks about the consequences of different types of rules. Naturally this relies heavily on game theory. Questions addressed by mechanism design theory include the design of compensation and wage agreements that effectively spread risk while maintaining incentives, and the design of auctions to maximize revenue, or achieve other goals." (David K. Levine, Department of Economics, UCLA. 1944)

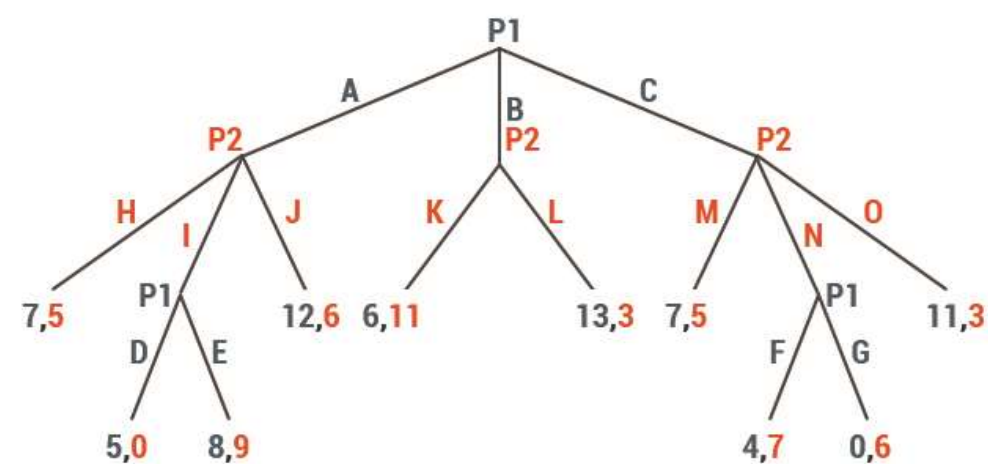
There are different ways to explain this theory and the two most common are demonstrated below.

We take two players, 1 and 2, in each example the goal is to act rationally and in the best interest of yourself with no concern to the other player. The objective is to maximize the amount of Unity you will receive; this depends on the choice of the second player and vice versa. Unity can be seen as your life happiness or life score.

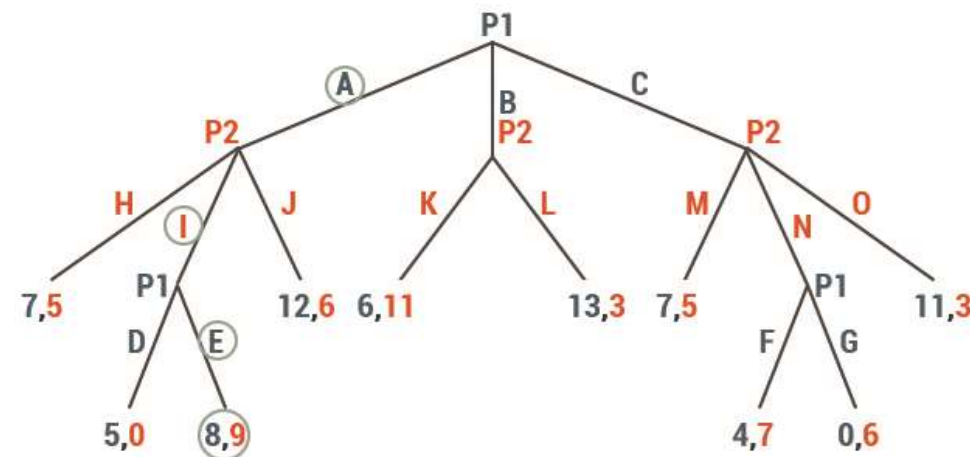
### Simple extensive form game:

In this example player 1 must choose to either go down avenue A or B, there after player 2 will decide either F, G, H or I to come to the outcome which shows how much unity each player will receive by colour and spaced with a comma. As stated each player is completely rational, therefore before player 1 should make his move he should first figure out what player 2 would do in each path. In path A player 2 would choose G as  $6 > 3$  and in path B he would choose H as  $9 > 6$ . Knowing this the rewards for player 1 are either 0 or 5 and as  $5 > 0$  player 1 should choose avenue B to maximize his unity.





In this second game player 1 gets to go again if path I or N are chosen by player 2, just like the previous example we will start with player 2 choice and work around that. Player 2 in avenue A has the option of either H, I or J leading to 5,0,9 or 6 unity, now player 2 would rather have 9 as it is higher than the rest, also lucky for him player 1 will pick avenue E over D as  $8 > 5$  therefore if A is picked Player 1 can expect to receive 8 unity. If B is chosen Player 2 will chose K over L as  $11 > 3$  this would lead to player 1 receiving 6 which is less than avenue A's 8 therefore B won't be chosen. In avenue C Player 2 can chose either 5,7 or 3 as player 1 will go for F over G as  $4 > 0$ . As 7 is the highest Player 2 will choose N leading to Player 1 Receiving 4 which is lower than A's 8. Therefore, for Player 1 to maximize his unity he will choose avenue A.



The next way of demonstrating game theory is with simultaneous move games. This is represented with the names of the participating players, and their choices. Inside this game the choices are called actions or strategies, and each player has the same choices available to him or her as the other player. This game can be represented using a matrix with grids and columns filled with the utility or payoff that each player would receive respectively

Normal form game:

Here each player picks a choice either A or B for Player 1 or X and Y for Player 2. They play at the exact same time without seeing the other player's choice. So, for this example, Player 1 will choose B because  $5 > 1$  and  $7 > 3$  either case he comes out better off than if he had chosen A. Player 2 will choose Y because  $4 > 2$  and  $8 > 6$  and again in each case he is better off with Y. Therefore, if B and Y are chosen then Player 1 will get 7 and Player Y will get 8. In this case this will be considered a Nash equilibrium, simply put neither of the players regrets their choice after seeing the other players. If either regrets his decision, then this is no longer a Nash equilibrium.

The Nash equilibrium is an outcome concept seen in game theory, during a two or more player game. This occurs when both players are happy with the

|          |   | PLAYER 2 |     |
|----------|---|----------|-----|
|          |   | X        | Y   |
| PLAYER 1 | A | 1,2      | 3,4 |
|          | B | 5,6      | 7,8 |

|          |   | PLAYER 2 |     |
|----------|---|----------|-----|
|          |   | X        | Y   |
| PLAYER 1 | A | 1,2      | 3,4 |
|          | B | 5,6      | 7,8 |

|          |         | PLAYER 2       |                    |
|----------|---------|----------------|--------------------|
|          |         | SILENT         | CONFESS            |
| PLAYER 1 | SILENT  | 1 YEAR, 1 YEAR | LIFE, FREE         |
|          | CONFESS | FREE, LIFE     | 20 YEARS, 20 YEARS |

A very famous game is the Prisoner's Dilemma game. In this game the two players have been arrested by the police on the suspicion of murder. They each have an illegal weapon on them and therefore are getting 1 year in jail each for this crime. The police then separate each player and give them a deal. If they stay silent they will get the 1 year for the illegal weapon, however if they confess that the other player committed murder they themselves would go free and not spend any time in jail, while the other player would get life. However, if both players confess then each will receive 20 years in prison for murder. This is explained to each of them and there is no changing of the deal regardless of what happens. Again, everyone is rational and only thinks for themselves, seen to the left is a representation of the payoffs each player would receive.

Just like the previous example each player wants the best outcome for themselves. Here Player 1 would rather be free than spend 1 year in prison, also he would rather spend 20 years in prison than life. This is the same for Player 2 who would rather be free than spend 1 year in prison, also he would rather spend 20 years in prison than life. Therefore, both Players would rather confess and each receive 20 years in jail.



## Use of Game Theory in Architecture:

These are just two of the examples of game theory used to rationally make decisions. As expressed this theory can be used in all aspects of life. Mzo Tarr Architects, founded by Adam Tarr is an award-winning firm which uses the theory. Tarr defines Game theory as “the mathematical study of decision-making between people in situations of conflict or cooperation” (Mzo Tarr, 2016) and is integral to his practice.

“Just about every design project involves a variety of parties—the client, planners, neighbours, investors—whose interests may not necessarily align.” (Mzo Tarr, 2016)

Mzo Tarr uses this theory to juggle the various demands, quantifying them into ranked priorities known as ‘utility curves’. They don’t stop there, even after the building is completed, the

theory is incorporated into its life, like when creating a better relationship between the neighbours.

When Tarr was approached to create a residential tower in London near Canary Wharf, working through the design he realized there was an opportunity to implement game theory between the residences on each floor. For people looking for a place to live in London, their first choice is the internal condition and floor space and second is the garden area. There is also a 90% chance that tenants would renew their lease if they had at least one good relationship with a neighbour. With garden space being something that architects overlook in the design, Tarr decided to start there. (<https://www.mzotarr.com>)

With this information, they could use game theory utility curves to create a game between the tenants and encourage them to create the shared garden space. In each of the circular floors there is a shared internal garden space surrounded by five residences. The idea that the garden be a shared space was to increase the community spirit and relationships between the neighbours. For this to work, each of the tenants needed to trade part of their internal floor space for the garden space. They can give up as much or as little space as they wanted to. For every 1 square meter of internal space they gave up, they got 2 square meters of shared garden space. Some tenants thought that if they didn’t give up anything they could just use the shared garden and be selfish, but the greatest spaces in terms of communal garden and private space were created when

the tenants all worked together in an unselfish way.

When looking at any design projects it is important to understand that people are different and want different things. It is fundamental to the designer that he understands each of the client’s motivations. A simple way of doing this is to ask the clients to rank the requirements of a project. This way you can start each project with a qualitative and quantitative design brief.

“In order to set up a project as a game, you must understand and quantify the motivations of all the players, not just your own.” (Mzo Tarr, 2016)

These payoffs give insight into the client’s priorities for the project but also provide the building blocks for how the clients motivations may

relate to those of another party i.e. planners. With game theory, it forces you to not only think about yourself but also the other players. Doing this will allow you to predict the outcome of the other players and allow you to decide your own best action in response.

Per RIBA, architects are “trained to understand a client’s needs and support strategic decision-making” (Mzo Tarr, 2016). Game theory in my opinion plays a major role in the Architectural industry and helps architects understand the strategic decisions people make and giving architects a better tool to process outcomes of different designs and construction methods.

“Gentrification is a trend in urban neighborhoods, which results in increased property values and the

displacing of lower-income families and small businesses. This is a common and controversial topic in urban planning”. (Mzo Tarr. 2016)

Some say this is a trend, but I say this is a trend rooted in a very well calculated risk. People with money have power. If they know they can take over a neighborhood by slowly upscaling it without much consequence, what’s going to stop them? At one point this was a calculated risk for the wealthy. This is an example of game theory that has happened often enough to become a trend in urban neighborhoods.

III. 34 Floor plans using Game Theory in Mzo Tarr building  
[https://images.homify.com/c\\_fill,f\\_auto,q\\_auto:eco,w\\_260/v1440641280/p/photo/image/632951/image\\_6\\_plans.jpg](https://images.homify.com/c_fill,f_auto,q_auto:eco,w_260/v1440641280/p/photo/image/632951/image_6_plans.jpg)



Game Theory in Games

Game theory can be used in making the best decision when a team needs to plan for the next tournament or game. Whether they need to play for a draw or fight for the win, position themselves offensively or defensively, all of their decisions are informed through research and current play styles of their opponents. However as we have seen in the examples a team could use their opponents strengths and over confidence against them.

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# Architecture and Gaming:

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### **Digital world, an Architects guide: Abstract**

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Architecture in video games has always been theoretical, surpassing what is available in the real and demonstrating the endless possibilities that could occur. It creates micro worlds and universes, with vehicles to change and alternate ideas of the world we live in past, present and future. The defining element of its design is the ability to transport us into fictional landscapes. Great architecture allows the experience of both the narrative and gameplay to be brought alive. Bringing about full immersion has become one of the key objectives in game design, with recent titles expanding on the frontiers of virtual environments and through renderings of entire cities and territories. Allowing their users to be transported in time to places and architecture they didn't think possible to experience. Unlike other forms of media, games deliver

believable, fictional environments that can be approached experientially providing new stages for storytelling and conceptual creativity.

In my essay I will be presenting some attractive and thought vexing landmarks and spaces.

### **Digital World Environments - Scenarios**

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"Located in Eastern Europe, City 17 is an unsettling metropolitan area, featuring a variety of architecture types, from pre-World War II neoclassicism to post-war revivalism, Soviet modernism, and contemporary design, as well as alien structures. The most disturbing locations, however, appear to be the ones comprising anonymous buildings—collective housing blocks that resonate with the strange nature of this post-apocalyptic world where humans are beginning to lose their memories, unable to remember the past, forgetting even who they are." (<http://half-life.wikia.com/wiki/Half-Life>)

"The sprawling landscape of *Red Dead Redemption* takes its inspiration from the iconography of the American Old West. The territory is based loosely on the Rio Grande Basin, the frontier region between Texas and Mexico,

and contains many settlements, gang hideouts, bridges, a perfectly functional railroad system, and a wide variety of geographical features to discover. Featuring a dynamic weather system, with smooth transitions between night and day, this continuous environment allows free exploration through thousands of square miles of virtual territory, from populated towns to the hostile wilderness teeming with wild life. The wide-open vistas, with vivid sunsets and sunrises, are a testament to the majesty of video games as a medium to experience a genuine sense of landscape." (<http://www.rockstargames.com/reddeadredemption>)

"An authentic depiction of Los Angeles in the year 1947 serves as the backdrop to *LA Noire*. The game presents an obsessively accurate recreation of the city's



built environment with faithful reproductions of buildings, locations, vehicles, and traffic patterns. As you drive through this open-world metropolis you can witness a vibrant period of accelerated urban development, with its majestic downtown and expanding suburbs still under construction.” (<http://www.rockstargames.com/lanoire>)

“Columbia, the setting for *BioShock Infinite* is nothing less than a city floating in the sky. Commissioned by the United States government and founded by ultra-nationalist leader Zachary Hale Comstock, this emerging utopia was built for the World’s Columbian Exposition held in Chicago in 1893 to celebrate the 400th anniversary of Christopher Columbus’s arrival in the New World. In Columbia, neoclassical buildings, skyscrapers, bridges, and boardwalks

hover over the Earth below, suspended with the use of Quantum levitation technology, and navigated with the aid of giant blimps, balloons, rockets, and propellers. A testament to American exceptionalism, Columbia was initially hailed as a floating symbol of the nation’s political and religious ideals, but seceded from the United States in the turn of the 20th century and disappeared into the clouds.” (<https://www.2kgames.com/bioshock/>)

“In *The Last of Us*, martial law is declared after the outbreak of a deadly fungal infection and many American cities are transformed into military-controlled Quarantine Zones. The remaining, non-infected population is kept safe inside these heavily guarded areas, but live under a permanent state of absolute rule. Meanwhile, the world outside is being slowly reclaimed by nature. Taking

inspiration from nonfiction books and essays such as *The World Without Us* and *Zones of Exclusion: Pripyat and Chernobyl*, *The Last of Us* depicts crumbling buildings, roads, and other man-made structures and wild animals taking over the streets. It’s an eerie representation of what would happen to our built environment without the presence of humans.” ([https://www.naughtydog.com/games/the\\_last\\_of\\_us](https://www.naughtydog.com/games/the_last_of_us))



III. 1 American Old West, Red Dead Redemption (2010). [https://images.indiegogo.com/file\\_attachments/687871/files/20140701131025-ruinas.jpg](https://images.indiegogo.com/file_attachments/687871/files/20140701131025-ruinas.jpg)



III. 2 Los Angeles, LA Noire (2011). <http://www.playthepast.org/wp-content/uploads/2013/11/la-noire5.jpg>



III. 3 Columbia, BioShock Infinite (2013). [http://www.hoodedutilitarian.com/wp-content/uploads/2013/06/2013-03-26\\_00008.jpg](http://www.hoodedutilitarian.com/wp-content/uploads/2013/06/2013-03-26_00008.jpg)



III. 4 Post-apocalyptic America, The Last of Us (2013). <http://cdn.collider.com/wp-content/uploads/The-Last-of-Us.jpg>

### Digital world, an Architects guide.

For most people experiencing cities and buildings on other continents is something of a dream. But to be transported back in time to a site where everything is as it was, is something all of us can't achieve without the help and advancement in games and virtual reality devices. The growing demand for games and virtual content has skyrocketed in the last year alone. With more and more people wanting to experience the world we live in through digital means, how can developers design believable and realistic spaces.

Architects and historians play a massive role in creating these spaces that players and users can experience it to the fullest. Take *Assassin's Creed II*, set during the late 15th century and taking place in Venice, Florence, Forlì and Monteriggioni to name a few of the Italian regions.

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Not only is the game fun to play but through the use of a codex that pops up when the user is close to important characters and landmarks, the game becomes an encyclopedia of architectural history. Needless to say, I've spent much of my time doing nothing more than sightseeing, discovering wonderful churches and temples, enjoying the exquisite sights provided by the city's iconic hills and aqueducts, and stopping every now and then to read the latest codex information. *Assassin's Creed* is any Architects dream when it comes to historical building knowledge and viewing. Architecture is not just pretty buildings however, it is a conversation with the landscape and the people, it is so much more.

**“Architecture’ is the art of designing buildings, or the style of a building with regard to a specific period, place, or culture.”**(Jon Bouchoud.2013)

All of the games I have listed before have great detail and transport you to a different time in an accurate and artistic way. The digital world is an amazing place for architects and scholars alike, but is that all it can be? Why are we not pushing our imagination to the very limits? This is the perfect place to see if new ideas can work and be functional. There is a massive untapped side to digital architecture and space that needs to be looked at.

Durable, useful and beautiful (firmitas, utilitas, venustas) these are the words of Vitruvius, a famous Roman Architect, on how he defined a good



III. 6 Renaissance Italy (Florence, Venice, Rome), Assassin's Creed II (2009), Assassin's Creed Brotherhood (2010).  
<http://www.playthepast.org/wp-content/uploads/2013/08/sophia.jpg>



building. Thousands of years later video games and virtual games have applied these principals in all facets of creation.

Architecture can be so much more than just a sexy building or something that makes lots of money. Both the digital and real world are full of buildings of every scale and function and yet there is still a massive shortfall in 'Architecture'. In the real world as in game design there is so much ego driven buildings based on what people want right now and not about pushing the boundaries and exploring the very edge of function and design. The architecture in the game was left out in a way forgotten about, it wasn't given the attention and care it deserves. Through the digital realm we can change the way people think and feel about architecture and space and these ideas can be brought

into the real world to make our space a better more interesting one.

One might think that architecture would reach new heights when designed in ephemeral environments. With no budgetary and physical limitations, the architecture could become so much more. It can become a wholly narrative, full of meaning, instigate a powerful user experience and convey a deep connection to the game plot and player perception. Sometimes it gets there, but in most cases it's a miss that turns out to be worse off for the game. This pervasive phenomenon of architecture that is evident in every aspect of the game, that deeply affects the players experience, is nothing more than a background support mechanism. Beyond the large budget projects, in-game architecture is just a rehash and reuse situation that spews out

bad architectural habits of real world designs, littered with cliché and after-thought design gimmicks.

If you are someone who can create photo-realistic environments and produce amazing concept designs, you are on the fast track to becoming a successful game designer. If you take any game review you will see that "product" is more of a focus than "process", and with each new game you can see it has a sort of random event at becoming a major success. It's very rare to find a game that has gone into so much research and understanding that it gives the user a more powerful experience. Maybe the developers feel that it's something that people won't care about and would be lost on some? Customers of real architecture aren't given much more credit. There is definitely more room for developers to grow digital



III. 6 La Maison de Verre Photo by La Maison de Verre, Thames and Hudson, 2007 [http://www.haaretz.com/polo-ly\\_fs/1.366726.1307585463/image/2221610858.jpg\\_gen/derivatives/landscape\\_625/2221610858.jpg](http://www.haaretz.com/polo-ly_fs/1.366726.1307585463/image/2221610858.jpg_gen/derivatives/landscape_625/2221610858.jpg)

architecture and have a greater impact on their user's experience.

Once a designer has figured out the era of his next game. They might have even discussed the architecture in a presentation, regarding its concept or design style of the game. They could have displayed amazing ideas about a space station in a sci-fi game, or castles in a medieval game, historically accurate events and location designs in a siege style game. Working very hard at nailing down the beautiful buildings like in *Assassins Creed* or *La Noire*. However, this doesn't mean that you have designed architecture. Buildings are not always architecture.

Christopher Alexander calls it "the quality without a name." It's that exact sensation that architecture can convey when all the elements come together in perfect unison.

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The only time I have been able to experience this was in Paris, inside the Maison de Verre, or Frank Lloyd Wrights, Bernart Schwartz House in Wisconsin. These two places made me realize how deep and fundamental architecture can be. They both have an extreme connection to the way people experience them.

**"A great building must begin with the immeasurable, must go through measurable means when it is being designed, and in the end must be unmeasured."** (Louis Kahn)

Before designers can create a unique architectural experience, it must go through the measurable, as Kahn says. Form has to face function. Architecture is a wondrous art form that can evoke emotion, tell a story and shape a player's experience. It can help aid players through the

environment like a well-designed choreography, guiding the user. One architect is well known for doing such a thing in real life. Frank Lloyd Wright, used strong juxtapositions between light and dark areas, giving height to areas that needed emphasis. He allows the user to enter through a compressed space before unveiling the true architectural experience, high ceilings, shafts of light and spaces that roll out before the user.

**"In music, the point of the composition is not to get to the end of the composition. If that were so the best composers would be the ones that got to the end the fastest. And there would be composers who only wrote finales. People would go to the concert just to hear one crashing chord. Cause that's the end. Same as dancing. You don't aim at a particular spot in**



III. 7 Assassin's Creed: Revelations and Constantinople. <https://wi-images.condecn.net/image/nU87xbMYpXy/crop/405/landscape>

**the room where you should arrive. The whole point of dancing is the dance.”** (Alan Watts)

The contrast between different spaces allows architecture to elevate a player’s experience to become more powerful and have a deeper emotional reaction to the game. Using hierarchy and contrasting it with the rhythm of the building, a user is able to navigate through a space easier as well as giving them datum points to remember their position. The hierarchy of architectural elements through colour, scale, shape, texture, etc. has more of an impact on the users experience that elements that have the same visual weight as one another.

Most designers just apply a skin to the facades of the building to make it more realistic, they don’t

think about how soft and warm materials have different emotional effects on the player. Using different textures, lighting and colours on certain surfaces, these can have a psychological impact on the player and either attract towards or repel away from certain locations or objects. Architecture creates interesting navigation paths that let you explore the building functions in more details than a flat facade.

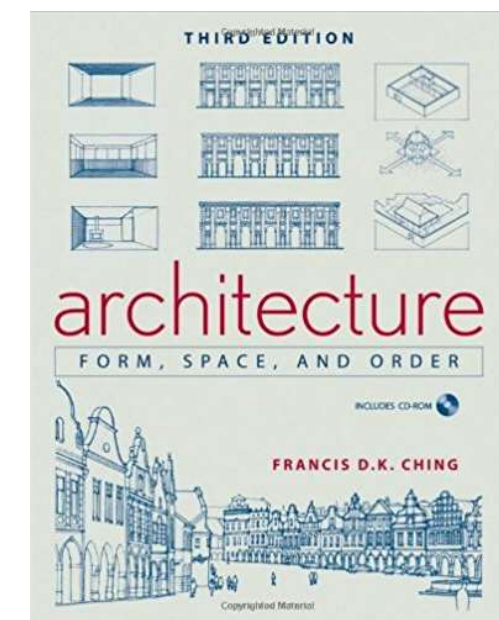
A building cannot just be birthed from the ground, placed on a site that has no connection to the structure. It needs to be carefully thought out and designed, the surface does not dive straight into the ground. Strong connections to the sky and ground can make the building feel more rooted, like it was placed there on purpose and not just a filler to the space.

Dr. Francis Ching’s “Form, Space and Order” is an architectural book that should be read by any game designer that wants to be great. Architecture being such a multifaceted industry can play a massive role in creating a more effective and enjoyable game. Architecture in the real world has always been greater than that of the digital world, but someday the advances in technology might swap out the real world for a virtual one. Game architecture has the potential to evoke an even deeper connection to Alexander’s “quality without a name;” becoming almost transcendental. Architecture in video games has more freedom, it isn’t bound by rules like physical buildings are. While inside the virtual, buildings exist eternally, they can be laced with interactive feature bringing architecture to life in a way real world buildings could never achieve. Physical buildings

are resistant to change, they are geographically specific, rigid and expensive to create.

As we have seen with the reference gaming projects, there has been a lot of development and growth. More and more game developers are coordinating their designs with architects to make it as accurate as possible to the era of the game they are creating. They are still falling short and are not using the expertise they have at hand to modify all the aspects of the game to the fullest. One-day game architecture will take over, and achieve Alexander’s quality without a name. But at the moment there is still a lot that current developers can learn from real world architecture. I urge anyone trying to develop the next timeless classic, to study architectural theory, the forms, the functions, everything architecture

can achieve and elevate their game to a new high, to give their users an experience like no other.



III.8 Architecture: Form, Space, and Order, Third edition, Francis D.K. Ching, [https://images-na.ssl-images-amazon.com/images/I/51eVXvViJL\\_SX386\\_B01,204,203,200.jpg](https://images-na.ssl-images-amazon.com/images/I/51eVXvViJL_SX386_B01,204,203,200.jpg)



From Programmer to Artist

Only until the late 1950’s, computers where never thought of as being used for entertainment. With mainframes taking up an entire city block its no wonder people thought this. But advancements in vacuum tubes leading to transistors, computers became easier to handle. This lead to universities, research facilities, and large businesses installing such machines in their buildings. William Higinbotham created the very first game on one of these computers while at Brookhaven National Laboratory in New York. (Josh Jenish. 2008 .pg 7)

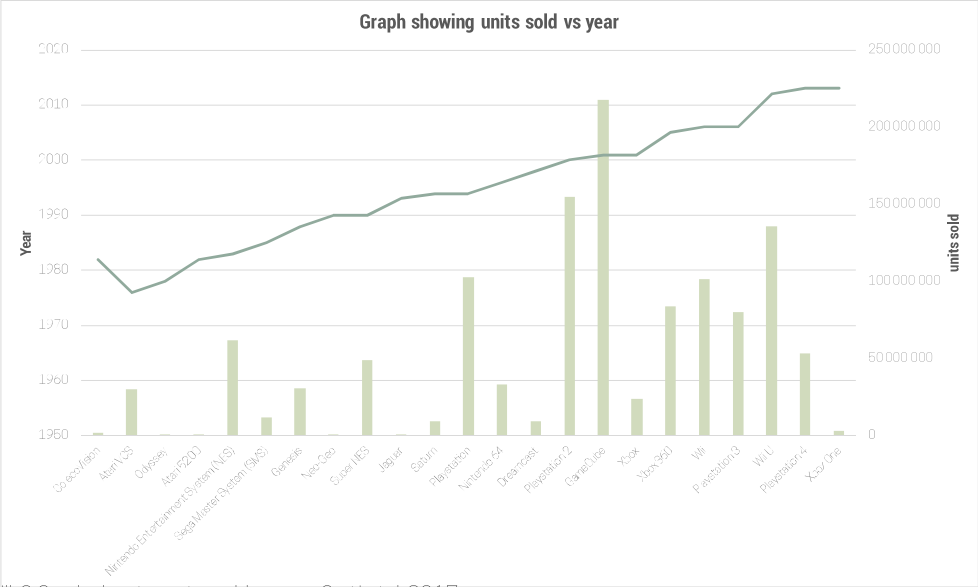
For the company’s Visitors Day, Higinbotham was charged with the task of entertaining the guests and keeping them from touching the expensive lab equipment. *Tennis for two* was created on an oscilloscope and allowed the visitors to play a simple game of tennis. With a knob

and paddle it allowed the user to change the angle and direction of the incoming ball and return it to the opponent. It wasn’t anything fancy as an oscilloscope looks like an old submarine radar. But without this game many of todays games might never have been designed. (Josh Jenish. 2008 .pg 7)

MIT noted for its advanced computer and technology programs produced a pioneer named Steve Russell. In 1961 Russell and a group of friends created *Spacewar!*, which utilized the full capabilities of the mainframe at the university. The mainframe manufacturer like the idea of two ships firing at each other until one was destroyed, so much that they decided to include the game with each of its mainframes. It would only be till later however that these students would change the face of entertainment in

the world. Nolan Bushnell was one of these young entrepreneurs who dreamed of arcades filled with computers. Bushnell is considered the father of modern gaming, and with his hardwired clone of *Spacewar!* on an ordinary television, named *Computer Space*, he sold the unit to Nutting Associates who released it in 1971. (Josh Jenish. 2008 .pg 8)

In 1972 Bushnell founded Atari and hired Al Alcorn to design a ping-pong simulator, later known as *Pong*. Wanting to first test the machine out, Bushnell installed the system at Andy Capp’s Tavern in Sunnyvale, California. To his delight the system was a massive hit, and found that so many players where using the system that they had filled the machine with quarters and eventually broke it due



III. 9 Graph showing units sold vs year. Ceri Laird, 2017

to over feeding.

The machine and many clones where popping up everywhere around the USA, in shopping malls, restaurants, convenience stores and bars. Later fully fledged video arcades where created and money started pouring in. The creation of more advanced games such as *Pac-man* (originally *Puck - man*), *Space Invaders*, *Asteroids* and *Galaxian* pushed technology forward by leaps and bounds.

With the arcade machines having superior technology to any of the rudimentary gaming consoles in homes people flocked to come and play at a video arcade. As the craze grew, so did the arcade cabinets to create a more immersive experience.

“In *Battlezone*, players peered through a periscope; *Fire Truck*

players sat in (you guessed it) a fire truck. Dedicated laser guns, racing simulators shaped like real cars and force-feedback cabinets that vibrated on cue all resulted from this era of rapid expansion.” (Josh Jenish, 2008.pg 9)

The simple truth during this time is that these cabinets where designed to make money. There was no time for advanced stories, characters, interesting narrative or any of the elements that make todays games so much more rich. But in the next three decades all that changed, from programmers being the most important part to any game development, the role started to fall to artists.

When you look through the thousands of images about concept artwork and game art it is hard to believe that it

is still not considered art. The pieces range from surrealist to impressionist to neoclassicism to futurist all while being rendered with stunning visuals. The term “arthood” is still reluctantly used to define video game work. Some critics were out right appalled by the mere mention of this. In 1927 social critic H.L. Menchen wrote about his feelings on movies and the people who make them:

“How can one work on and have a rational interest in a fable that changes its locale and its characters 10 times a minute? Worse, this dizzy jumping about plainly unnecessary; all it shows is the professional incompetence of the gilded pants-pressers, decayed actors, and other such half-wits to whom the making of movies seems to be entrusted.” (H. L. Mencken, 1927)



III. 10 Assassins Creed concept artwork. [http://zvergaming.weebly.com/uploads/8/5/8/9/85893818/gaming-artwork-1\\_orig.jpg](http://zvergaming.weebly.com/uploads/8/5/8/9/85893818/gaming-artwork-1_orig.jpg)

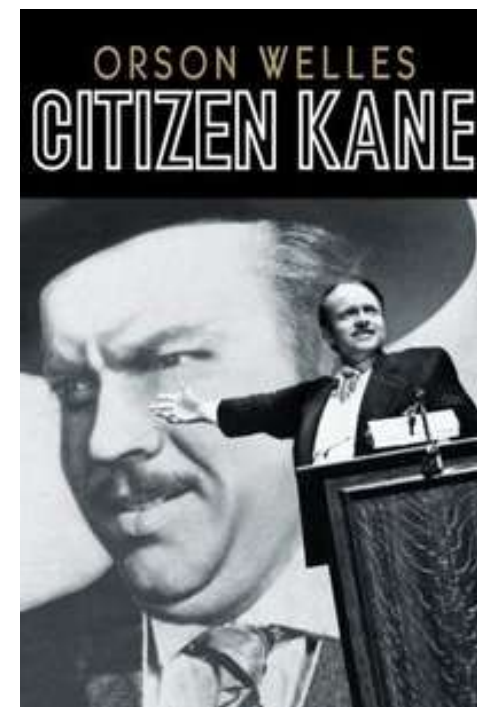
To many, movies were just missing the ability to convey human drama to its fullest. They would never be as intimate or pure gravitas of live theater. They would never be “real” art. *Citizen Kane* and *Gone with the Wind*, followed by the staggering achievements of the French New Wave cinema began to change that notion. Suddenly, even the harshest of critics had started to quieten down.

This is what I predict will happen to the gaming industry in all its forms. There doesn’t need to be collective consensus on what defines art for you to study, enjoy and respond to the world of gaming.

**“Art isn’t art because people say it is. Art is art because you say it is.”**  
(Josh Jenish. 2008 .pg 10)

Once basic structure and the story line has been established, artists are called in to create a vision for the game. With the freedom to work, ideas flow out of them as they embark on the creation of the game’s visual identity, constructing a design language that will be spoken through the game.

Next, animators and skilled modelers come in to produce these sketches into 3D objects. With the staff trying very hard to stick to the concepts and not let the technology of the time hinder the digital design. Everything is built up with the collaboration of the design team, creating stunning landscapes, buildings and characters for the programmers to use.



III. 27 Citizen Kane movie poster. [https://resizing.flixster.com/LctxD1ADdS3tipnxYsT\\_HnC\\_BB0=/206x305/v1.bTsxMTlwNzQ0MTtqOz-E3NTQ00zEyMDA7MTUzNjkyMDQ4](https://resizing.flixster.com/LctxD1ADdS3tipnxYsT_HnC_BB0=/206x305/v1.bTsxMTlwNzQ0MTtqOz-E3NTQ00zEyMDA7MTUzNjkyMDQ4)



III. 28 Gone with the wind movie poster. [https://images-na.ssl-images-amazon.com/images/I/5191u1X-ie6L\\_SX303\\_B01,204,203,200\\_.jpg](https://images-na.ssl-images-amazon.com/images/I/5191u1X-ie6L_SX303_B01,204,203,200_.jpg)

## How Video games Will Change Architecture

“Generation Blockhead” a name given to the new set of gamers that emerged during the release of *Little Big Planet*, *Super Mario Maker* and *Minecraft*. Many gamers and even Architects can see the huge creative communities moving towards something.

How will such a movement effect the highest budget form of art? Lead by James Delaney, a Cambridge architecture student, BlockWorks is a 40 - person global team that consists primarily of Minecrafters who everyday push the conceptual building design within *Minecraft* to advance the field of Architecture.

Minecraft is a 3D game that has limited goals for the player to achieve, this gives the users the freedom to explore and enjoy the game as they see fit. The game revolves around the

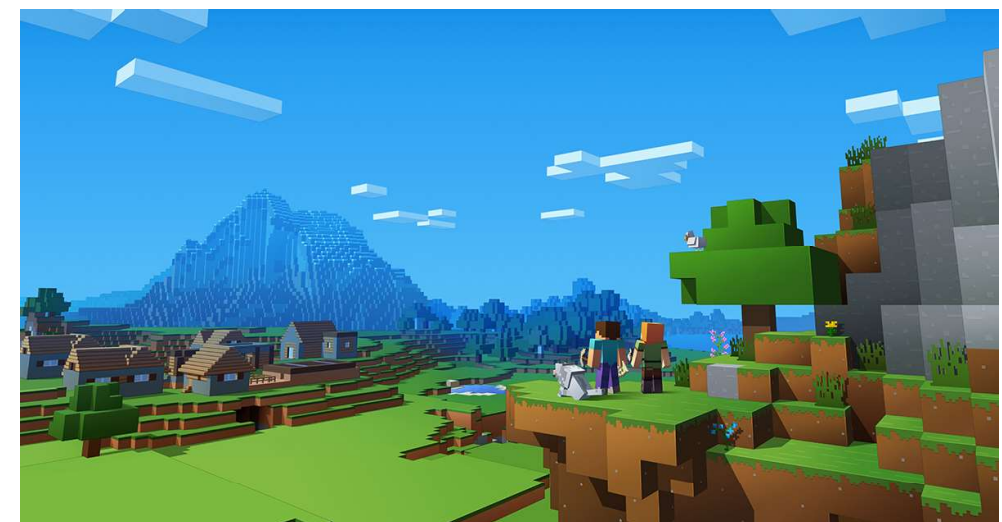
ability to break cubes, collect them and then create something new using the cubes. The realm of Minecraft is a pixelated/cubed version of different natural scenes.

Architects have been involved in a large number of A list game designs. Creating visually rich and comfortable spaces, however very little of the designs and ideas have made their way back into the real world of design. Few, if any, Architecture firms are currently using gaming as a tool for their designs. However, “games like *Minecraft* have the possibility to change that”. (Steven Schkolne. 2017)

“If you go back maybe 50, 60 years, the architects of today, quite a few of them reference something like *Lego*”(James Delaney.2017). *Lego* is still a very popular building tool for children but their imagination seems

to be unlocked more inside *Minecraft*. For Delaney, *Minecraft* is “the digital version of *Lego*... It’s kind of the natural progression of things.... Just as *Lego* inspired the architects of today, I think we’ll get the architects of tomorrow having played *Minecraft*... As a kid”. (James Delaney.2017)

One of the first examples of a game being used to test real world Architecture was by United Nations. The program is called *Block by Block* and uses *Minecraft* to design structures in diverse locations such as Haiti, Lima, Kosovo and Mumbai. The idea is to bring in groups of young people to work together and solve planning and design challenges in a space using the game to demonstrate their idea of a perfect space.



III. 11 Image from inside the game *Minecraft*. <https://minecraft.net/static/pages/img/index-hero-og.088fb7996b03.jpg>



The project as a whole, through numerous design challenges all over the world, showed that Minecraft was a perfect tool for involving the community in urban design programs. “Public spaces are vital ingredients of successful cities, providing the backbone to urban life.” (<https://blockbyblock.org/about/>)

The program allowed for users to bring forth their in game ideas into the real world. With each game having a unique style and model design you can see how everything could look completely different. With structures from *Borderlands*, *Little Big Planet* or *Super Mario Bros* having a wonderful fantasy nature about them, to *Age of Empires* adapting the post-modern revitalization of historical models. Even the post-apocalyptic nightmare scene from *Gears of War* or *Fallout*. Every tool used in the design and

creation process has a real influence on the work produced.

With CAD systems giving Architects a gods view of creation, the designs are always from the outside, just like with Lego. Using games like *Minecraft*, the designer has a completely different approach, being involved in a first person view. The vital design form of human-scale has a much bigger impact and realization once in this mode. “The idea of being able to design a building ... as you move through the space is super-attractive to an architect.” (James Delaney, 2017)

This is why you can see a big push by the traditional Architecture software companies to incorporate a game like functionality into their softwares. VR and Augmented reality apps such as *ARKi*, *Storyboard VR*, *Pair*, *SmartReality* and *Fuzor*, to name a



III. 29 Block by Block Community project Real world scenario vs Minecraft. <https://i.imgur.com/rHbKC.jpg>



few, are being used by Architects to demonstrate their designs to the clients in a more understandable manner.(Lidija Grozdanic for Archipreneur.com.2017)

Is a gaming perspective and first-person design exactly what the world of Architecture needs to continue to develop the future. “Moving through a building whilst trying to send an email is not easy because buildings haven’t been designed for that” (James Delaney.2017). Tools to help with these problems are exactly what games bring to the table. Architects design spaces and how they will be used, but they never have the opportunity to fully experience it until its built, and at that stage its too late to make any changes.

Looking back at past history you can see that too often the designs

have not come from a communal interaction. Multiplayer creation will change the way the future is shaped from parks, cities and buildings, working as a collective to solve design challenges.

With both industries constantly changing and adapting it is clear to see that they need each other and they need to come together.



III. 12 Buildings inside *Borderlands 2* game. [https://s.candybanana.com/images/f211/borderlands\\_2\\_35.jpg](https://s.candybanana.com/images/f211/borderlands_2_35.jpg)

The Role of Architecture in Video Games

The Sims, one of the most popular games to have ever been created was influenced by architect Christopher Alexander. Why do we construct buildings in the first place, both in game and in real life?

“To protect people, goods, and animals from the weather.

To organize human activity efficiently (factories, theaters, offices, sports arenas)

To conceal and protect goods and animals from theft (warehouses, barns, shops, storage facilities).

To offer personal privacy (toilets and private houses).

To protect people from other people (fortifications, military installations, prisons).

To impress, commemorate or simply

decorate (civic monuments and religious buildings).” (Ernest Adams Gamasutra. 2002)

When we compare the real world to videogames there are some functions that are not needed. Weather does play a huge role in most games we see. It is just there to set a mood. There is also no need for privacy either, as you can take off your clothes and even if you could, it's not real.

Games take a different twist on real world actions. There is no need in the real world to visit “Town Hall”, if something needed to be done there, you would just call or email. Games however use this as a metaphor to showcase the functions a Town Hall can provide. Theft is also a function that rarely exists in games but to make it feel more realistic the creators give you a building to

store all your resources. Once the resource is inside the building, it can never be stolen, destroyed or even reach full capacity. It is like a magical place where resources are converted from vulnerable and unusable, to invulnerable and available for consumption. Some games such as *Dungeon Keeper* have a more realistic take on this. The treasury can become full and items are able to be stolen.

Decoration and Military function are the two that do directly translate over. Wargames have been making use of constructed edifices to protect and shield the troops. Architecture is being used to describe and create a space that has a function and a purpose within the game. Chess has no buildings, it has no need for architectural influence or the desire to mimic the real world.

A problem games face is portraying nature, the detail and the beauty can be there but the true giveaway is that you are looking at a monitor, you can see the real world around it, there is no sweeping vistas or panoramas that immerse you completely into a game. Time and speed falls short too, it takes a few minutes to walk across an island or travel around the world. You can complete an entire year in the game and it has only been an hour in the real world. People don't have all day to wait for an action to occur naturally but it does take something away from the real world. Curves are expensive, more Bauhaus and less botanical gardens. 3D creations take up time and money and when you have an oak tree that has thousands of leaves and hundreds of trees in a forest you can start to understand why so many games opt for a more city scene.

Architecture in games is there to support the game, they aren't a parallel to the real world buildings and their functions. With most of the buildings in games, their functions are irrelevant and are used mainly as metaphors to enrich the feel of a game in the same way as buildings in movies, false fronts to support the ongoing narrative. The idea is to make a place or time feel more dangerous, beautiful, tacky, wild, etc than what it really is. Buildings and Gameplay help the user complete challenges and actions to progress through the game and levels. This is supported by Architecture in both the design of the buildings and the public spaces around them. The way the user experiences the space and navigates through the world. Some of the ways that developers achieve this is through exploration, obstacles or tests of skill, constraint and

concealment.

Constraint: Board games have no secondary boundary, their only constraint to the playing field is the edges of the board. In a representational game the idea is to allow the characters to move freely as they would in real life but not too freely that they wonder off out of the game. Architecture is a tool that can be used to limit a players movement, a weapons firing range or angle and the ability to go through walls .

Concealment: There aren't many games that allow the player to have a complete open understanding of the game. Items, paths, guests, goals etc are all hidden in some way or another, this is what makes a game adventurous. Here architecture is able to create a map to hide the user from other players, isolate items and

object until the time is right or the user has progressed far enough in the game.

Obstacles and tests of skill: Jumping across a chasm, climbing up a wall face or avoiding booby-traps are all ways in which designers make the game more enjoyable for the player. Some can be overcome with hand-eye coordination and others with observation and logic.

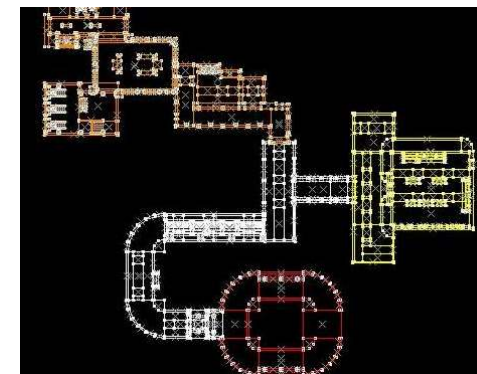
Exploration: This allows the user to understand the space they are in, to know which path leads where. Mazes are one of the original forms of this challenge. Some games don't game the user a map and therefore it is up to the player to memorize his route and surroundings.

Peter Lok, a Canadian game designer has published on his website a sketch of a ventilation shaft that lead from

the top of a building all the way down into an equipment room. Next to the sketch was a description of how the user should approach the challenge:

"Shutters that open and close. Must jump down when open and fan is on. When closed you plummet and shutters are electrified. Have 2 sets of fan/shutter. Must land on ledge above fan. Blades will kill you." (<http://www.dragonridge.com/>)

If we take this as real-world architecture then this isn't a practical design. The fans only blow out so that you don't fall to your death. However you would probably need an extra fan to bring air into the equipment room as well. There is no need for two shutters or for them to be electrified either. Around all of this there is no explanation as to the rest of the building or the context that this part



III. 13 Floor plan of Quake map [http://www.designersnotebook.com/Columns/047\\_The\\_Role\\_of\\_Architecture/Figure\\_1.jpg](http://www.designersnotebook.com/Columns/047_The_Role_of_Architecture/Figure_1.jpg)



III. 14 Office, Counter-Strike map. <https://steamuserimages-a.akamaihd.net/ugc>



III. 15 Gabriel Knight is waiting for the maid to finish cleaning this hotel room. [http://designersnotebook.com/Columns/047\\_The\\_Role\\_of\\_Architecture](http://designersnotebook.com/Columns/047_The_Role_of_Architecture)



III. 16 Soul Reaver is a game about a vampire that eats souls, so a cathedral has powerful connotations. <http://thelostworlds.net>



is in. It is a false front for the sole purpose of moving the player from one area to another with the use of a challenge.

Game design just has to be functional and allow the user to move through the game. This sketch provides the user with a challenge, constraints and an exploration challenge.

Familiarity: Different locations and scenery offer clues to the functionality of those spaces. For instance if you wanted to find a blacksmith you wouldn't expect them to be in the kitchen of a building. Games rely on a players ability to use common sense to understand a spaces functionality. Another form is if you wanted to avoid a security guard, one route might be to take the ventilation shafts to get around the guard.

50

Allusion: Games often borrow scenes and buildings from the real world. This brings on a different kind of emotion to the player and draws the player deeper into the games story line.

New worlds require new architecture: If you want the user to be unfamiliar with a space, create something never before seen, something that throws the player off. There is a disadvantage though, if the design is too unfamiliar then the user can get thrown off and not have a frame of reference to overcome the game. In Alien space ships the designers often use passages and human like doors to keep the user grounded.

Surrealism: A surreal landscape introduces a strange environment to the user which can give the player a hint to start using lateral thinking or introduce a sense of mystery.

Atmosphere: As seen in Ill. 19 the environment is reminiscent of New York, with its graffiti walls and dark, damp underpass, there is even a large cathedral type window in the distance which give the player something to aim for, maybe a save point or safe house.

Architecture is also there to inform and entertain the user in its own right. It does not have the sole role of being a tool to introduce: exploration, obstacles or tests of skill, constraint and concealment. Familiar locations and players common sense bring out a functionality in the architecture. In my opinion it is more important than character design, it is what brings you into the game, and flushes out the story line. Maybe in the future we will see more and more game designers studying Viollet-le-Duc and Vitruvius, Gaudí and Gropius. The impact and



Ill. 17 An aerial view in *Planescape: Torment*. Note the extreme variety the of buildings and the lack of cues as to their function. <http://designersnotebook.com/Columns>



Ill. 19 The city of Stark, from *The Longest Journey*. <http://designersnotebook.com/Columns>



Ill. 18 *Myst* had a strong surreal element in its architecture. <http://designersnotebook.com/Columns>

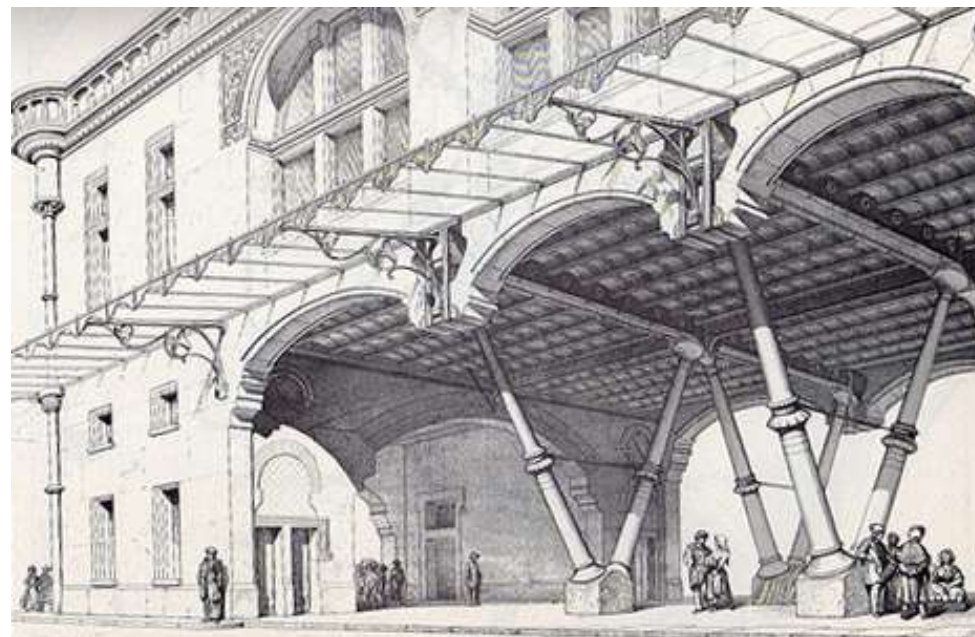


Ill. 20 *Escape from Monkey Island*. <http://designersnotebook.com/Columns>

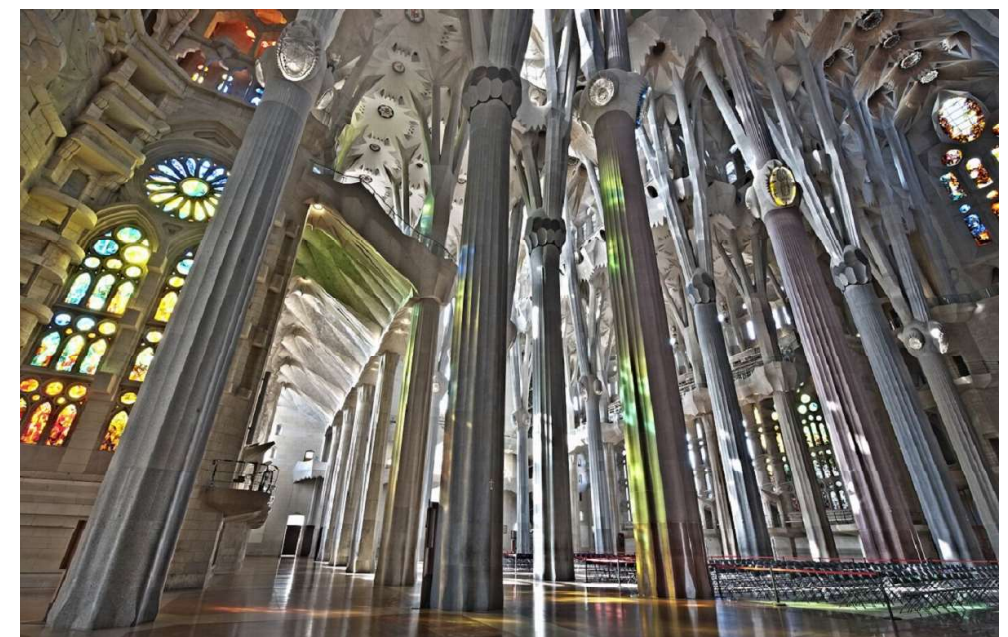


shared knowledge between these two massive industries can only benefit each other.

**“Architecture, meaning both landscapes and structures, is what turns the bare grid of the chessboard into the living world of the computer game.”** (Ernest Adams Gamasutra, 2002)



III. 21 Iron exploration by Viollet-le-Duc. <https://archistdaily.files.wordpress.com/2012/09/violet.jpg>



III. 22 Inside the Sagrada Família: A stone forest and light. [http://www.spainthenandnow.com/userimages/gaudi-wikimedia-sagrada\\_familia\\_interior\\_nau.jpg](http://www.spainthenandnow.com/userimages/gaudi-wikimedia-sagrada_familia_interior_nau.jpg)

## Video games will become “new tools” to solve architecture’s global challenges

Jose Sanches, a Los Angeles architect and game developer recently released his neighbourhood-building simulator, *Block’hood*. Jose is currently an assistant professor in Los Angeles at the University of Southern California. Here in the School of Architecture he states that gaming has and will become an increasingly important tool to both construction and architecture of cities. “Video games will become an increasingly important tool for designing cities”, “games could help both professionals and the public understand the challenges of contemporary cities.” Stated Jose in a discussion before release.

Plethora Project, Jose’s studio game development company which is exploring the relationship between architecture and gaming, using *Block’hood* as one of its tools. Architects have been trained to

think in scale and its relation to neighbouring scales. *Block’hood* freely lets the user design and construct a neighbourhood that interact and utilizes the environment. Taking into account factors such as social, economical and natural. “By using games, we can engage a global audience in the problems that architecture is facing.” (Jose Sanches). The goal is to create a city using predefined “blocks”. Each 96 interdependent block has a different input requirement, these must be completed to create a sustainable city and prevent decay. The blocks range from power sources: photo-voltaic panels, wind turbines, to environmental: bushes, trees, to architectural: stores, apartments.

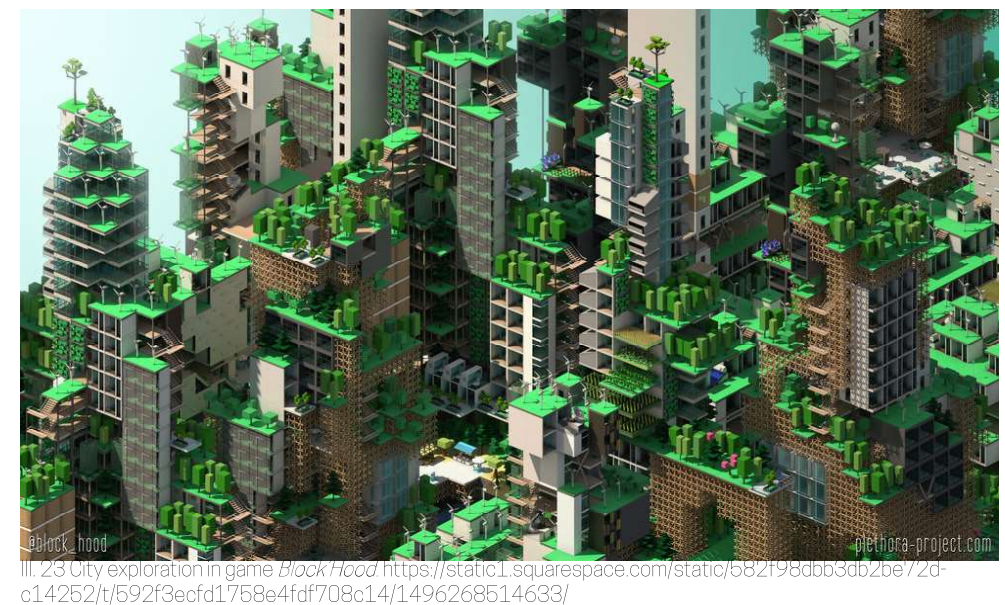
“Be careful... Seeking an Utopian neighbourhood carelessly can lead to dystopia,” cautions the games

advertisement text. (<https://www.plethora-project.com/blockhood/>)

**“But today we face global issues and we need new tools to address a new kind of scale: a planetary scale.”** (Jose Sanches)

The game uses different functions and each block has a unique input criteria that need to be met. An environmental block would need water while an architectural block would require public space, water and electricity. This is what makes the game more ecology and entropy than others.

Just as each block has a specific input, they too have a specific output. The game requires the user to balance the inputs and outputs of each block to create a thriving and fully functioning city.





"I developed *Block'hood* from the perspective of an architect to raise issues of ecology and life-cycles of cities," Jose said. "Games do not need to be a mechanism only for entertainment. They have the power to immerse players into simulated narratives and allow for a collective thinking through virtual communities."  
(Jose Sanches)

Around 90% of the current cities were designed by non- architects, can games such as *Block'hood* or *Minecraft* allow Architects to become more vital in creating the future cities.  
(<https://www.plethora-project.com/>)

The future holds great opportunities for video games to become a more frequent and powerful tool used in urban planning and encourage a better work relationship between communities and professionals. There

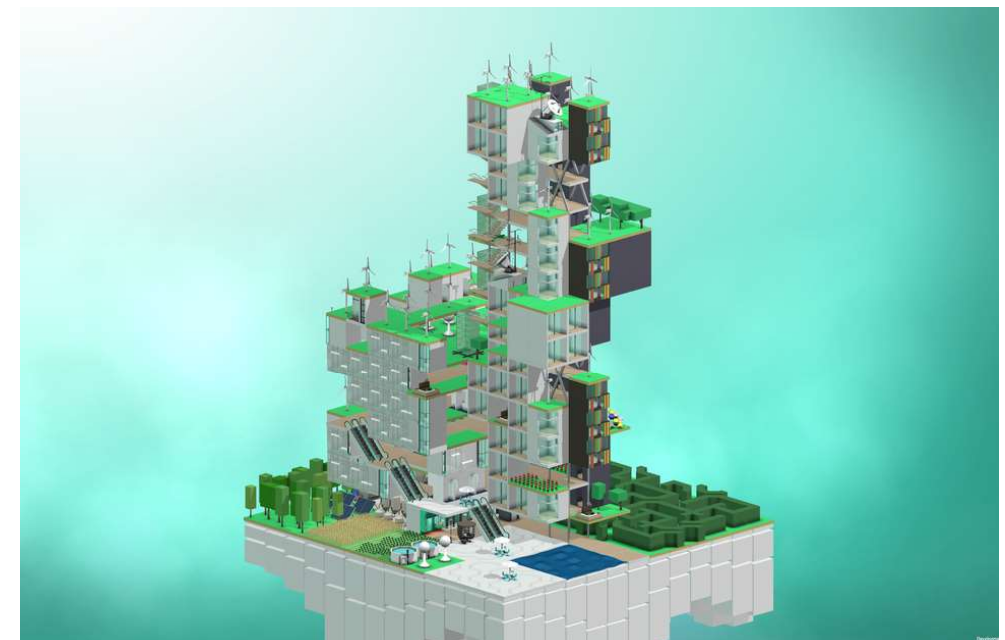
needs to be constant communication between industries and communities. A platform that gaming can create and allow everyone to work together to solve problems and create new and interesting cities for the future



III. 24 Block options. [https://images-4.gog.610f1945505bf4e997fdd7a98afd7f043c-b570495392040a7e810eba513f2\\_product\\_card\\_screenshot\\_748.jpg](https://images-4.gog.610f1945505bf4e997fdd7a98afd7f043c-b570495392040a7e810eba513f2_product_card_screenshot_748.jpg)



III. 25 Small house design. <https://www.rockpapershot-gun.com/images/16/apr/bhoodheader.jpg>



III. 26 Playing with energy efficiency in game *Block'hood* <https://static1.squarespace.com/static/582f98dbb3db2be72dc14252/t/582fa454ff7c5046969ba4f7/1479517405154/?format=750w>

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# Professional Gaming and South Africa:

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Gaming and Gamers by the Numbers

With Gaming becoming more and more popular, the industry finds itself answering many questions around the pro’s and con’s of Games, and the effect they have on Gamers. Some questions asked where: “whether men predominate in gaming; whether games portray women and minorities poorly; whether violent games promote aggressive behavior; and whether games encourage positive attributes such as problem-solving skills, communication and teamwork.”

A survey done by the Pew Research Center had some interesting findings with regards to these questions and other issues. (<http://www.pewinternet.org/2015/12/15/gaming-and-gamers/>)

“Equal numbers of men and women ever play video games, although men are twice as likely to call themselves ‘gamers’”

58

49% of Americans “have ever played video games on a computer, TV, game console, or portable device like a cellphone,” and of that only 10% listed with the title “gamer.” Of the women who play games, 57% believe that men are the majority demographic. The findings in some ways shows that this is in fact incorrect.

Men are more comfortable with the title “Gamer” than women (15% vs. 6%). Even in the age 18 - 29 finds only 9% of women using the “Gamer” term while 33% of men do.

“Four-in-ten adults believe that violence in video games is related to violent behavior”

The majority of the American population disagree with the statement “people who play violent

video games are more likely to be violent themselves.” However 40% do agree that there is a correlation between violent behavior and violent games. 47% of women agree with this over the 31% of men who identify as “Gamers” and play violent video games.

“Among the general public, attitudes toward games are complex and often uncertain”

In other major debates the public is found to be more closely split with 26% finding games a waste of time vs 24% says it isn’t, and 16% just don’t know what to think.

The same close findings can be found when answering whether or not “most games help develop good problem solving and strategic thinking skills.” 17% say this is true while 16% say

otherwise for most games. While 47% say this is true, but only for some games and not all.

23% think games do not promote teamwork and communication while 10% say they do. 37% say this is the case but only for some games and not all. When asked if games are a better source of entertainment over TV, 30% of adults said they weren’t while 11% agreed.

In general we can see that most people are unsure of certain aspects around gaming. 47% are uncertain when it comes to the portrayal of minorities in an ill manner, while 40% are uncertain when it comes to women and how they are portrayed in games.

“Compared with those who do not play video games, game players

are more likely to agree with the positives and disagree with the negatives associated with games”

People who play games are more likely to have positive thoughts over those who don’t play:

25% of game players believe that video games pro actively introduce good problem solving skills and a strategic way of over coming them, while only 8% of non-gamers agreeing with this.

17% of gamer players agree that when it comes to entertainment, they would rather be in a game than watching something on the TV, with only 5% of non-gamers agreeing.

15% of gamers believe that video games promote teamwork and communication skills, while 6% of



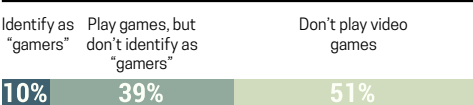
non-gamers agree with this. The same can be said that people who play games are more likely to disagree with negative views around video games:

35% of game players disagree with the statement that video games are a waste of time, while 13% of non-gamers feel the same.

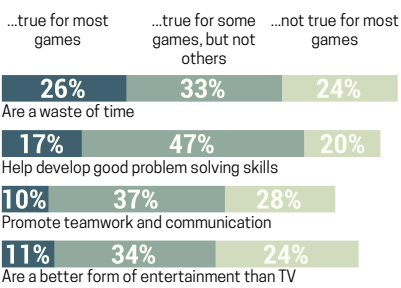
33% of game players disagree that games portray minorities poorly, while 9% of non-gamers also disagree.

26% of game players disagree that games portray women in an ill light, while 16% of non-gamers feel the same way. (<http://www.pewinternet.org/2015/12/15/gaming-and-gamers/>)

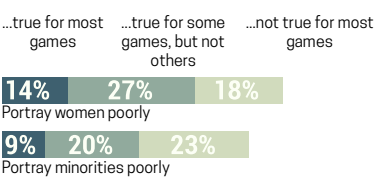
% of all adults who ever play video games on a computer, TV, game console or portable device like a cellphone



% of all adults who think the following qualities are...



% of all adults who think the following qualities are...



### 1. Who plays video games and identifies as a “gamer”

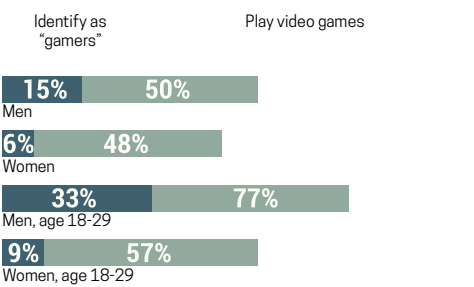
With 22% of young adults (18 - 29) saying the term “Gamer” describes them well. 67% identify as “Gamers” but do not use the handle.

77% of men vs 57% of women (18 - 29), 58% of adults (30 - 49) ,40% of adults (50 - 64) and 25% of adults over 65, play video games on some form of device, console or computer. Women are more likely to play video games as the age group increases. 38% vs 29% in the 50 and older category. Although there are a lot of older adults playing games, very few actually identify as “Gamers”. Only 4% feel that the term describes them well.

The study finds that when it comes to who plays games, race and ethnicity don’t play a part. However there is a difference when it comes to which group describes themselves

as “gamer”. 7%, 11% and 19% of Whites, Blacks and Hispanics use the term “gamer” when identifying themselves. (<http://www.pewinternet.org/2015/12/15/gaming-and-gamers/>)

% of all adults who...



2. Public debates about gaming and gamers

The majority of questions that arise when talking about gaming are usually around its impact on violent behavior and the amount of women that play games.

“Most Americans – including a majority of female game players – believe that most video game players are men”

60% of adults think that “most people who play video games are men.” While 31% do not believe this, and 9% don’t have an opinion on the matter.

“A substantial minority believe that those who play violent video games are more likely to be violent themselves”

40% of people agree that “people who play violent video games are more likely to be violent themselves.” 60

53% disagreed with this claim.

Young adults have differing views as to the impact of video games than older adults. 70% of 18-29 year olds and 40% of adults over 50 disagreed with the statement.

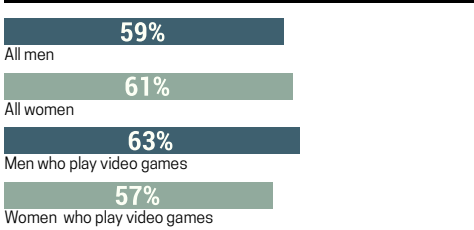
Race also had an interesting difference in opinions on the matter. 52% of Hispanics, 39% of blacks and 37% of whites agreed with the statement.

When it comes to video games, majority believe that games are just for recreation and don’t play a part in the outside world. 64% of gamers disagreed with the statement.

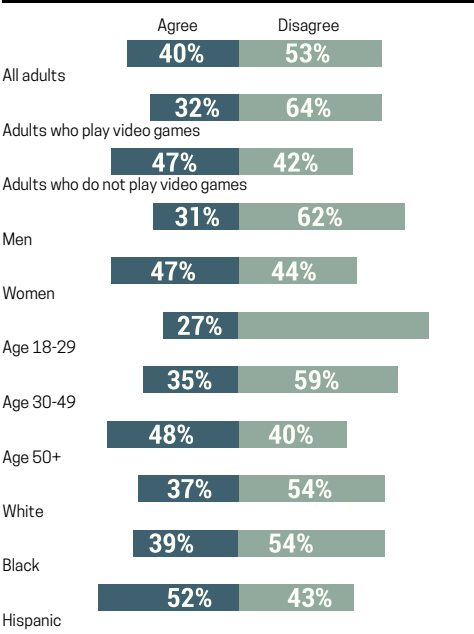
Genders also played a part in differences of opinions. 42% of female gamers believe the statement compared to 22% for males. (http://

www.pewinternet.org/2015/12/15/gaming-and-gamers/)

% of men vs. women who agree that “most people who play video games are men,” by gaming status



% of those who agree vs. disagree that “people who play violent video games are more likely to be violent themselves”



3. Attitudes about video games

With games becoming increasingly popular over the years so has the intensity by which they are judged and rated. A survey was formed and asked to the general public regarding games and their impact. The answers the public where able to choose from where:

True of most games,  
Not true of most games,  
They apply to some games but not others.

**“Video games are a waste of time”**– 26% of adults believed this to be true, 24% disagreed and 33% felt that it depended on the game. 28% of whites, 32% of adults over the age of 65 and 27% of people who obtained a high school diploma all agreed with the statement.

**“Video games help develop good problem solving and strategic thinking skills”** – 17% of adults agreed, 16% disagreed and 47% felt that it depended on the game. 22% of adults under 50 years and 10% of adults over 50 years agreed with the statement. 19% of men agreed with the statement compared to 14% of women.

**“Video games promote teamwork and communication”** – 10% of adults agreed, 23% disagreed and 37% felt that it depended on the game. 17% of people aged 18 - 29, 9% of adults over 30, 12% of men and 9% of women all agreed with the statement.

**“Video games are a better form of entertainment than watching TV”** – 11% of adults agree, 34% disagree and 24% felt that it depends on the

game. 24% of people aged 18 - 29, 7% of people 30 and older, 14% of men and 8% of women agreed with the statement.

The public became much less certain when it came towards gaming’s portrayal of women and minorities.

**“Video games portray minority groups poorly”** – 9% of adults agree, 20% of adults disagree and 23% felt that it depends on the game. 13% of blacks, 11% of Hispanics and 7% of whites agreed with this statement. 13% of people aged 18 - 29 and 7% of people aged 50 and over agreed.

**“Video games portray women poorly”** – 14% of adults agree, 27% of adults disagree and 18% felt that it depends on the game. When it came to the response, gender didn’t play a role

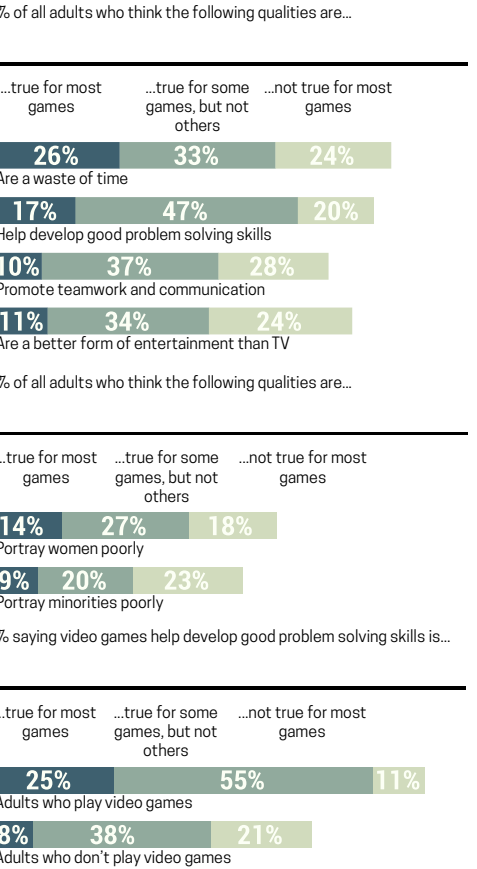
in the answers. 24% of each gender aged 18 - 29 disagreed with the statement.

**“Compared with those who do not play video games, game players tend to agree with more positive depictions of gaming”**

With most of the responses the public is very uncertain have widely different opinions on gaming. However people who play video games will always respond positively to their hobby. This is the same for men and young adults who hold an affirming view of gaming.

Among the benefits that game players are more likely to value:

**“Most video games help develop good problem solving and strategic thinking skills”** - 25% of game players, 39% of gamers and 8% of



people who don't play games believe this to be true.

28% of males and 22% of females believe games develop problem solving and strategic thinking skills. 32% of gamers aged 18- 29 and 18% of gamers aged 50 and over agree as well. 17 % of people who play games, 34% of gamers and 5% of non-gamers believe that games are a better form of entertainment over watching TV. 23% of men and 10% of women also agree with the statement.

**“Most video games promote teamwork and communication.”** - 15% of people who play games, 28% of gamers and 6% of non- gamers believe this statement to be true. 19% of males, 12% of females, 21% of people aged 18 - 29 and 11% of people aged 50 and over also think this is true.

When it comes to negative notions around gaming, those who play generally shy away from it.

**“Most video games are a waste of time.”**- 35% of people who play games and 53% of gamers disagree with this statement. 40% of men and 30% of females also disagreed with the statement. 43% of players aged 18 - 29 and 32% of players aged 30 and over also disagreed with the statement.

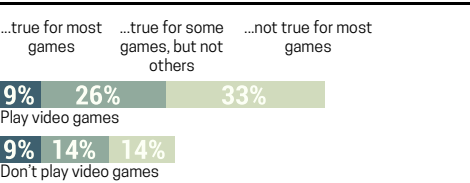
**“Most video games portray minority groups poorly.”** - 33% of people who play games and 46% of gamers disagree with this statement. 15% of blacks, 12% of Hispanics and 7% of whites agreed with the statement. 39% of blacks and 24% of Hispanics disagreed with the statement. 36% of men and 30% of women felt the statement to be incorrect.

The community is divided when it comes to the portrayal of women in games.

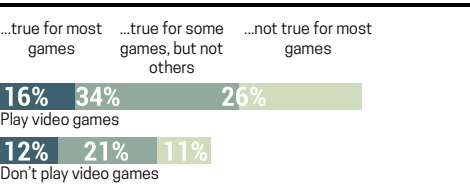
**“Most video games portray women poorly.”** - 26% of people who play games and 35% of gamers disagreed with the statement. 16% of people who play games and 24% of gamers agreed with the statement. 34% of people who play games and 30% of gamers felt that this statement was only true for certain games. 21% of men and 27% of women where unsure on this statement.[\(http://www.pewinternet.org/2015/12/15/gaming-and-gamers/\)](http://www.pewinternet.org/2015/12/15/gaming-and-gamers/)

There are still a substantial amount of gamers who had mixed views on some of the issues, even though the general feeling was positive around games and gaming.

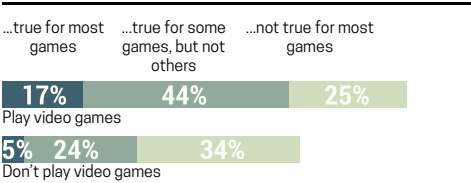
% saying video games portray minorities poorly...



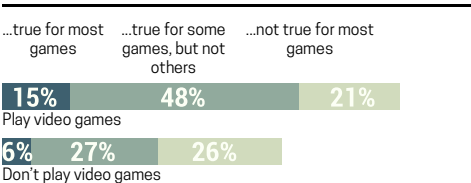
% saying video games portray women poorly...



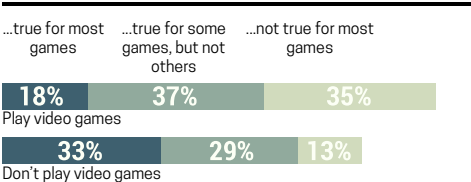
% saying video games are a better form of entertainment than watching TV is...



% saying video games promote teamwork and communication is...



% saying video games are a waste of time is...





### eSports nation: How competitive gaming became a flourishing sport

About an hour before the biggest game of their lives at Madison Square Garden and the team is surprisingly calm. It's a Sunday Afternoon in August and the team is relaxed, hunched over chairs in their dressing room. Their coach Chris Ehrenreich is giving them a pep talk before they go out to play, reminding them to focus and not let the crowd's noise shake them. They break and work over their individual warm-up drills.

Counter Logic Gaming (CLG) step out to face their opponents Team SoloMid (TSM) to a stadium of 12,000 screaming fans. This best-of-five will determine the North American champion in the video game League of Legends.

San Juan Capistrano, Calif, is where CLG's Peter "Doublelift" Peng, grew his gaming skill. As a somewhat 'typical

gamer', (thin, wickedly smart and bespectacled) the 22 year old turned pro at 17. He quickly rose to the top of the rankings, but sadly his parents outraged with him wasting his 4.3 GPA in a life of gaming, kicked him out of the house. This was when he reached out to the gaming community for any place to stay. Here he is, wearing his name on the CLG jersey, playing in one of the most famous arenas in the world. Not that he cares.

"SportsCenter is here!" someone says excitedly. "They're doing a live shot."  
"Is SportsCenter a TV channel?" asks Doublelift. "Sorry, I don't know anything about real sports." (Peter Peng, 2015)

**"The nation's fastest-growing sport isn't soccer or mixed martial arts. It's not rugby or lacrosse. It might not even be a sport at all."**(Stephanie Apstein, 2015)

E-Sports, or Competitive gaming has completely taken over in the last 5 years. With advances in technology it has brought the competitive side to a much wider audience.

*"Newzoo, a market research firm, estimates that 93 million Americans are active in sports, but more than twice as many—194 million—regularly play video games. That's 61% of the population."* (<https://newzoo.com/>)

With \$22 Billion in revenue the industry crosses many boundaries. Many gaming enthusiasts don't have an interest in traditional sports,



III. 1 Stadium full of fans watching a live eSports tournament. <http://gameranx.com/wp-content/uploads/2016/04/E-Sports-Featured-1024x576.jpg>

however, Marshawn Lunch, running back for the *Seattle Seahawks* regularly plays *Call of Duty* (they even made him a character in their *Black Ops 3* game). Even the *Kansas City Royals*, A baseball team was found to have spent less time on batting practice and watching film, instead using their free time to play the mobile game, *Clash of Clans*. With there being just as many gamers over the age of 50 as there are under 18 you might find that awkward high school kid making upwards of \$1 million a year. Salary, prize money and sponsorship and advertising all generate revenue for a professional gamer.

So would you classify E-Sports as a sport? Well there are uniforms, national and international teams, pro leagues, head-to-head competitions and seven figures up for grabs. There are even school and University

leagues here in South Africa, WITS has a team and even gives scholarships to those who compete at a national level. If you are competing as an international in USA you are granted P-1 “athlete” visas. You even have the TV coverage and viewership, with a total 27 million people watching the League of Legends final in 2014. To put this number into perspective, the World Series (Baseball) had a total of 24 million viewers, the National Basketball Association final had 18 million and the National Hockey League had 6 million viewers during their Stanley Cup Final. The Online digital streaming site, Twitch.tv was bought by Amazon for a whopping \$970 million. The site is where most of the eSports tournaments are streamed to. It has more traffic than WWE.com, MLB.com and ESPN.com combined. (<https://newzoo.com/>)

Now you might be surprised that video games are an actual spectator sport, but you wouldn’t be alone. *League of Legends* maker Riot Games, booked L.A’s Staples Center, which is a 21 000 seat stadium, for its World Championship Final back in 2013. Structured like the Fifa world cup, saw 16 teams compete in a month long competition until there was only the finals to be played. Due to viewing angle and the larger stage in eSports there where only 10 000 seats available, but they managed to all sell out in under an hour. In 2014 the same thing happened, only this time 40,000 seats at the Seoul World Cup Stadium. (<https://www.si.com>)

“The fan experience in person is not unlike the fan experience Online: The same broadcasters who call the games for the streaming-video audience are piped into the arena;



III. 2 Player celebrating winning a Starcraft championship. <http://cdn.gamer-network.net/2015/usgamer/eSports-Grow-Blizzard.jpg>

fans get a bird's-eye view of game action on jumbotrons that project the computer screen; and often fans are simultaneously on their phones checking their League of Legends fantasy teams.” (Stephanie Apstein, 2015)

The competitors hear nothing from the crowd while seated in a long row up on stage. Two Frequencies of white noise cancel and block all noise coming from the screaming crowd.

eSports even have fantasy teams where players are chosen to be a part of your digital fantasy team. There are daily lineups for when there is only one day of games or season long lineups that include 7 staters and 3 alternates.

During the matches teams are seated in glass sound proof boxes on stage,

these have been specially designed so that the players inside receive no noise from the crowd during the games.

Games at the professional level last around 40minutes and then a 15 minute intermission between. During the intermission the crowd can enjoy the traditional jumbotron fare, dance contest and trivia, although the only one they are missing is the “kiss-cam” as E-Sports organizer points out, its pretty hard when “90% of the audience is male”.(<https://newzoo.com/>)

Since that first step in competitive gaming with the Magnavox Odyssey, players have been craving new challenges and ways of showing off their skills. Dennis “Thresh” Fong is the first recognized professional gamer, he has also appeared in the Guinness World Records. Dennis even

won a Ferrari 328 from the co-creator of Quake during one of the games tournaments back in 1977.

Since then the need to compete has been a constant growing force, with Evil Geniuses five man team taking home \$6.6 million after winning the *Dota 2* international championship in 2015. One of the players 16 year old Sumail “Suma1L” Hassan’s becoming the first teen E-Sports millionaire after receiving \$1.3 million from the tournament. 2016 saw the winning team Wings Gaming taking home \$9.2 million, an impressive jump from the previous years winnings. (<https://www.esportsearnings.com>)

Dota 2 still leads with most prize money handed out, nearly \$90 million since 2011. While League of Legends has the most consecutive players per month, a total of 67 million.





With teams budgeting between \$3 million - \$5 million to operate on a yearly basis, most of this money comes from sponsorship. The major sponsors being Red Bull, Geico and HTC with even Samsung sponsoring their own team. Gaming doesn't produce muscle tears or abdominal strains like other sports but many professionals have had to retire due to wrist and hand pain. The tournaments even bring in the World Anti-Doping Agency to test players after one admitted to taking Adderall during a tournament. (<https://www.esportsearnings.com/>)

Just like sports, even E-Sports needs to crack down on the potential drug use, even match fixing. *StarCraft 2* tournament saw 12 people being arrested for their involvement with match fixing. With no governing body and many tournaments being hosted

online rather than in person, it is very difficult to manage standards. South Korea dominates the computer game side while America takes the console games. 100,000 fans attended the *StarCraft* pro league final on Gwangalli Beach in Busan.

Competitive gaming has now become a marketer's dream. With many of the spectators not watching other sports, they have been limited to the exposure of certain adverts. With players generally on the younger side, with the oldest being 25 and 10 days. According to Newzoo, women make up 31% of the fans. With games needing an incredible amount of time to master it, its no wonder that teenagers dominate the scene. "You have to be a certain kind of person to be a pro League player," says Doublelift. "You just have to be really nerdy and not have a lot of social

skills!" (Peter Peng, 2015)

Riot staffer trying his best Don Lafontaine impression welcomes CLG and TSM onto stage as Madison Square Garden shakes. As, CLG kitted in their black hoodies and TSM in their light blue shirts, make their way to the team booths on stage a trash-talk video begins to play on the jumbotron:

"Regi's the type of guy that'll come kick your sand castle and take your sand," says CLG founder George "HotshotGG" Georgallidis of TSM founder Andy "Reginald" Dinh.

"Against CLG, my sodium levels kind of go out of control," says TSM's Marcus "Dyrus" Hill.

CLG take the tournament in an impressive show and all this after just 9 months ago being just one



III. 4 Inside Katowice gaming house practice room. [http://www.katowicegaminghouse.com/assets/img/gaming\\_house\\_01.png](http://www.katowicegaminghouse.com/assets/img/gaming_house_01.png)



game away from relegation. They achieved this massive come back by hiring a new coach. Ehrenreich a student at Clemson who minored in athletics leadership and has a major in education, was the man for them. He had experience dealing with football players and even though he played *LoL*, he had never coached it before. He borrowed practice techniques from football, piping in crowd noise and flashing lights during intense battles in practice games. To become an expert in anything, one must spend countless hours honing his skill and pushing himself to become better. Even seeing sports psychologists to help better themselves. This is a team sport and just like any, you need to work together and interact on a regular basis to improve communication and understanding.

Gaming houses are used to aid in

this matter. The professional team comes together to live in a house together, here they do everything as a unit. CLG's gaming house is situated in downtown L.A., and is more of a compound, with 3 separate buildings, pool and basketball hoop on the property. The hoop has not been used since Doublelift tore his pinkie open and required 12 stitches after getting it caught in the chain netting. The team just like any need to watch out for injuries and be cautious about what they do as this is their livelihood. The property also includes a gym which is frequently used by the players, they do however always have to have someone with them during training just in case something goes wrong. (Peter Peng, 2015)

"That's my boy, D-Shan!" replies Zaqueri "Aphromoo" Black. Doublelift and Aphromoo are usually located in

the bottom lane together and even have a nickname for this "the Rush Hour bot lane." Doublelift is Jackie Chan, Aphromoo is Chris Tucker.

Calm and collected even at their home where Ehrenreich pulls them out onto the porch for huddles. But once they sit back down and start playing, you can see the intense concentration and the lights turn back on. Early on the team wasn't even communicating over a voice chat but rather typed messages, Ehrenreich quickly got rid of this bad habit. He even makes them start their days with a short 2km run, this gets the brain properly working before they start their 6 - 10 hour training session. Even in their free time you will find them playing solo. Streaming Online and advertising products is a way most of the professional gamers earn a little extra on top of their prize money



III. 5 Players on stage during eSports competition. <https://www.su.edu/wp-content/uploads/2016/03/esports.jpg>

or monthly salaries, which generally range from \$7 000 - \$11 000. (<https://www.si.com>)

Within minutes of walking off the stage, the players are lined up against a Riot backdrop for fan meet and greet, with the line containing more than a thousand people. After having played an intense final they sit for about an hour meeting and taking photos with fans. Some teams have even forbidden their players to accept baked goods from fans on fear of receiving something bad. With fame coming at the cost of having stalkers and even going so far as to have one follow the team all over the country.

Fans are tremendously important to the growth of the sport. This was shown in the extreme after CLG preparing for a boot camp in South Korea found out that one of their

players, a Philippines native was denied a visa. The team posted the update to their web page and a few hours later saw a fan saying they had a connection inside the visa office. CLG got a hold of the user and two weeks later Jake “Xmithie” Puchero received his visa. (<https://www.si.com>)

In April, ESPN 2 broadcast one of the *Heroes of the Storm* tournaments during prime time, just 7 months after John Skipper, the president of ESPN stated that they will only be showing “real sports”. As you can imagine there was a backlash on Twitter with comments: “what has the world come to,” “what the hell is this,” “go outside, kids” however, since this, ESPN has actually doubled down on the eSports coverage and even dedicated their June magazine solely to eSports.

“I’d probably google ESPN *League of*

*Legends?*” he says. “I’m glad ESPN covered MSG, but I don’t think it’ll ever be truly mainstream like football or basketball. It’s competitive, there’s fans, there’s passion and skill. I think trying to figure out if it’s a sport or not is completely useless.”

CLG and TSM didn’t make it out of the group stages during this tournament back in 2015. They did however, play a big part in drawing more than 11 million viewers to watch the tournaments first day. Even Doublelift’s mom, with whom he recently reconnected tuned in, “She doesn’t understand it,” Doublelift says, “but she knows it’s important to me.” (Peter Peng, 2015)



III. 13 ESPN eSports division logo. [http://espnmediazone.com/us/files/2016/01/ESPN\\_esports\\_logo1.jpg](http://espnmediazone.com/us/files/2016/01/ESPN_esports_logo1.jpg)

## Gaming is becoming a real sport in South Africa

Hours and hours of gaming isn't good for you, it can cause laziness, loneliness and social awkwardness, some of the terms used by many psychologists.

Barry Louzada, a 36-year-old gamer from Johannesburg disagrees with this whole heartedly. The professional gamer has made thousands of friends through his years of international competition travel and online gaming.

"There's always been a stigma about gaming being anti-social - that's nonsense," said Louzada. "I've made life-long friends purely based on gaming. I've even gone to their weddings." (Barry Louzada. 2017)

Louzada has been able to make a good living from eSports through his hard work and skills. In 2016 he competed in Dubai at the World Electronic

Sports Games for a prize pool of R15.7 million. The whole experiences was fully paid for and even included accommodation at a five star hotel. (<https://mybroadband.co.za>)

2017 saw the largest eSports prize pool at Valves annual Dota 2 international tournament. Valve racked in just over \$120 million in sales and put up \$24.8 million as the tournaments prize pool. (<http://www.dota2.com/international>)

To put the tournament into perspective the winning team won more than Andy Murray got for winning Wimbledon. Each player in the winning team also took home more money than the winning teams players in both the NFL Super Bowl and Fifa Soccer World Cup.

With an estimated 180 million viewers for the 2019 eSports season, its no wonder there are more viewers globally than the NBA. (<https://esportsobserver.com>)

South Africa is currently seeing a massive increase in competitive gaming over the past few years. *Dota 2* and *Counter-Strike* have taken competitive gaming to a new level with local and international tournaments being hosted on a regular basis. Some of these tournaments have even surpassed traditional sports in both prize pool and viewership. (<https://www.digitalgamingleague.co.za/>)

The local eSports scene has been constantly growing but has yet to reach the level of some international scenes. This is most likely due to our countries wealth distribution and the awareness of games and the sport.

We are however steadily on our way to making it a "real" sport.

A major reason why gaming has become so big is thanks to live streaming site Twitch, which allows viewers to watch players online playing games. This also allowed big tournaments to live stream the games for everyone, anywhere to enjoy. From here eSports and the business around professional players snowballed.

Professional gaming teams are similar to football clubs in the way they are run, with transfer windows, buying of players and training staff. Many of the players have become celebrities signing big contracts with advertisers and sponsors. *Free to Play: The Movie* is a documentary by Valve which showcases the world and personalities of the professional



III. 6 Dota 2 Logo. <https://upload.wikimedia.org/wikipedia/en/thumb/0/08/DotA2.jpg/250px-DotA2.jpg>



III. 7 Counter-Strike: Global Offensive Logo. <http://www.goty.ro/wp-content/uploads/2012/06/Counter-Strike-Global-Offensive-Logo.jpg>



III. 8 GINX advertisement coming to DSTV. <https://ginx.tv/wp-content/uploads/2017/07/Untitled-1-1.png>



III. 9 Telkom DGL Logo. <https://mygaming.co.za/news/wp-content/uploads/2016/03/Telkom-DGL-featured-Image.jpg>

players, their day to day activities and what its like to play in tournaments. (<http://www.dota2.com/>)

With eSports growing in South Africa its no wonder we have a few teams that travel internationally to compete. The skill gap between local and international teams is large and this is due to international players quitting any form of work or school and completely focusing on gaming as their form of income. Locally we are unable at this time to do this, as there aren't enough tournaments to make it a plausible choice.

Local TV channels have started to coversome of thebiggertournaments with SuperSport showing their first match back in March of 2016. GINX is a new tv channel releasing on DSTV which will solely cover eSports tournaments and events. (<https://>

70

[mybroadband.co.za](http://mybroadband.co.za))

The tournament scene locally has been increasing and due to more and more players entering and sponsors starting to take interest, the prize pools have also increased. Digital Gaming League (DGL) has been around for just over 10 years with its sponsor Telkom playing a big role. Recently it hosted its first R1-million tournament. During the rest of the year it is an open league which sees around 500 teams competing. (<https://www.digitalgamingleague.co.za/>)

“The great thing is that any gamers can enter the tournament. It's not just for professional gamers,” (Barry Louzada. 2017)

New eSports studio, Mettlestate has been on the war path to creating a

proper competitive league, coverage and information brand. They have even partnered with Samsung and Asus to host a *Counter-Strike* tournament with a prize pool of R1-million. This is a lot of money and the tournaments hosts hope that even the parents will start taking eSports more seriously. Allowing their children to play games to achieve the goal of becoming a professional gamer. (<http://www.mettlestate.com/>)

However, negative perceptions persist. “When you imagine a gamer, you imagine a nerdy kid in a basement, am I right? You'll be surprised by the people who are gamers,” (Barry Louzada. 2017)

Gaming has also hit schools, with many of the local schools competing against each other and even going on to try out for Regional, Provincial,



iii. 10 teams competing on stage in Mettlestate tournament in Sandton. <http://goodluckhavefun.co.za/wp-content/uploads/2017/05/MettleState-Stage-e1494402888355.jpg>



National and Protea Colours. This level is controlled by Mind Sports South Africa which also includes board games. The Olympic Council of Asia have added eSports to their official program for the 2022 Asian Games held in China. (<http://mindsportsa.co.za/>)

Samanth Wright, a Mettlestate member says that eSports gamers are dedicated, skilled and work incredibly hard to get to where they are. She hopes that these tournaments will encourage parents to embrace the sports for their kids.

“I get a lot of moms who complain their kids want to become professional gamers. I tell them the best thing you can do for your child is to let them play video games,” (Samanth Wright. 2017)

Gaming is a profession that should be taken very seriously and with so many

negative stereotypes about games how can architecture introduce a space that overcomes this. With each professional player, they train for countless hours always pushing their abilities to become quicker at hand-eye co-ordination. Developing thier analytical thinking, communication and team work skill. Its no wonder even the top teams have, managers, psychologist, dietitians and media representatives. In other countries, professional gamers are famous. They are often seen doing commercials and earn lots of money doing promotions and guest appearances. (<https://www.si.com/>)

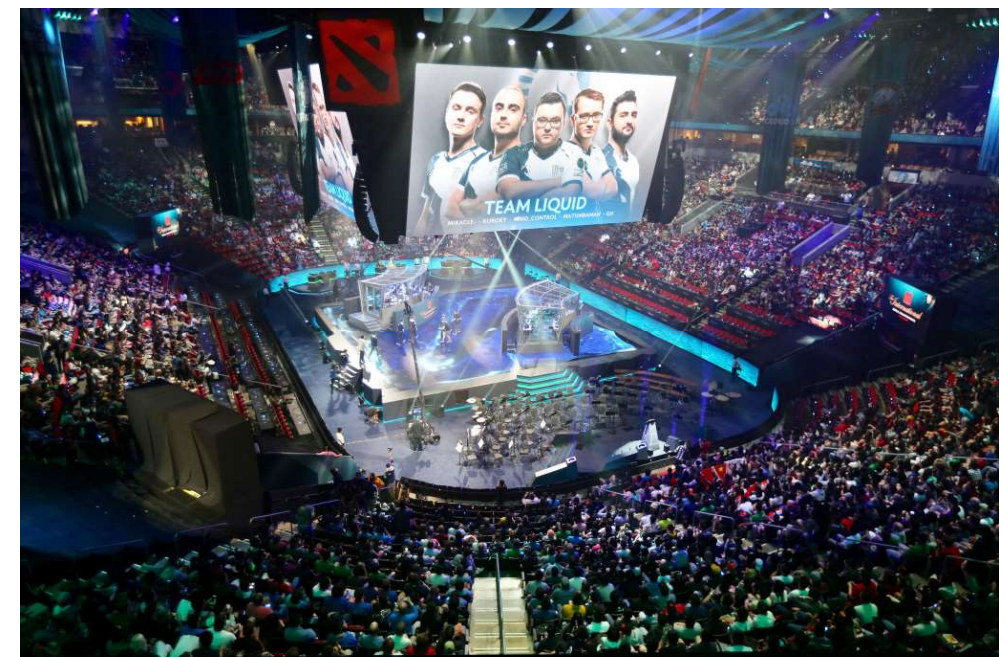
“Just like Cristiano Ronaldo has built a brand for himself as a footballer, we want to do the same with SA’s pro gamers,” (Barry Louzada. 2017)

Bravado Gaming is one of the top

eSports teams in South Africa, with multi-gaming teams that compete regularly. Teamwork and individual skill is what the teams focus on when they train for hours at a time everyday.

Ruan “Elusive” van Wyk is the CS:GO team captain and has lead his squad to countless victories earning them the title of best CS:GO team in South Africa. Ruan maintains that his structured training regime is what ensures they remain at the top of their game and the league.

Ruan is vital to the teams success with in game coordination and strategy during matches and keeping their 6 hour training program focused and useful everyday.



III. 11 teamLiquid announced Dota 2 ti7 champions. [http://www.xoukgaming.com/wp-content/uploads/2017/08/36526751405\\_4426381e49\\_k.jpg](http://www.xoukgaming.com/wp-content/uploads/2017/08/36526751405_4426381e49_k.jpg)

“Our daily training consists of individual and team-related practice. Individually, we’ll practice roughly two hours a day,” (Ruan van Wyk. 2017)

The team trains between 4 - 6 hours five day a week and on some days this is pushed to 9/10 hours due to competitive matches. The team does take Fridays and Saturdays off, to relax and enjoy private time.

Many international teams use a “gaming house” to come together and practice. The house is an ordinary house with the living room being converted into a large computer room for the team to practice in. Bravado on the other hand just practice online from the comfort of their own homes.

For Bravado however, most of their practices are at their own homes and each player connects together

via the Internet. Occasionally before a big tournament the team likes to have “boot camps” where they will all go to one house or a hotel and train together there.

He stresses that a team needs to have a strong balance between individual strength and being able to work together. Some of the skills needed include good knowledge of the map, aiming, team placement and tactics as well as utilization of equipment. (<https://mybroadband.co.za>)

When they are not practicing as a team, it is expected that each player works on his/her individual skill. Practicing aiming, movement, equipment, watching past videos of players and strategies, always working to improve their skills. Together they work on adaptation and preparation strategies for up coming

games or new styles that they think might work. Generally the game still comes down to the individual making the best decision in a given situation.

“We review old footage of ourselves, as well as other players, to aid each other in ensuring that we make the best possible decision in those situations. This is what we call adaption and reactive play.” (Ruan van Wyk. 2017)

There isn’t a gym or eating plan set for the players but traditionally in a gaming house this would also be controlled by the team manager. He looks after all the planning for tournaments, organization of the house and the teams assets, arranging transportation and making sure everything runs smoothly, to name a few responsibilities.



III. 12 Bravado gaming on stage after winning Mettlestate US:GO tournament. [https://i0.wp.com/www.criticalhit.net/images/2017/05/18301225\\_1875885622699446\\_7416535998975631923\\_n.jpg?resize=820%2C547](https://i0.wp.com/www.criticalhit.net/images/2017/05/18301225_1875885622699446_7416535998975631923_n.jpg?resize=820%2C547)



“Some of the players do exercise and eat healthily, but it’s not a priority for everyone,” (Ruan van Wyk. 2017)

With local gamers not being able to solely afford to be a professional gamer, many still live at home and are subsidized by someone. Ruan was studying industrial engineering before the stress of trying to juggle both gaming and varsity work forced him to pick. Ruan chose to give professional gaming a chance and hasn’t looked back. Even though the team trains and sit on the computer for extended hours each day, they still enjoy playing other games as a way of relaxing.

Most of Bravado does this full-time with the exception of their younger members who are in matric. The team isn’t able to earn a proper salary on just their winnings due to a low tournament number and prize pool

in South Africa. Every player has a different way of destressing after training, some even play more games with a lighter heart to break away from the stress.

“We all have our own games that we play to break away from the competitiveness, including playing Counter-Strike casually. I occasionally play World of Warcraft, PlayerUnknown’s Battlegrounds, Battlefield, or Assassins Creed.” (Ruan van Wyk. 2017)

With the steady growth of eSports at every level it won’t be long until we see computer based gaming surpass “real” sports.



III. 14 PlayerUnknown's Battlegrounds eSports tournament poster for \$350 000. <http://www.esports-news.co.uk/wp-content/uploads/2017/07/pubg-gamescom.jpg>

Illustrations:

III. 1  
E-Sports-Featured-1024x576.jpg (JPEG Image, 1024 × 576 pixels) - Scaled (0%). n.d. Available: <http://gameranx.com/wp-content/uploads/2016/04/E-Sports-Featured-1024x576.jpg> [2017, April 12].

III. 2  
eSports-Grow-Blizzard.jpg (JPEG Image, 1400 × 713 pixels) - Scaled (0%). n.d. Available: <http://cdn.gamer-network.net/2015/usgamer/eSports-Grow-Blizzard.jpg> [2017, April 12].

III. 3  
TSM-vs-CLG-620x350.png (PNG Image, 620 × 350 pixels) - Scaled (0%). n.d. Available: <http://www.championspotlight.com/wp-content/uploads/2015/03/TSM-vs-CLG-620x350.png> [2017, April 12].

III. 4  
gaming\_house\_01.png (PNG Image, 974 × 613 pixels) - Scaled (0%). n.d. Available: [http://www.katowicegaminghouse.com/assets/img/gaming\\_house\\_01.png](http://www.katowicegaminghouse.com/assets/img/gaming_house_01.png) [2017, April 12].

III. 5  
esports.jpg (JPEG Image, 750 × 380 pixels) - Scaled (0%). n.d. Available: <https://www.su.edu/wp-content/uploads/2016/03/esports.jpg> [2017, April 12].

III. 6  
250px-DotA2.jpg (250×75). n.d. Available: <https://upload.wikimedia.org/wikipedia/en/thumb/0/08/DotA2.jpg/250px-DotA2.jpg> [2017, September 05].

III. 7  
Counter-Strike-Global-Offensive-Logo.jpg (670×300). n.d. Available: <http://www.goty.ro/wp-content/uploads/2012/06/Counter-Strike-Global-Offensive-Logo.jpg> [2017, September 05].

III. 8  
Untitled-1-1.png (1920×1080). n.d. Available: <https://ginx.tv/wp-content/uploads/2017/07/Untitled-1-1.png> [2017, September 05].

III. 9  
Telkom-DGL-featured-Image.jpg (800×450). n.d. Available: <https://mygaming.co.za/news/wp-content/uploads/2016/03/Telkom-DGL-featured-Image.jpg> [2017, September 05].

III. 10  
MettleState-Stage-e1494402888355.jpg (1200×801). n.d. Available: <http://goodluckhavefun.co.za/wp-content/uploads/2017/05/MettleState-Stage-e1494402888355.jpg> [2017, September 05].

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36526751405.4426381e49\_k.jpg (2048×1365). n.d. Available: [http://www.xoukgaming.com/wp-content/uploads/2017/08/36526751405.4426381e49\\_k.jpg](http://www.xoukgaming.com/wp-content/uploads/2017/08/36526751405.4426381e49_k.jpg) [2017, September 05].

III. 12  
18301225\_1875885622699446\_7416535998975631923\_n.jpg (820×547). n.d. Available: [https://i0.wp.com/www.criticalhit.net/images/2017/05/18301225\\_1875885622699446\\_7416535998975631923\\_n.jpg?resize=820%2C547](https://i0.wp.com/www.criticalhit.net/images/2017/05/18301225_1875885622699446_7416535998975631923_n.jpg?resize=820%2C547) [2017, September 05].

III. 13  
ESPN\_esports\_logo1.jpg (451×347). n.d. Available: [http://espnmediazone.com/us/files/2016/01/ESPN\\_esports\\_logo1.jpg](http://espnmediazone.com/us/files/2016/01/ESPN_esports_logo1.jpg) [2017, October 03].

III. 14  
pubg-gamescom.jpg (870×580). n.d. Available: <http://www.esports-news.co.uk/wp-content/uploads/2017/07/pubg-gamescom.jpg> [2017, October 03].

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Mettlestate – Forging the Future of Pro Gaming. n.d. Available: <http://www.mettlestate.com/> [2017, September 05].

Mom, Dad: Gaming is a real sport | IOL News. n.d. Available: <https://www.iol.co.za/news/south-africa/gauteng/mom-dad-gaming-is-a-real-sport-8036677> [2017, September 05].

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# Site Selection:

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Site Criteria

With Johannesburg being so widely diverse, there is a lot of possibilities and potential for a new Gaming building. Johannesburg has a mixture of precincts that each share similarities but also have their own unique style. It is within these precincts that I will be primarily looking at.

The selected site shall attempt to explore, demonstrate and interrogate the disconnection and re-communication of technology and gaming presented in the thesis. The site exploration will deal with the local context, its resources and the nature of the building connections around it.

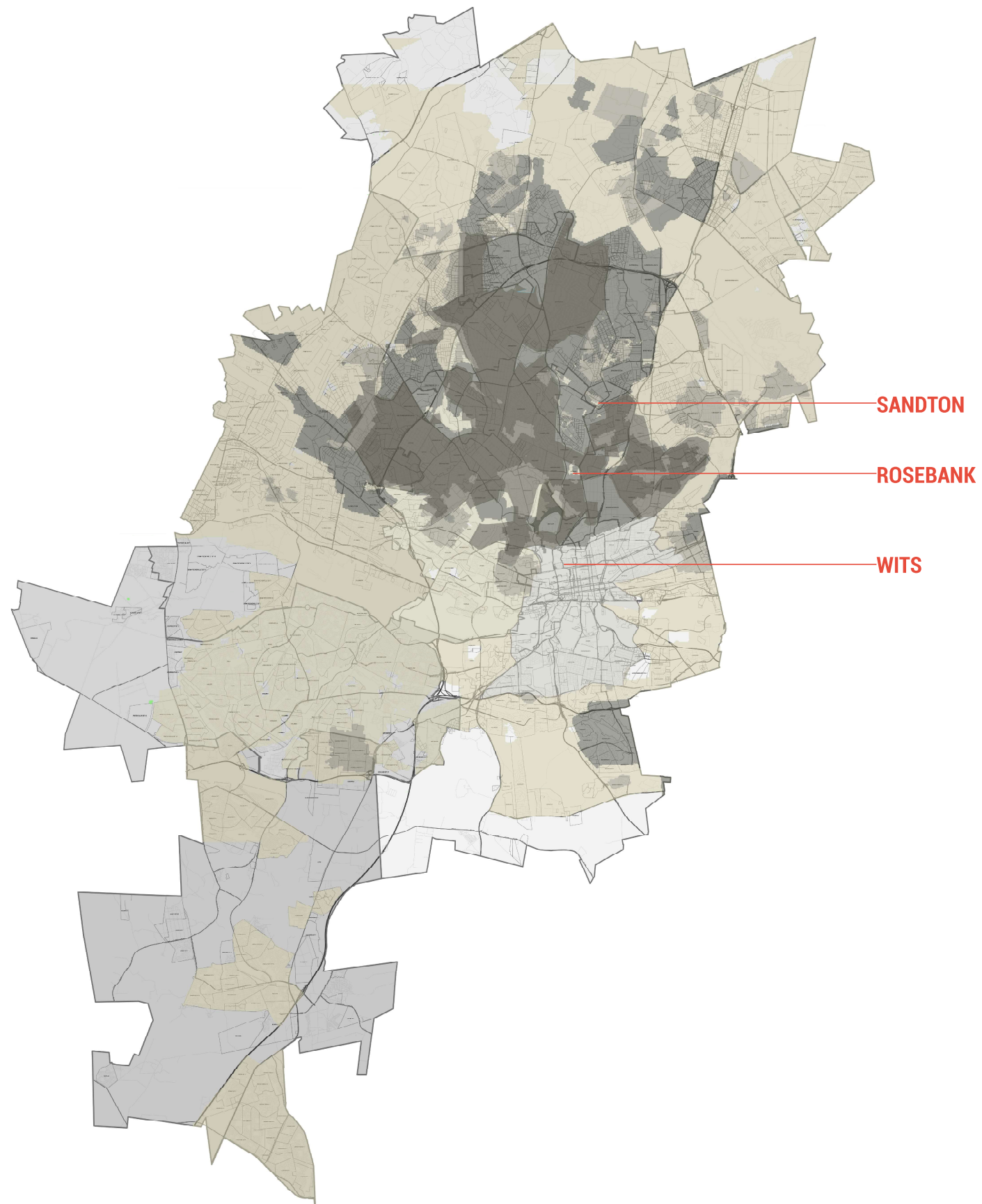
- The ideal site requirements are:
- Close proximity to transportation nodes.
  - Internet infrastructure or feasible location to implement a high speed line.
  - School connections
  - Socially diverse
  - Close to tertiary education
  - Located in an area that would benefit from the new zone rebirth
  - The building needs to alter the surrounding area in a proactive way
  - Urban green space should be brought in to create a connection between building and user.



Johannesburg with final site location







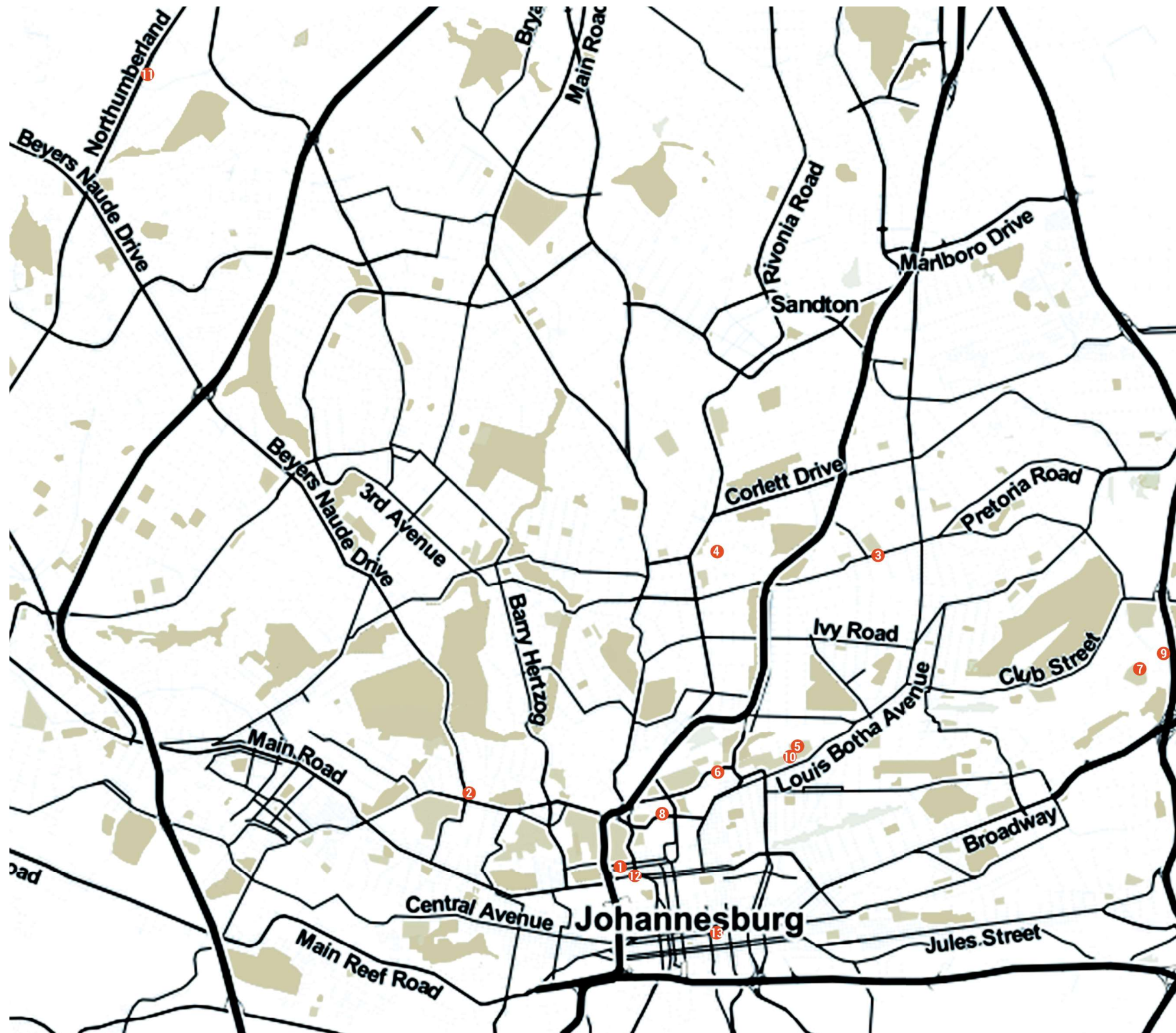
### Internet Fibre density

South Africa has only recently been rolling out large Fibre networks to the home and business. With the help of Vumatel, Telkom, Fibrehoods and Cool ideas many areas have been connected. This has allowed users to access the Internet quicker and from more locations than before. Gamers are now able to not worry about using up all the bandwidth while playing on international or even local servers. With a Fibre line, connection to the world is more reliable, quicker and cheaper.

A high speed internet connection is vital to the success of my building, as professional gamers and game developers need to be constantly connected and have no interruptions to the servers where they are either playing on or communicating with.

Left is a density map showing the areas that have Fibre lines and how many providers are in that area.





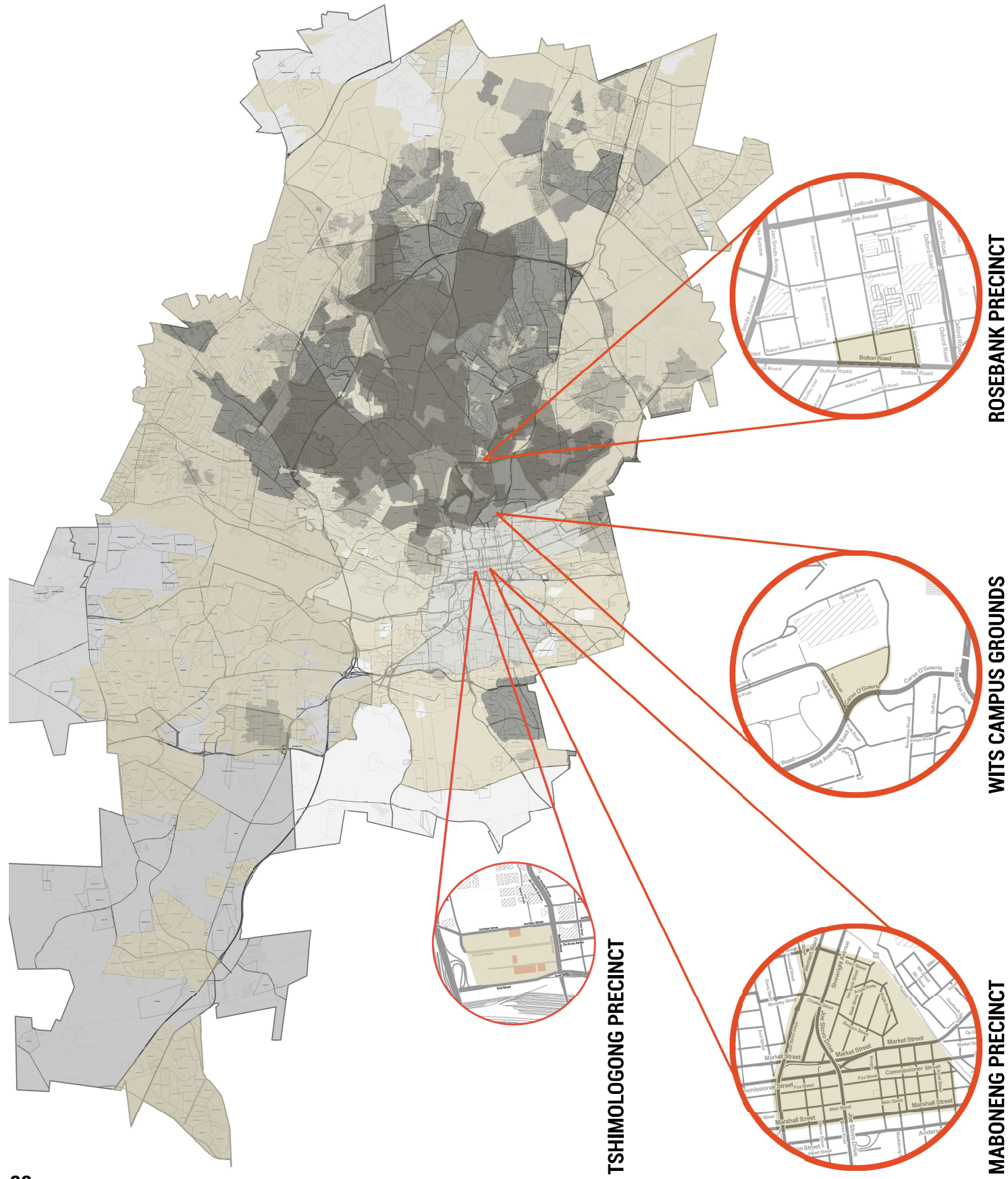
#### Map of Schools with eSports teams

- 1 - University of The Witwatersrand
- 2 - University of Johannesburg
- 3 - St Mary's School
- 4 - Kingsmead College
- 5 - King Edward VII School
- 6 - Roedean School SA
- 7 - St Andrew's School for Girls
- 8 - Parktown Boys' High School
- 9 - Saheti School
- 10 - St John's College
- 11 - Ticketpro Dome
- 12 - Chosen Site
- 13 - Jeppe High School for Boys

#### Schools with eSports teams

Due to an increase in the number of schools and varsities that compete against each other in eSports, finding a site that fits well within this connection is important. Just like with 'real' sports the most important step is at a school level.





### Major Precinct selection

Rosebank, Maboneng and WITS were clear choices to look into, however with my building having an education aspect and targeting students I decided to look around the area of WITS and Braamfontein as well. Through exploration and research I discovered the IBM Research center and the Tshimologong Precinct.



### Closer look at Braamfontein

Braamfontein has a large network of major and minor roads that connect a variety of different functions with in and around the area.



## Green Space

Braamfontein has several pockets of green space in the area however most of them are either in a private zone or in uncomfortable spaces. The greenery along the street face although abundant doesn't serve as a useful stay and relax area.

The use of successful nature and technology is a big part of my design, finding a space that can incorporate a new urban design and natural rebirth is important to the success of the project.





**Braamfontein and its connections**

There are three clear precincts inside the Braamfontein area that relate to this project and its designs.

The map to the right shows:

Major road connections to Braamfontein and through the area to each of the precincts.



Major access points to buildings and facilities



Minor access points to buildings and facilities



## Tshimologong Precinct

Wits University, through its JCSE program has been pushing a creative initiative for ICT startups. In Juta Street, Braamfontein, just a couple of blocks away from Wits' main campus, the "Digital Technology Innovation Zone" has been established. The IBM research facility was one of the 5 buildings that Wits occupied and renovated to create this Tech-hub. With the idea to bring together a large spectrum of students and residences who all have an interest in digital technology innovation and entrepreneurship. The facility hosts different activities and programs to encourage users to innovate and develop e new enterprises in the technology sector. All of the current JCSE's skills development programs have already been moved to this new facility. This new Zone had the hope to become a catalyst for urban regeneration and the growth of

technology in Johannesburg.



III. 1. Tshimologong entrance poster. Photo by Author

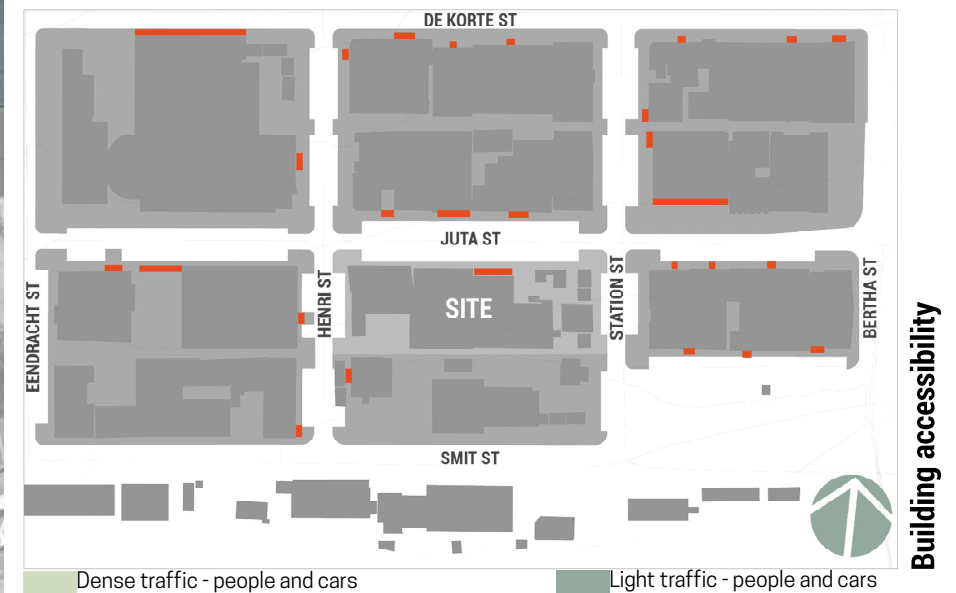


III. 2. Tshimologong entrance across from site selection. Photo by Author



III. 3. IBM research building to the right of Tshimologong Entrance. Photo by Author







Street Elevation with Site Selection

Juta St - North Facing



Juta St - South Facing



Station St - East Facing



Henri St - West Facing





Site pictures



III. 4 Corner Henri St and Juta St. Photo by Author



III. 5 Tshimologong building on Juta St. Photo by Author



III. 6 Juta St parking and road view. Photo by Author



III. 7 IBM research building corner Station St and Juta St. Photo by Author



III. 8 Public seating and pavement treatment on De Korte St. Photo by Author



III. 9 Picture of Rosebank College on site, photo taken from Smit Service Rd. Photo by Author



III. 10 Picture of Rosebank College on site, corner Juta St and Station St. Photo by Author



III. 11 Picture of Rosebank College on site. Photo by Author



III. 12 Picture of Rosebank College on site, corner Juta St and Station St. Photo by Author



III. 13 Picture of Education department building on site, corner Juta St and Henri St. Photo by Author





Illustrations:

- III. 1  
Laird. C , 2017. Photograph of Tshimologong poster. Unpublished photograph.
- III. 2  
Laird. C , 2017. Photograph of Tshimologong Precinct entrance. Unpublished photograph.
- III. 3  
Laird. C , 2017. Photograph of IBM research center. Unpublished photograph.
- III. 4  
Laird. C , 2017. Photograph of the corner of Henri St and Juta St. Unpublished photograph.
- III. 5  
Laird. C , 2017. Photograph of Tshimologong building on Juta St. Unpublished photograph.
- III. 6  
Laird. C , 2017. Photograph of Juta St parking and road view. Unpublished photograph.
- III. 7  
Laird. C , 2017. Photograph of IBM research building corner Station St and Juta St. Unpublished photograph.
- III. 8  
Laird. C , 2017. Photograph of public seating and pavement treatment on De Korte St. Unpublished photograph.
- III. 9  
Laird. C , 2017. Photograph of Rosebank College. Unpublished photograph.
- III. 10  
Laird. C , 2017. Photograph of Rosebank College on Site, corner Juta St and Station St. Unpublished photograph.
- III. 11  
Laird. C , 2017. Photograph of Rosebank College on Site. Unpublished photograph.
- III. 12  
Laird. C , 2017. Photograph of Rosebank College on Site, corner Juta St and Station St. Unpublished photograph.
- III. 13  
Laird. C , 2017. Photograph of Education department building on Site, corner Juta St and Henri St. Unpublished photograph.

Reference & Sources:

“Launch: IBM Research Lab – Tshimologong”. n.d. Available: <http://www.tshimologong.joburg/2016/08/25/launch-ibm-research-lab/> [2017, September 26].

“Tshimologong – Digital Innovation Precinct”. n.d. Available: <http://www.tshimologong.joburg/> [2017, September 26].



# Design Development:

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Design Methodology & Drivers

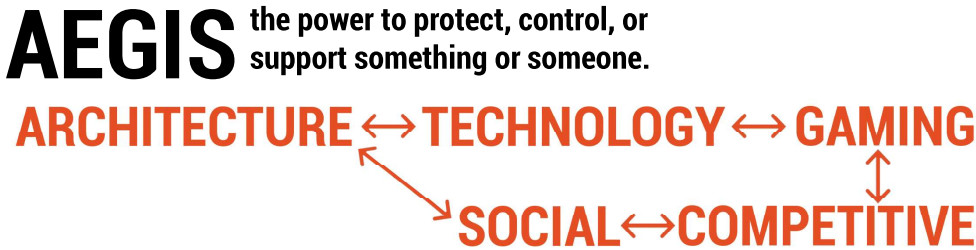
Creating a technologically advanced and forward thinking building, with an adaptive client and site response. Using forms of open planning, Multi-functional spaces and ‘hot swap’ office design to make sure the building is timeless and can cover the needs of any occupants. The building must also be efficient, use of borehole heating and cooling, smart lights, increase in overall natural area, minimizing on wasted space, rain water collection, shading screens, green materials, low carbon footprint and maximize social interaction both inside and outside of the building.

Game development and design is on its own a massive sector inside gaming as a whole industry. South Africa is a part of the global video game creation scene with games such as *Broforce* and *Runescape*. However this is just a niche market of Indie games and are local companies haven’t broken into the triple A rate games market. For a successful gaming centre it needs to cover the complete process of games including the design, development and testing of games.

Due to the massive social and economic diversity South Africa currently has, it is easy to find someone who has never experienced playing a game on either a console or computer. The idea is to inform the general public of how games came into existence, their current role and the current industry as well as future developments. The hope is to inform and create a larger generation of gamers and designers who want to pursue a profession in the sector. Another part is community growth with like minded people coming together to watch or just play casual games with friends.

As eSports continues to grow in the country and the world, the centre needs to be demonstrating the professional aspects of gaming. Here a medium viewing arena where professional matches can be played and streamed for the public to enjoy. This will inform the public and those who want to take gaming to the next level about all the current competitions and how they might be able to compete in them.

Once a player or team has committed to being a professional and has reached the required level of skill in a game, they need a place to practice with their team and compete in tournaments. The centre will need to accommodate teams that wish to live together, training rooms for them to practice in, meeting rooms and recreational spaces for players to distress and relax.

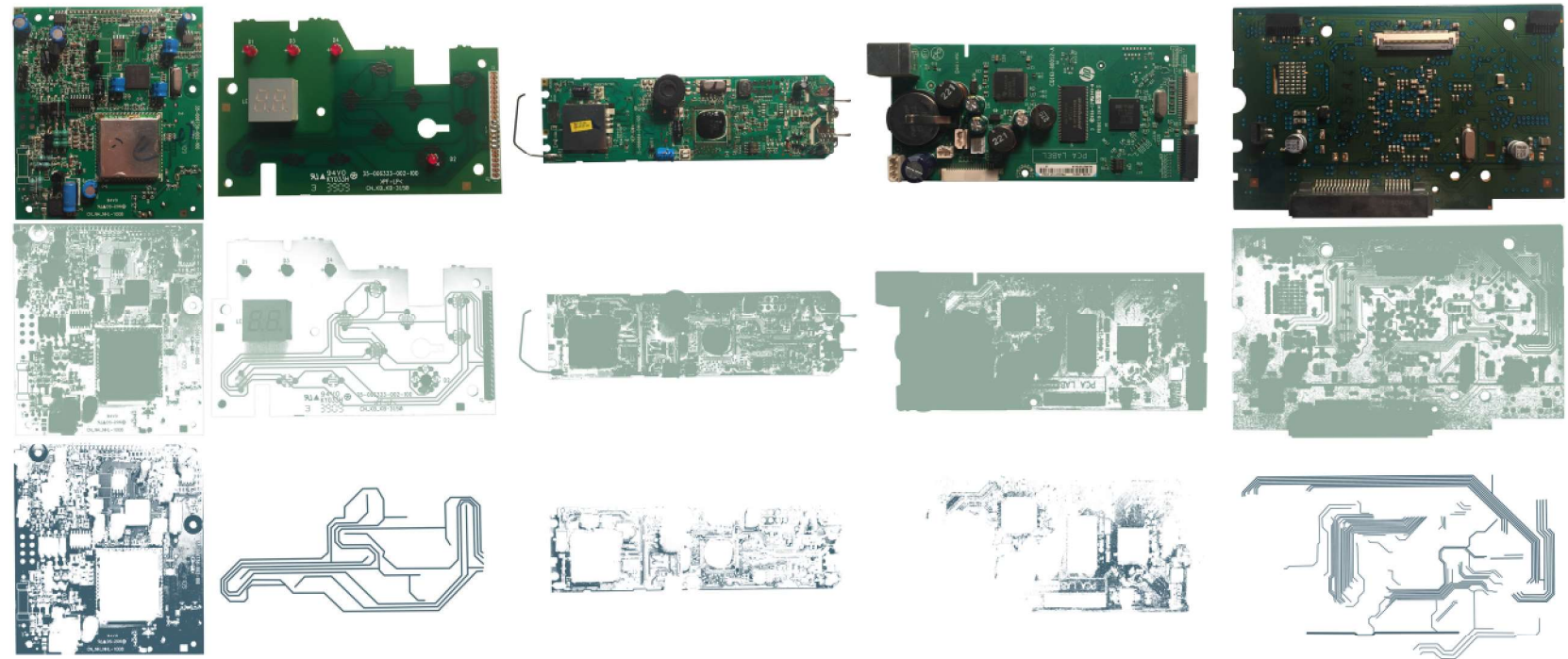




## Design Process

The idea for the building is to make the building ever changing and adapting to its users needs. A building that is fun and interactive.

To the right I did a study of different circuit boards and their connections to each module. The networks are ordered and only sometimes cross paths. This shows how informations travels between each component and creates a network of information that achieves an outcome.



Pod Vending Machine Skyscraper

eVolo 2017 Honorable Mention by Haseef Rafiei, United Kingdom.

The project is structured around Tokyo’s fascination towards science, technology and engineering. It focuses on the way in which society interacts with machines, and the way people have become fascinated with automation. The Pod Vending Machine takes a look at how automation can be used in the real estate and construction industry. Trying to solve a world wide problem of abandoned buildings, wasted materials and public cost to rejuvenate these areas and buildings. The design creates a building that remains in an incomplete state, adapting and changing to the current needs of the city.

The proposal is that of a home dispenser, it 3D prints modular Pods when needed to keep up with current

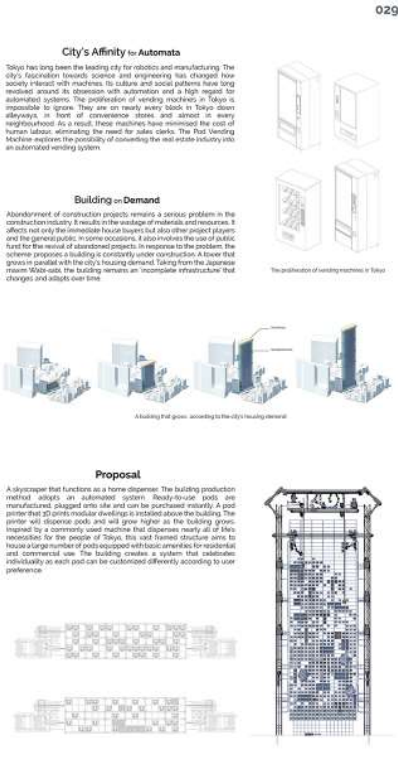
demand. As more and more pods are created the building will become taller and taller. All of these pods sit within a fixed steel grid structure with the 3D printer located at the top. And just like with cranes the printer can be moved up with the extension of the steel frame.

The building celebrates each individual and their own unique needs and requirements. Each occupant can design their Pod home and if needed can attach an extension at anytime. Manufactured on site there is no wasted materials and the construction process is quick and isolated.

I would like to incorporate a function into my building that will allow the user to change his/her environment and space as if its being 3D printed in the moment.



III. 1 Pod Vending Machine, eVolo 2017 skyscraper competition entry. <http://www.evolo.us/wp-content/uploads/2017/04/0290-1.jpg>





## The Edge

The Edge by PLP Architecture, Amsterdam.

Designed for consulting company Deloitte the building is considered the most sustainable office building in the world. With the help of technology, software and office planning the building manages its program to suit the current needs inside.

Through the app you are able to reserve office space, meeting rooms and parking. Lighting and air-con are all controlled through the app and are only used when in range of a person, this means no lights are left on in unoccupied rooms. Giant solar panels and borehole water heating keep the building powered and at a comfortable temperature. Even the surrounding parks have had special plants, insects and wildlife to control what grows in the area. As every part of the building

is connected to a main server, the technology department can make sure at all times that the building is operating at peak efficiency.

The building contains a gym and restaurant for employees to enjoy. Robot cleaners and security guards roam the building at night, cleaning up and protecting the building with motion sensors and cameras.

With technology playing such an important role in game development and functionality, it should also be evident in the function and the building as a whole.



III. 2 Deloitte s, The Edge building in Amsterdam. <https://www.bloomberg.com/features/2015-the-edge-the-worlds-greenest-building/img/Edge-exterior-day.jpg>

## Mountain Dwelling

Mountain Dwelling by PLOT a BIG and JDS collaboration, Copenhagen.

“The mountain is the 2nd generation of the VM Houses - same client, same size, and same street. The program, however, is 2/3 parking and 1/3 living. What if the parking area became the foundation of the homes - like a concrete hillside covered by a thin layer of housing, cascading from the 1st to the 11th floor? Rather than doing two separate buildings next to each other - a parking block and a housing block - we decided to merge the two functions into a symbiotic relationship.

The parking area needs to be connected to the street and the homes require sunlight, fresh air and a view. Thus all the apartments have roof gardens facing the sun, amazing views and street parking on the 10th

floor. The Mountain appears as a suburban neighbourhood of garden homes flowing over a 10-storey building - suburban living with urban density. The Mountain includes a number of sustainable technologies. Most notably, all the rainwater on the site is collected in an underground cistern and then recycled to be used as drip irrigation throughout the terraced planters.”

The North and West facades of the building have a perforated aluminium cover to allow air and sunlight into the parking structure.

The planter boxes act as railings for the dwellings and create a level of privacy between each unit. While the seasons change so do the plants and thus change the look of the building itself.

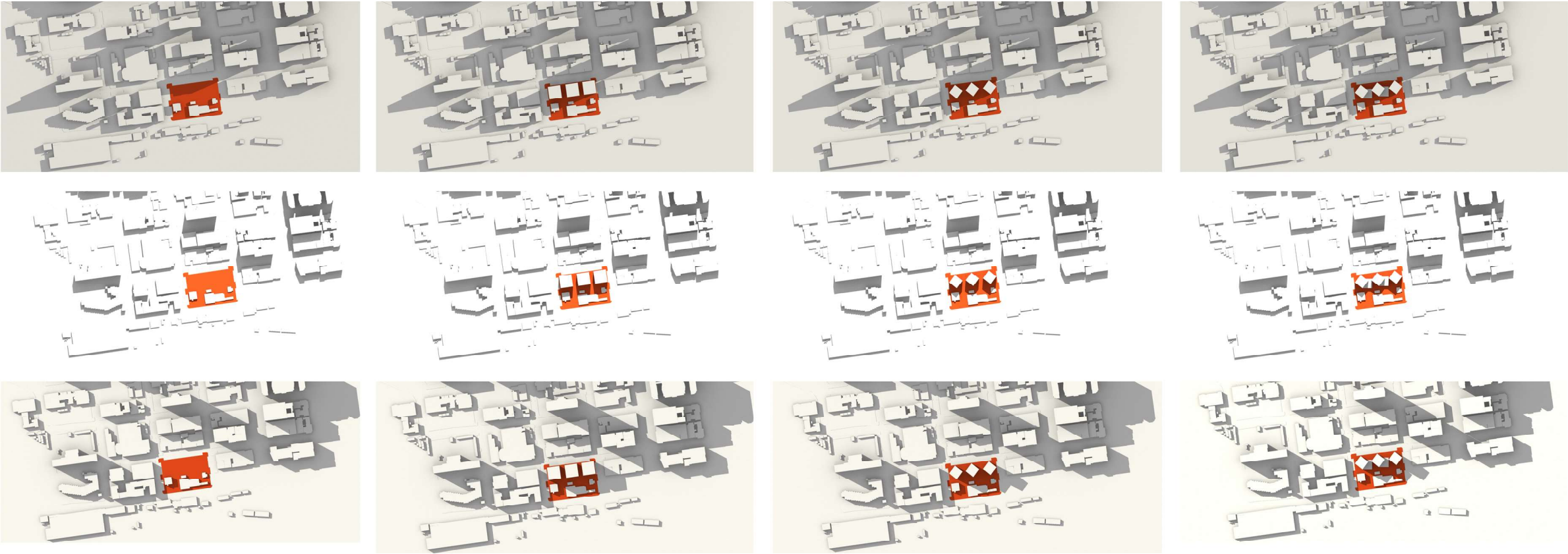
Sun relation and this ever changing landscape that is introduced through the users personal touch can make a building more interesting. I want my building to look different every time you go to visit it.



III. 3 PLOT's, Mountain Dwellings building in Copenhagen. <https://image.architonic.com/imgArc/project-1/4/5202737/BIG-Mountain-01.jpg>



Sun study of different building shapes



8:00 am Sun Study

12:00 am Sun Study

18:00 pm Sun Study

## Linear motors

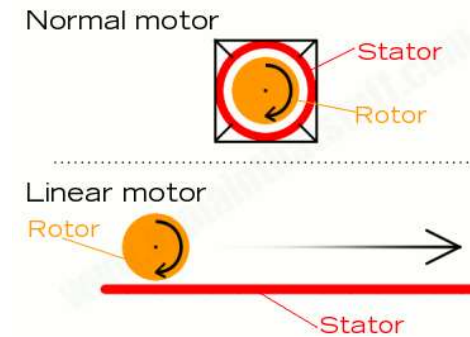
To allow the pods to move vertically and horizontally each pod will have in its base and ceiling void, a linear motor. These are electric induction motors that produce a straight line movement rather than the traditional rotation movement. It is used on Maglev, rollercoasters, conveyor belts and some elevators.

“A linear motor is effectively an AC induction motor that has been cut open and unwrapped. The stator is laid out in the form of a track of flat coils made from aluminum or copper and is known as the primary of a linear motor. The rotor takes the form of a moving platform known as the secondary. When the current is switched on, the secondary glides past the primary supported and propelled by a magnetic field.” (<http://www.explainthatstuff.com>)

The Pods would be able to move horizontally and vertically depending on the required final required position.

Reference to how something so big would move can be seen in automated car parkings. Cars are placed at the entrance on a platform and the automated system finds an available spot for the car underground. A ticket with a password and number is given to the owner and is used when collecting the car. The system memorizes the location of each vehicle with a unique code and is then able to retrieve that car when called upon. Unlike lifts the car park doesn't have a predetermined route. ie its not just up and down to x amount of floors. The car park needs to move vertically and horizontal and find an open space to store the car.

Please see attached USB for videos.



Ill. 4 Normal motor vs Linear motor. <https://cdn4.explainthatstuff.com/how-linear-motor-works.png>

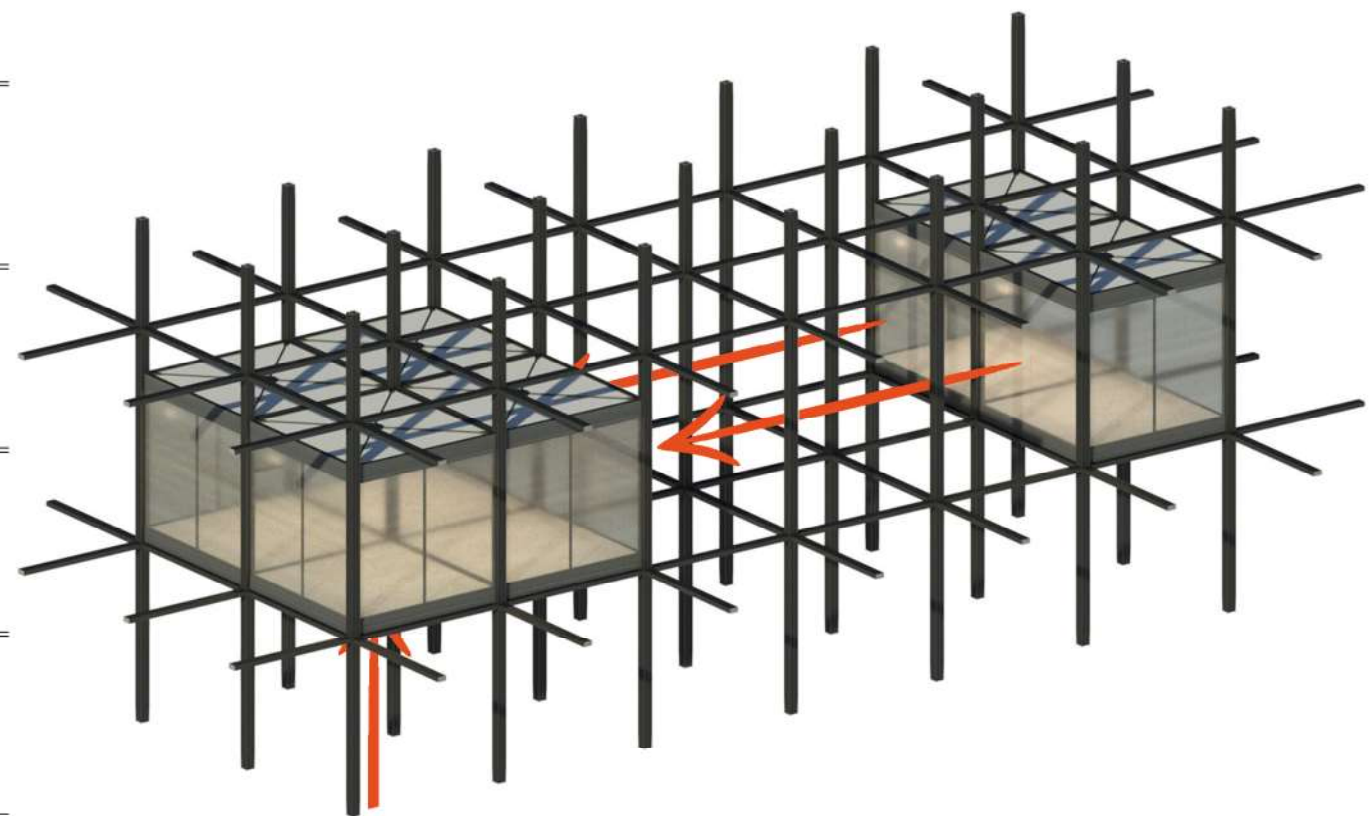
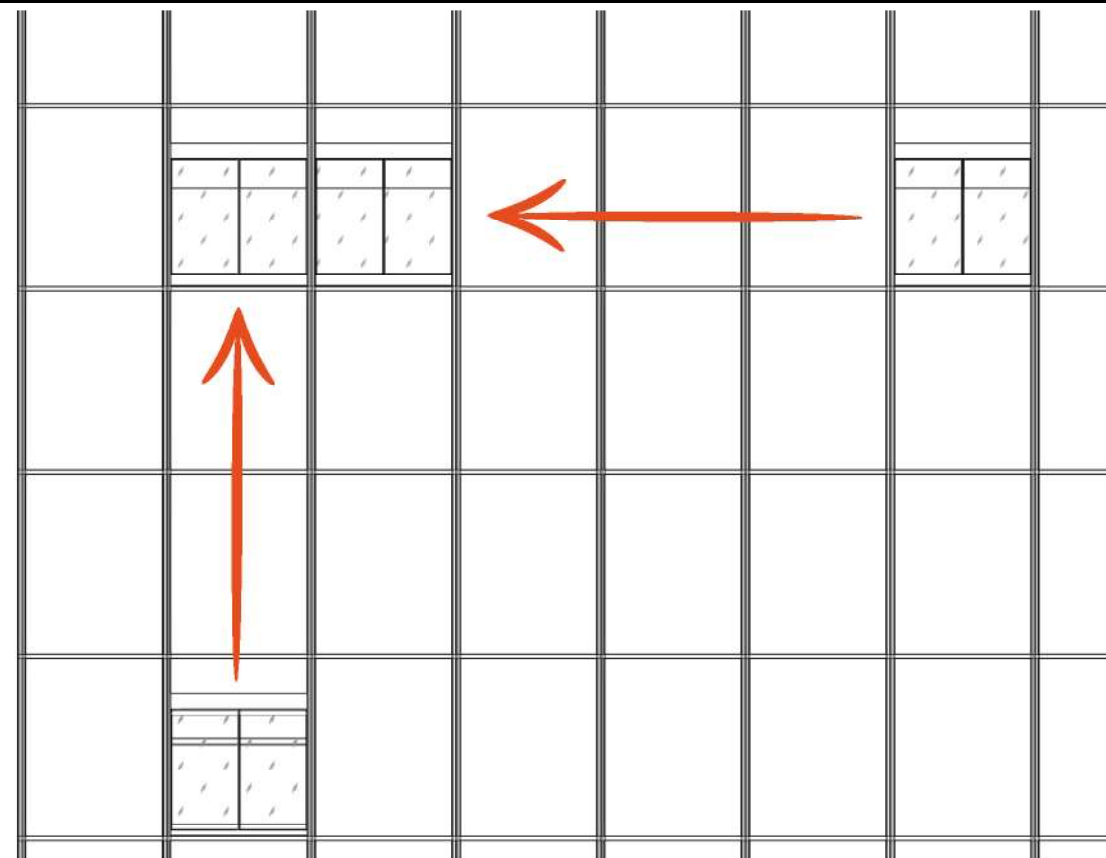


Ill. 5 Horizontal and Vertical moving elevator by Thyssen Krupp. [https://media.treehugger.com/assets/images/2014/12/silly-architects.jpg.650x0\\_q70\\_crop-smart.jpg](https://media.treehugger.com/assets/images/2014/12/silly-architects.jpg.650x0_q70_crop-smart.jpg)



Ill. 6 Underground automated car park. [http://www.jeb-iga.com/wp-content/uploads/2013/09/Volkswagen\\_Car\\_Park\\_AutoStadt\\_HENN\\_Architekten\\_5-700x450.jpg](http://www.jeb-iga.com/wp-content/uploads/2013/09/Volkswagen_Car_Park_AutoStadt_HENN_Architekten_5-700x450.jpg)

### Pod movement to create larger unit



## Pod design

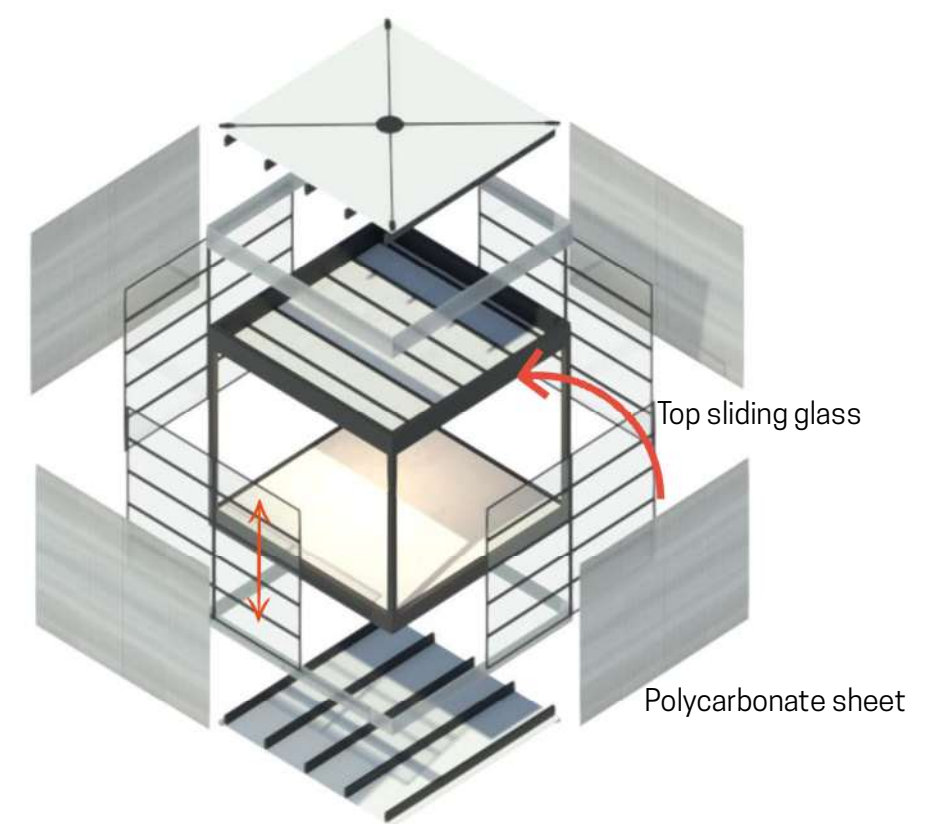
The choice to use a square pod comes from its ease of moving around a fixed grid structure and its ability to adapt to the needs of the client. Modular design allows for the space inside to conform to the users requirements. Whether its a large area, small space, open all around or closed off. The pods have been designed for this kind of mixed office and private space style.

The Pods fit into a steel grid that supports the tracks for the linear motors to function on. Each pod 4m x 4m and is able to move vertically and horizontally through the linear induction motors. Upward sliding glass panels split each face into two portions. This allows a face to be completely open or partially open as seen in the image to the right and on the following pages.

When the pods come together the user can open these sliding panels that stack upward and join pods together to create bigger rooms. Each pods side has a translucent polycarbonate sheet that rolls upward and is stored in the ceiling void. This allows the user to control the amount of sun entering the space.



III. 7 Installer placing Polycarbonate sheet over green house. <https://secure.img1-fg.wfcdn.com/im/16358486/resize-h600-w600%5Ecom-pr-r85/5440/5440811/PRO+5mm+Polyethylene+Panel.jpg>

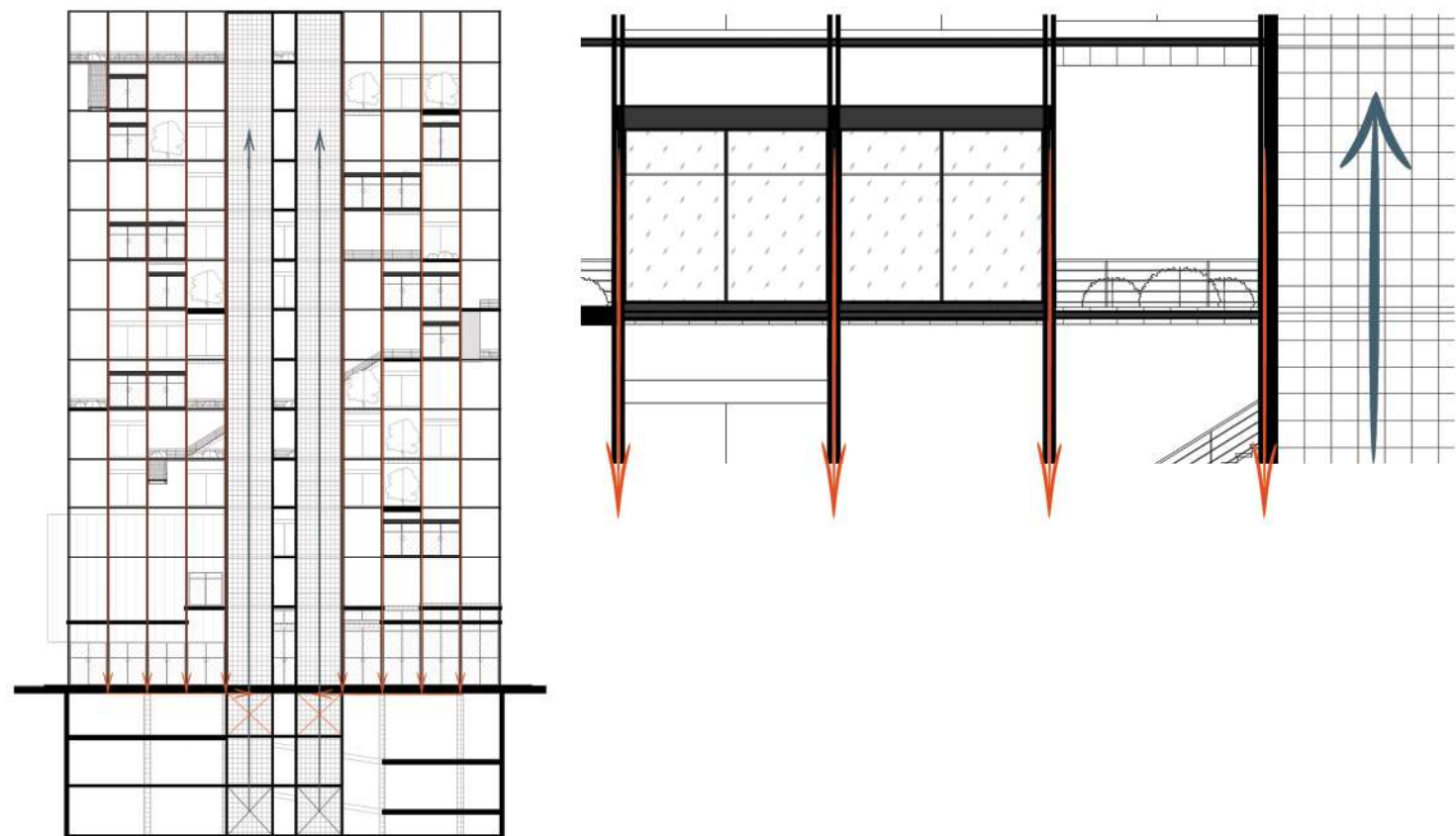




## Water Collection

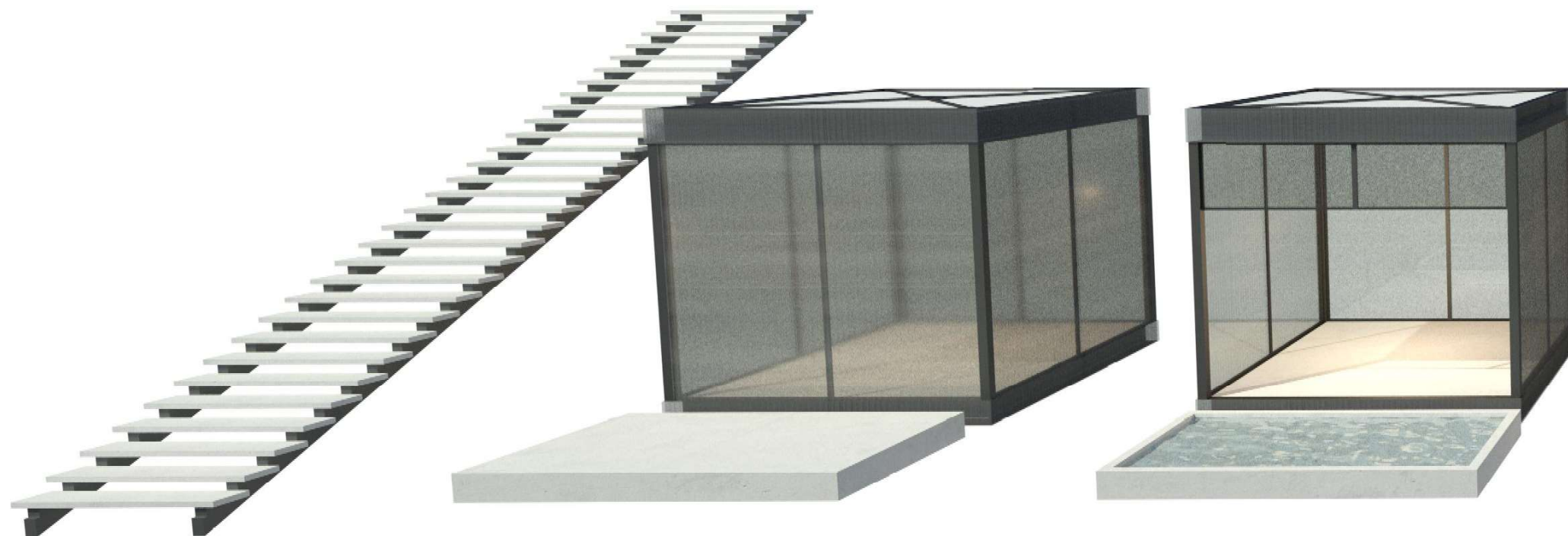
Trickle-Down Toilet Water and Rainwater collection will be used within the concrete core and steel vertical poles. Massive tanks will be stored in the basement rooms to collect all the water, this water will then be cleaned and reused to water the gardens.

Borehole tanks will collect sub surface water and pump it into the building for use throughout. This can also be used to keep the building cool during the summer with circulation. As the water then heats up it is collected in separate tanks to be used as hot water inside the taps.



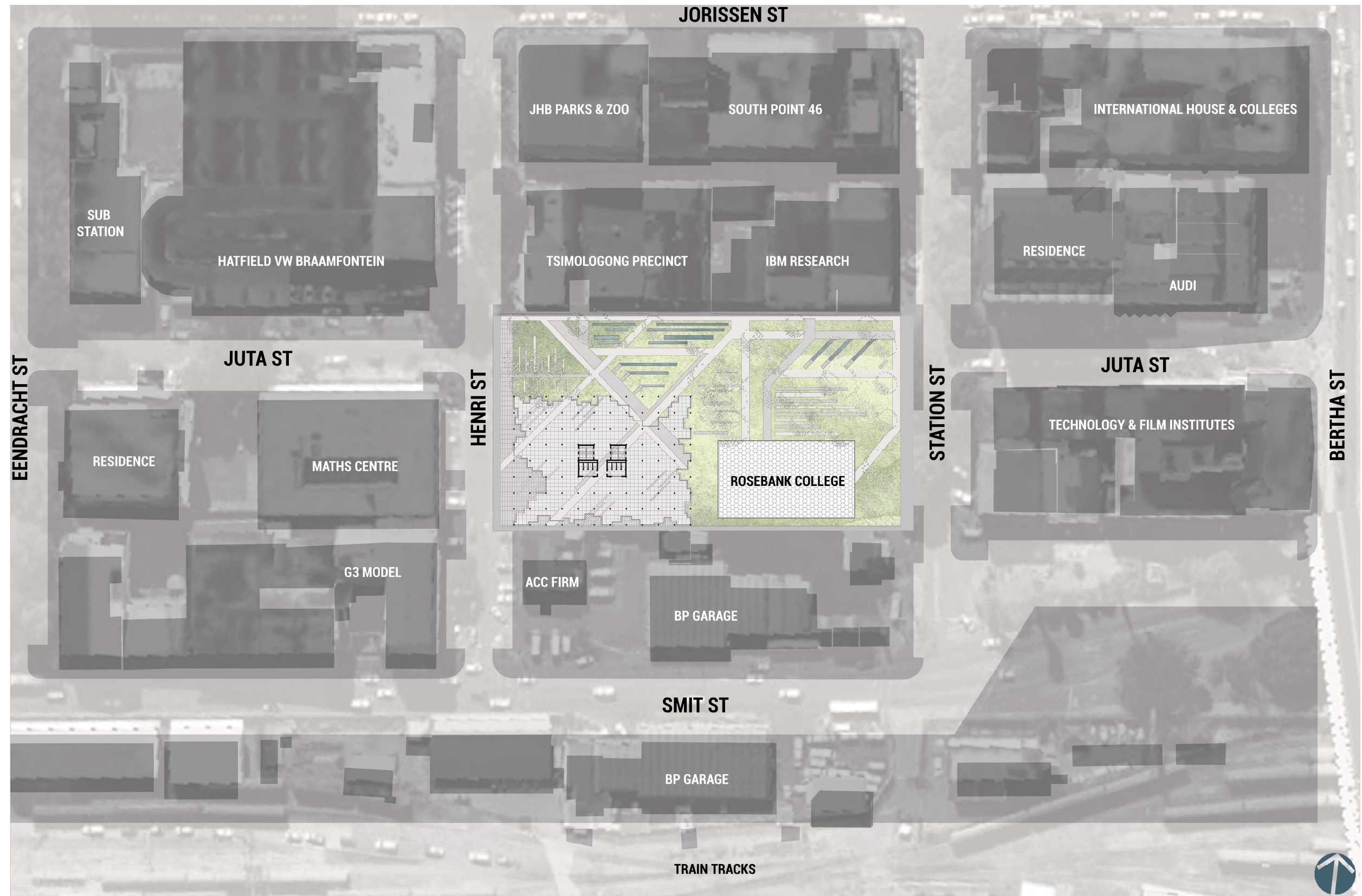
### Types of pods & circulation platforms

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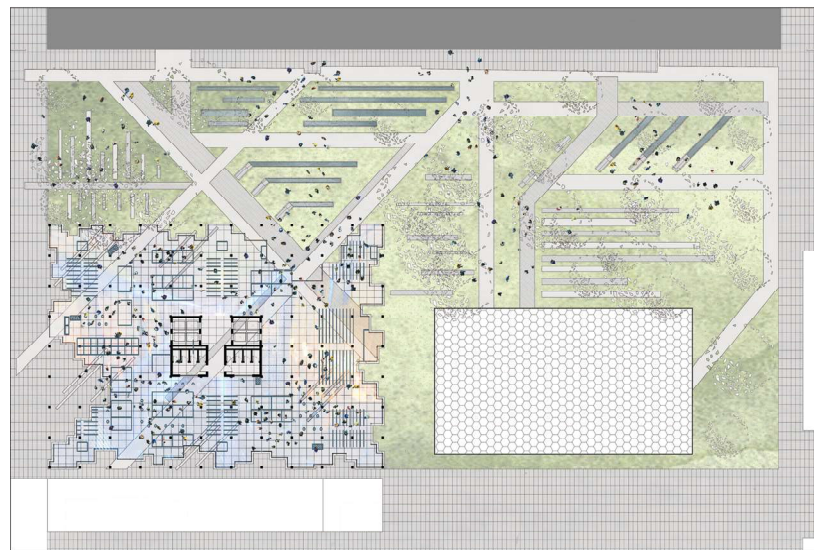




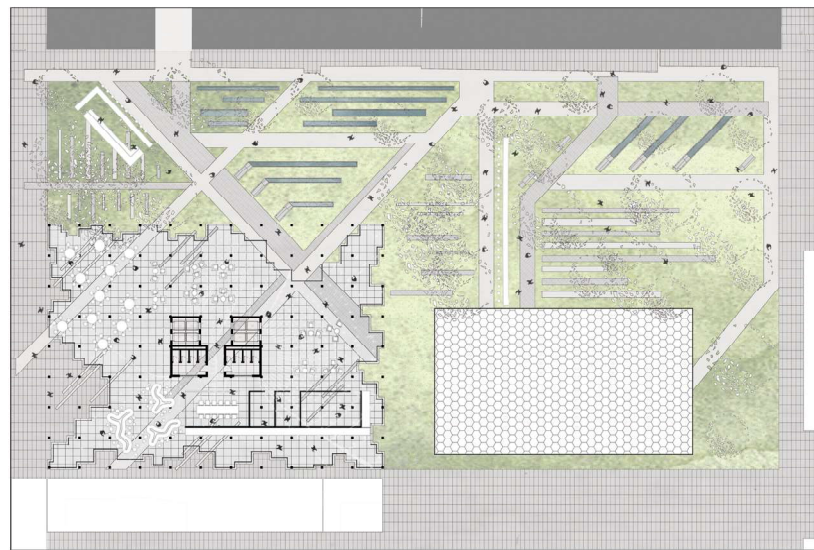


**SITE & CONTEXT PLAN** scale 1:500

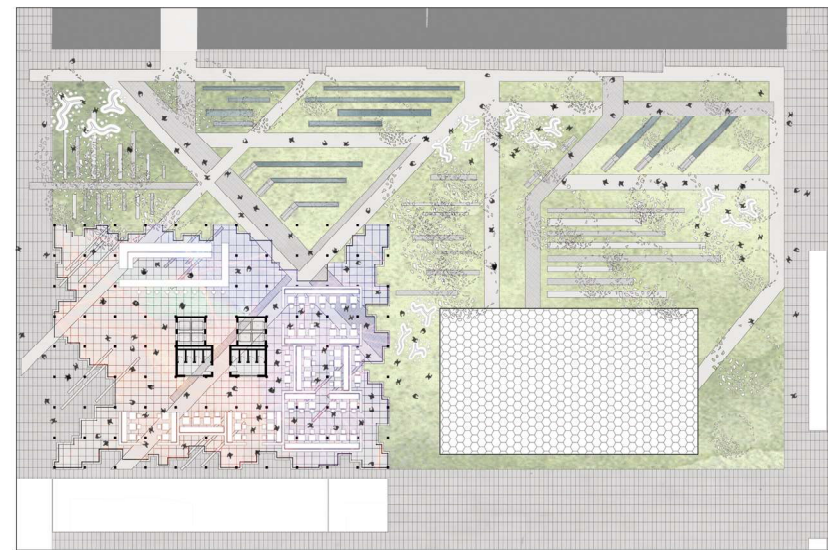




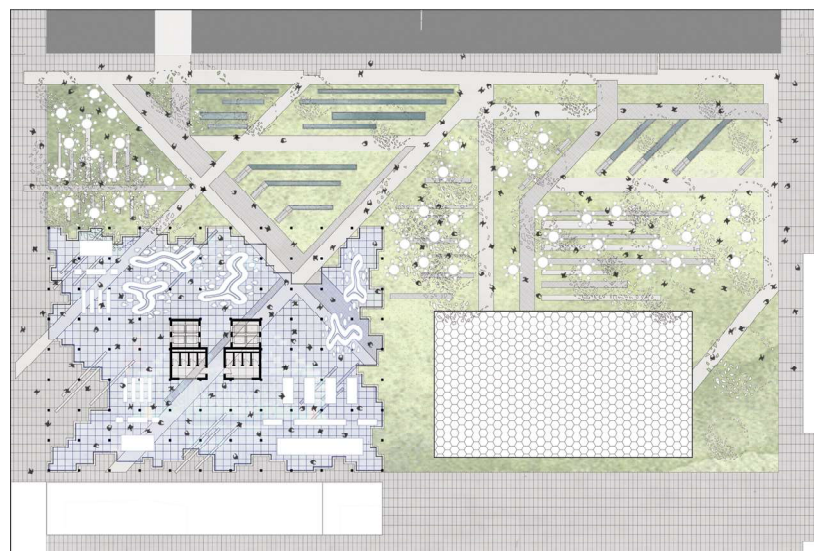
GROUND FLOOR PLAN DURING GAMING EXPO



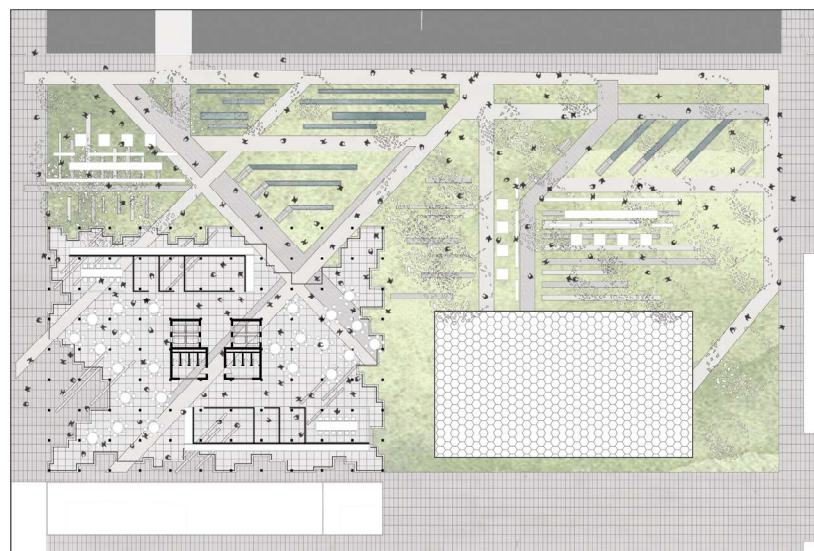
GROUND FLOOR PLAN DURING BASIC EVENT/ PUBLIC INTERACTION



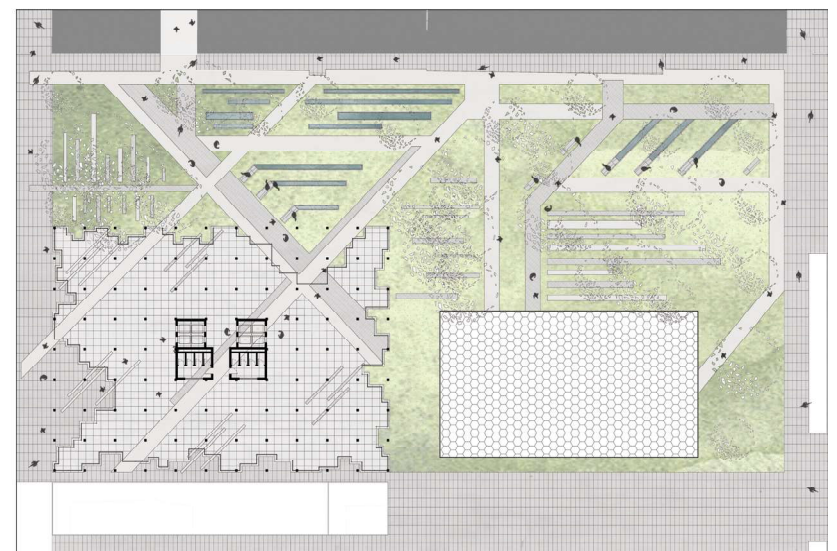
GROUND FLOOR PLAN DURING LAN COMPETITION



GROUND FLOOR PLAN DURING TELKOM PROMOTION



GROUND FLOOR PLAN DURING LEARNING AND TECH CONFERENCE



GROUND FLOOR PLAN DURING NO EVENT

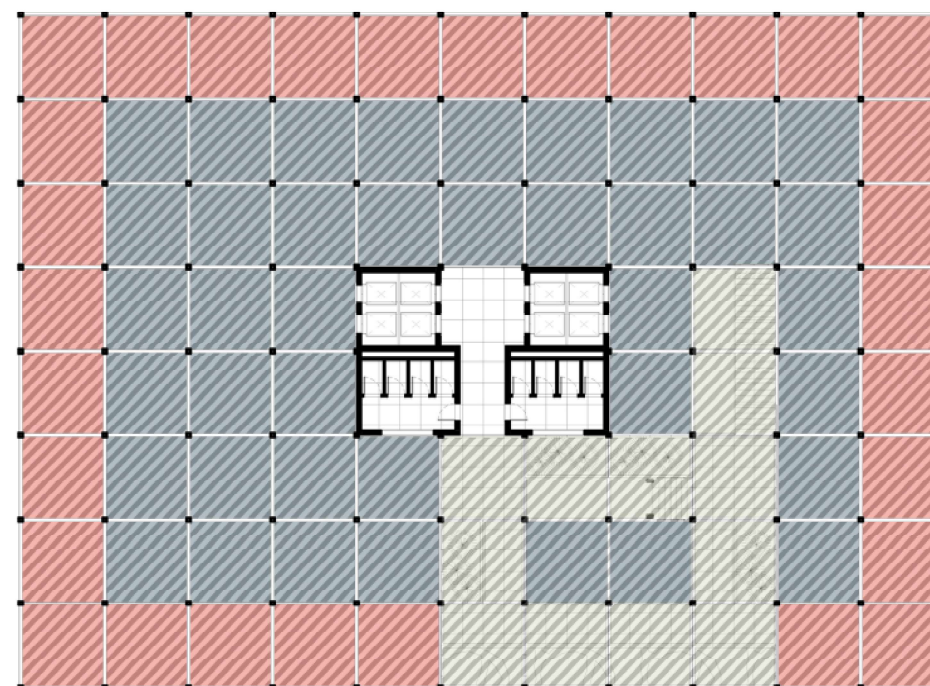




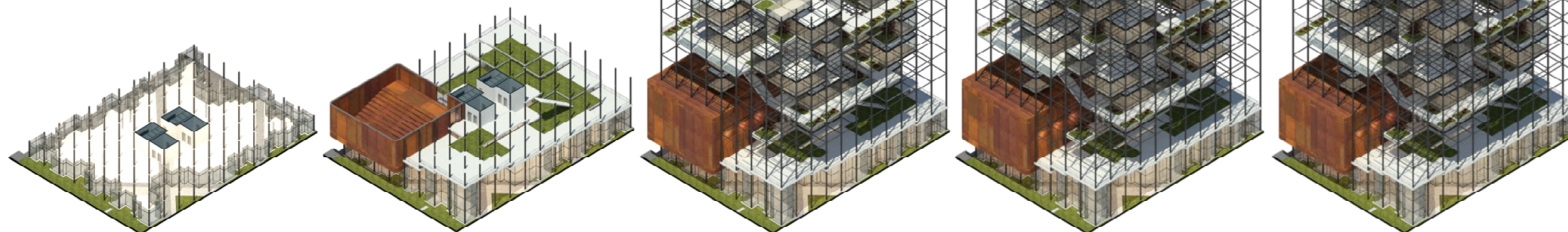
 No Pods can access outer ring of the structure.

 Pod Circulation space: Internal 9 x 6 grid, excluding Circulation walkways.

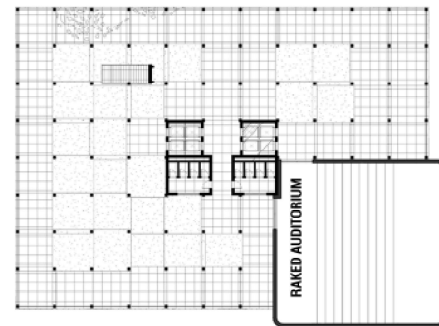
 Circulation structure where Pods can't be placed on.



-  Kitchen = 5 (1 x 2 Pods)
-  Game Design/Development = 4 (2 x 2 Pods)
-  Recreation Space = 8 (2 x 2 Pods)
-  Private Bedroom = 27 (1 x 1 Pods)
-  Private Team HQ/ Practice Room = 7 (2 x 2 Pods)



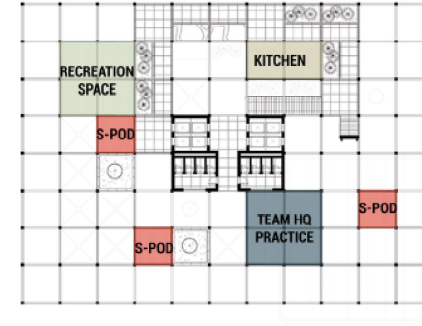




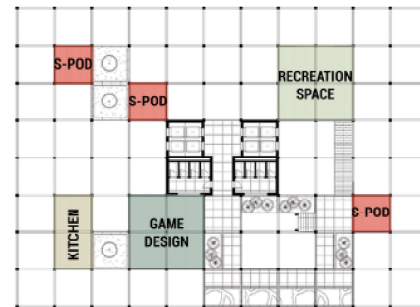
FIRST FLOOR PLAN scale 1:500



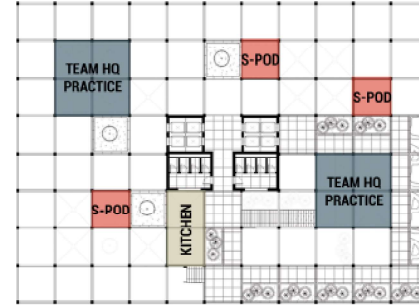
SECOND FLOOR PLAN scale 1:500



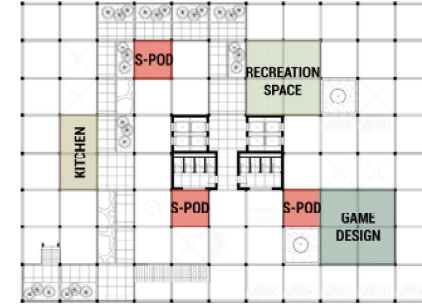
THIRD FLOOR PLAN scale 1:500



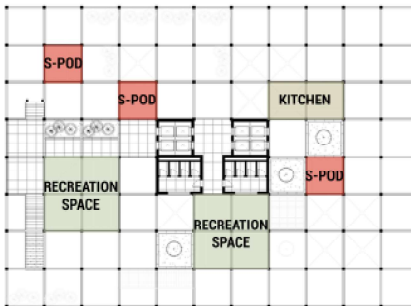
FOURTH FLOOR PLAN scale 1:500



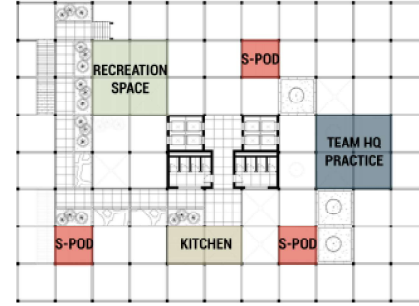
FIFTH FLOOR PLAN scale 1:500



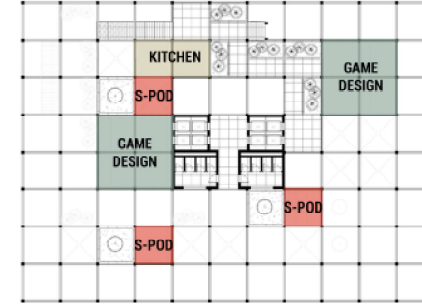
SIXTH FLOOR PLAN scale 1:500



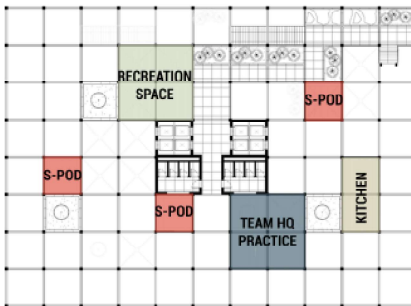
SEVENTH FLOOR PLAN scale 1:500



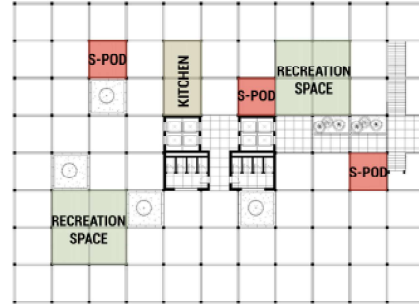
EIGHTH FLOOR PLAN scale 1:500



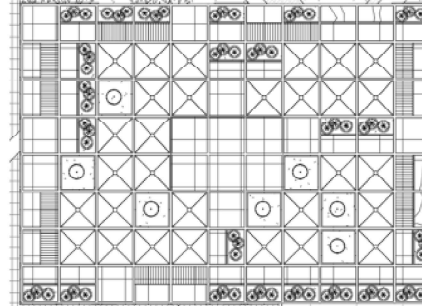
NINTH FLOOR PLAN scale 1:500



TENTH FLOOR PLAN scale 1:500



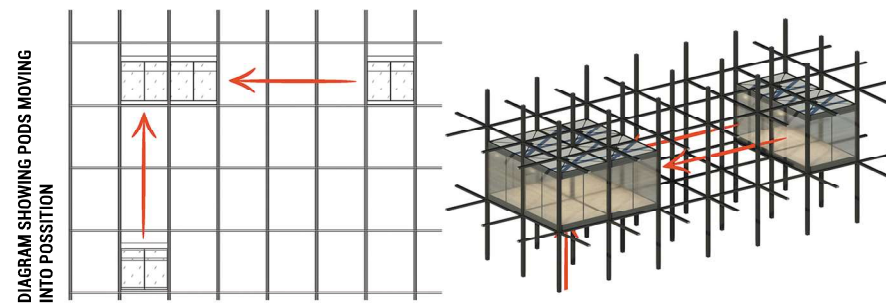
ELEVENTH FLOOR PLAN scale 1:500



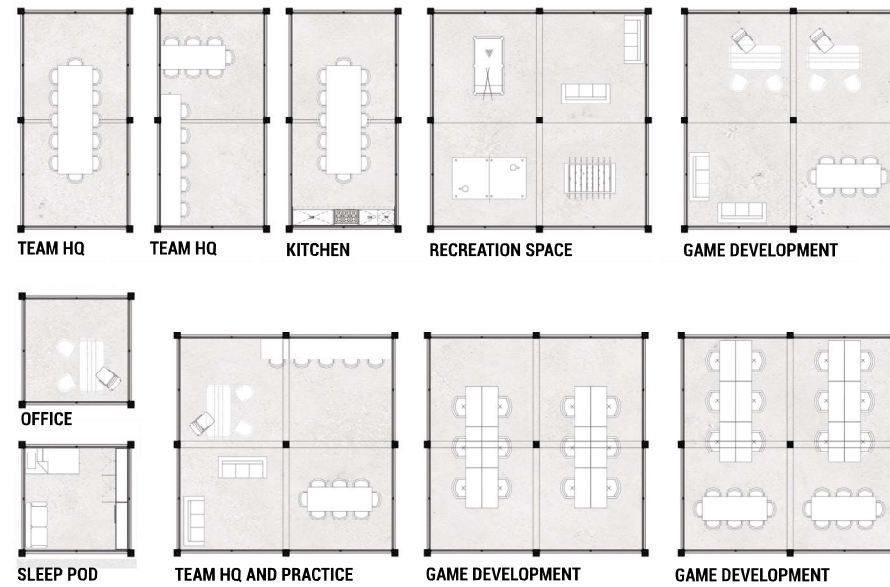
ROOF PLAN scale 1:500







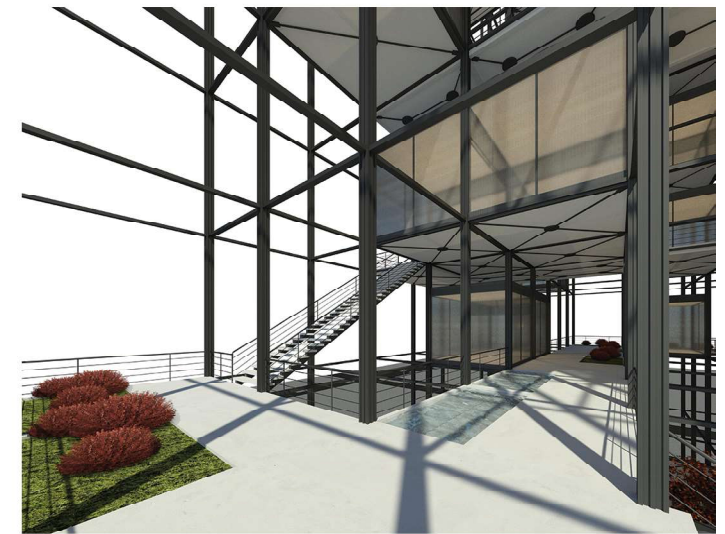
OPTIONAL INTERNAL POD LAYOUT



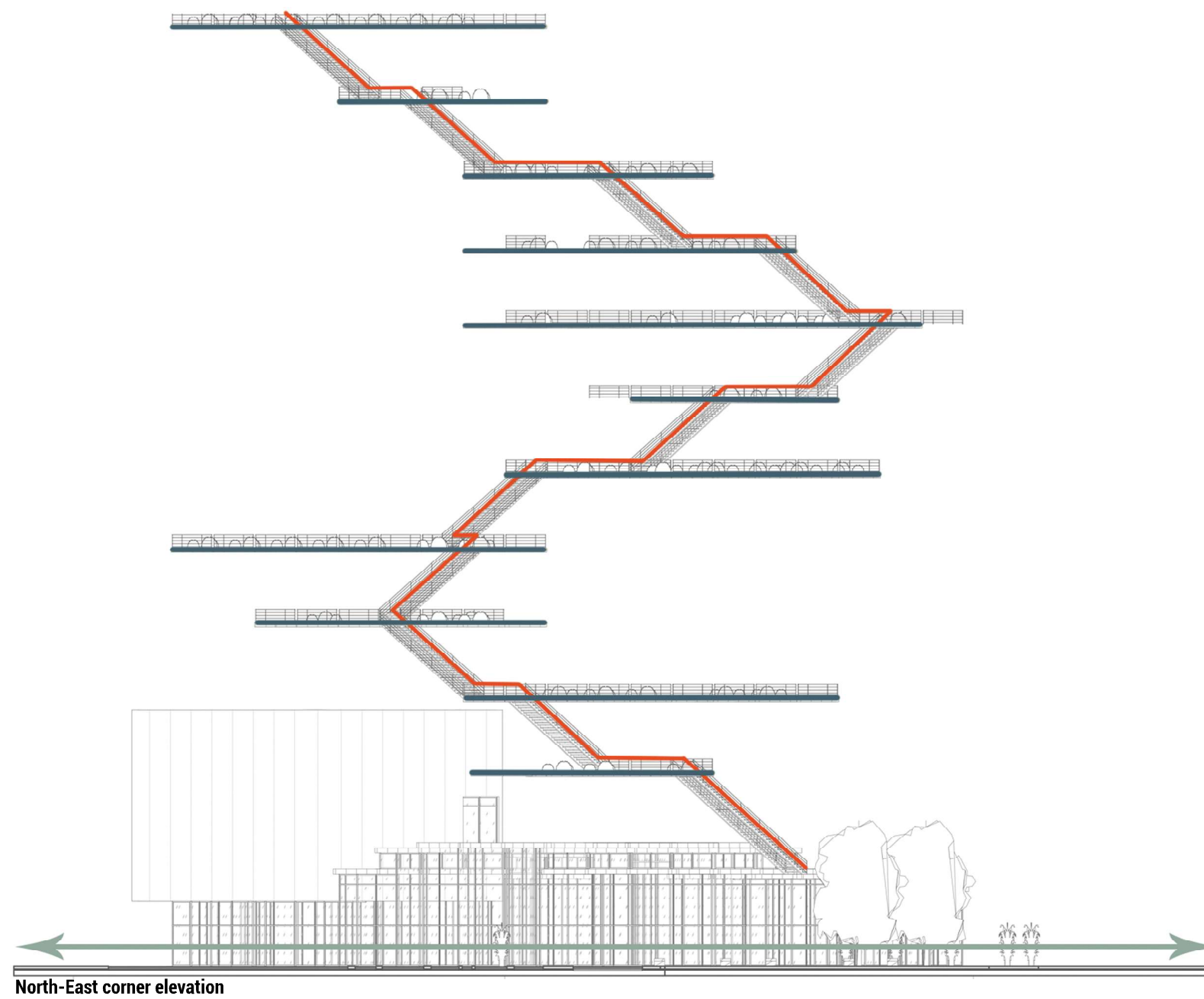
INTERNAL VIEW OF 4 PODS TOGETHER

- Kitchen = 5 (1 x 2 Pods)
- Game Design/Development = 4 (2 x 2 Pods)
- Recreation Space = 8 (2 x 2 Pods)
- Private Bedroom = 27 (1 x 1 Pods)
- Private Team HQ/ Practice Room = 7 (2 x 2 Pods)

Total Single Pods = 113  
Total Pod zones = 407  
Total Circulation = 118  
Total no Pod zones = 241



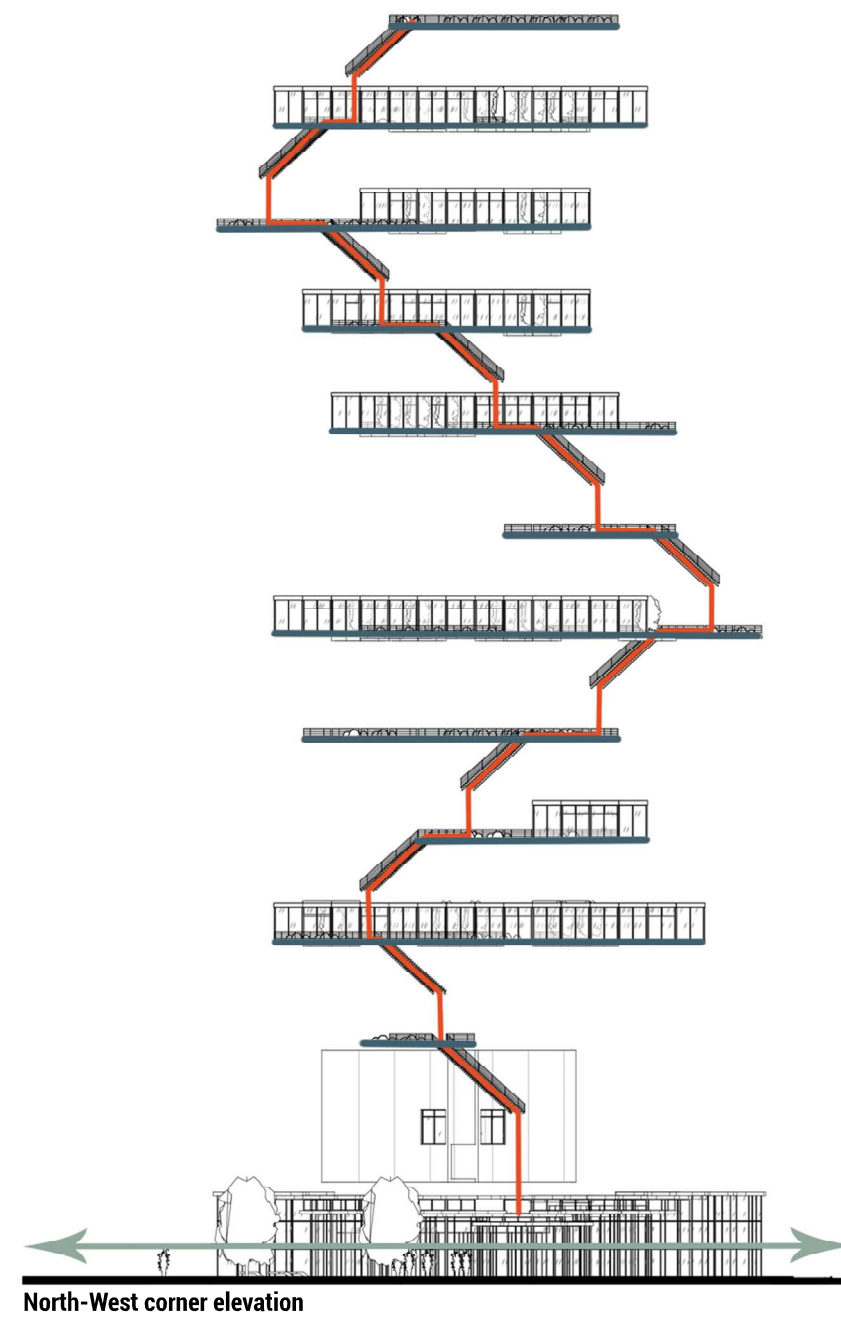




Vertical movement along outside stairs

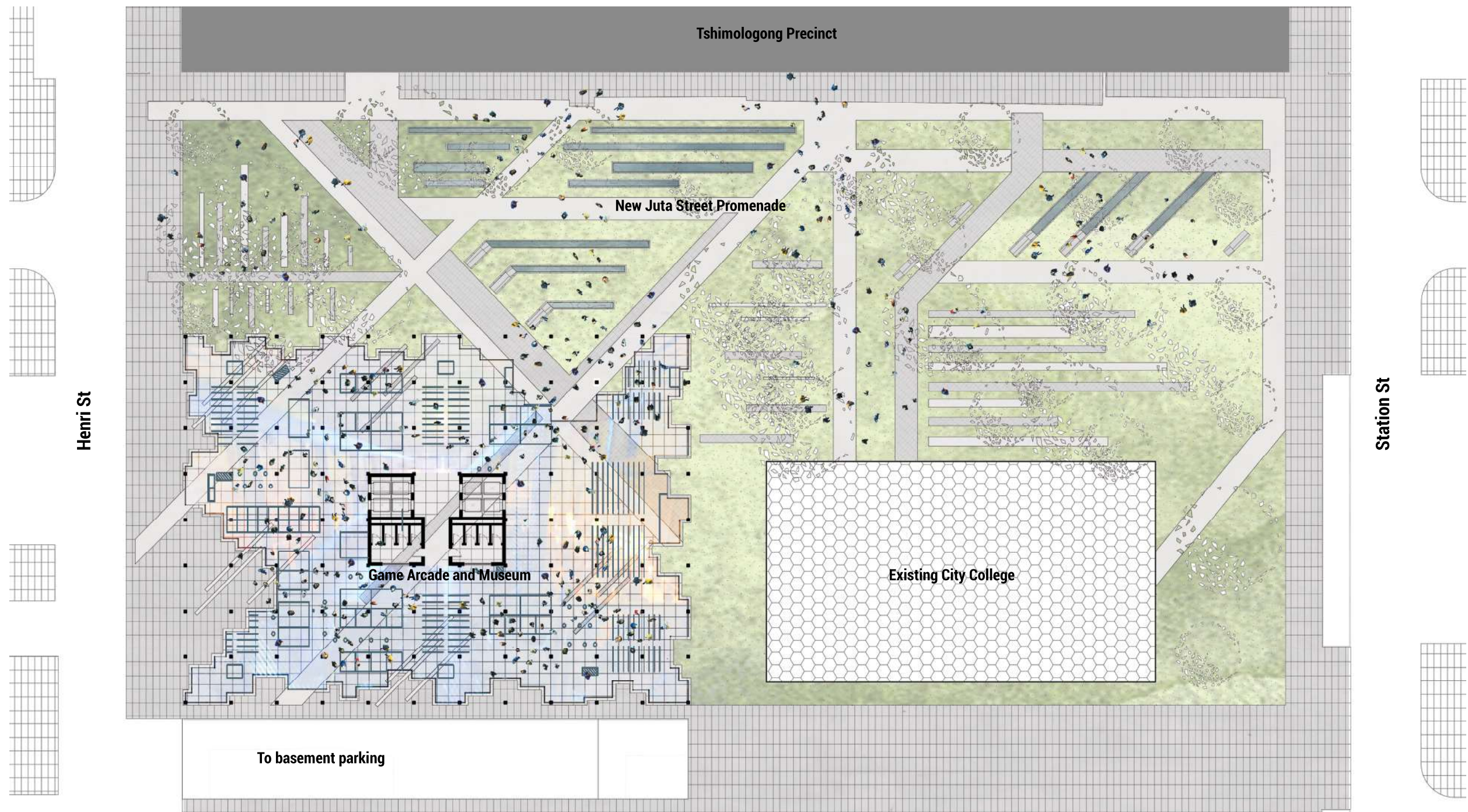


Horizontal movement along fixed walkways



Horizontal movement through ground floor





## Ground Floor Plan

On the Ground floor will be a Game Arcade and Museum where users can come and try their hands at games from all eras. Learning, interaction and community growth will occur on this floor. Here players can improve their skills and learn more about professional gaming before moving to the higher floors.

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As a player gets better and becomes more interested in the industry they are able to move up to game design and development floors. This will interest those who wish to be apart of the creation of games more than the actual competitive playing of the games.

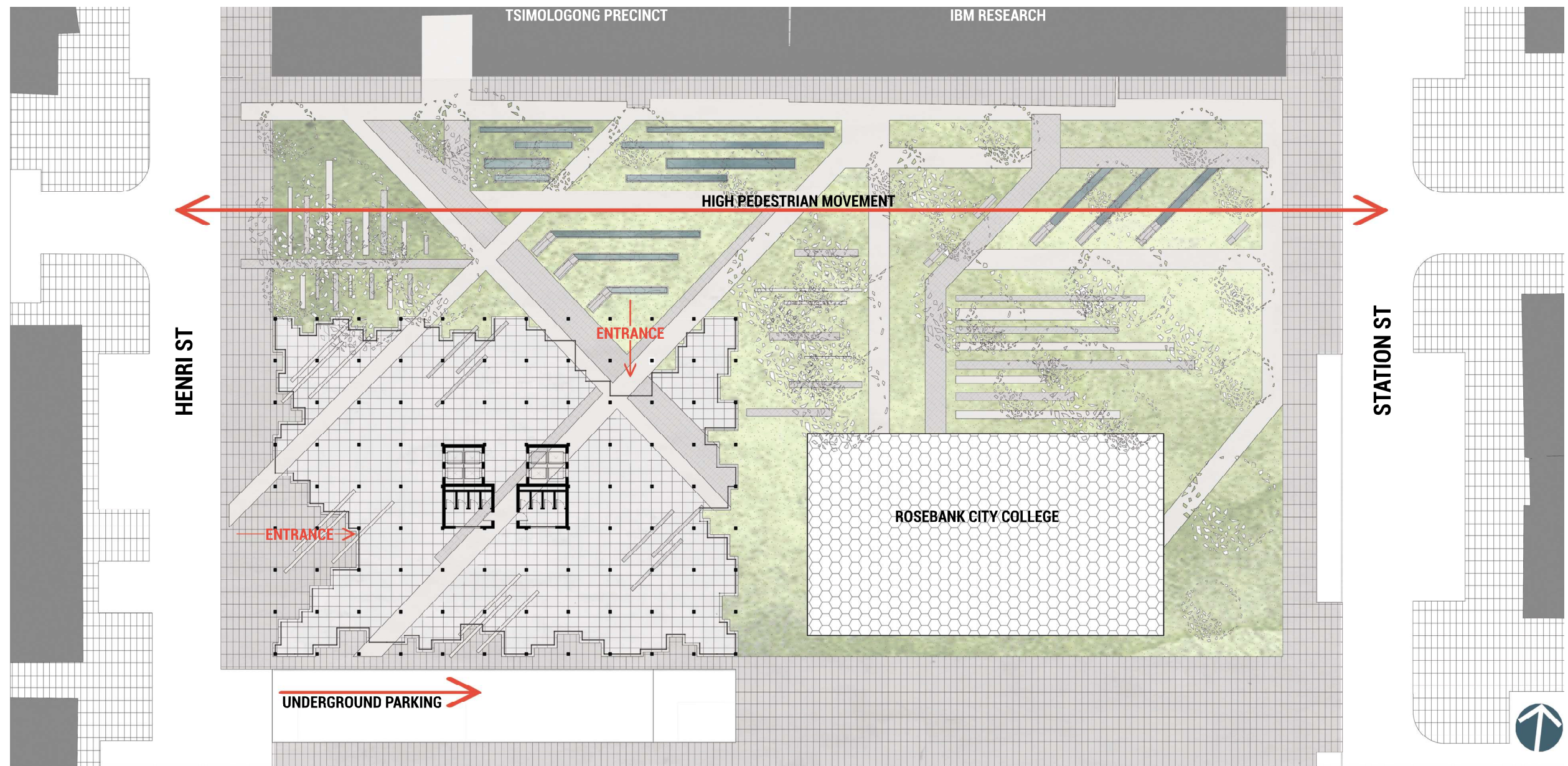
If a user would like to play professionally he/she can get a team together to live in the pods up stairs and practice as a team to challenge other pod residences. With Local and International tournaments taking place inside the building there is a small venue for spectators to enjoy live professional gaming. If a

tournament of larger scale is needed then the local Civic Theatre will be used which is located a few blocks away. (See Mapping)

Outside the buildings the area has become one precinct, including the Tshimologong building, IBM research centre and the City College. With

this growth part of Juta St has been converted into a public promenade.

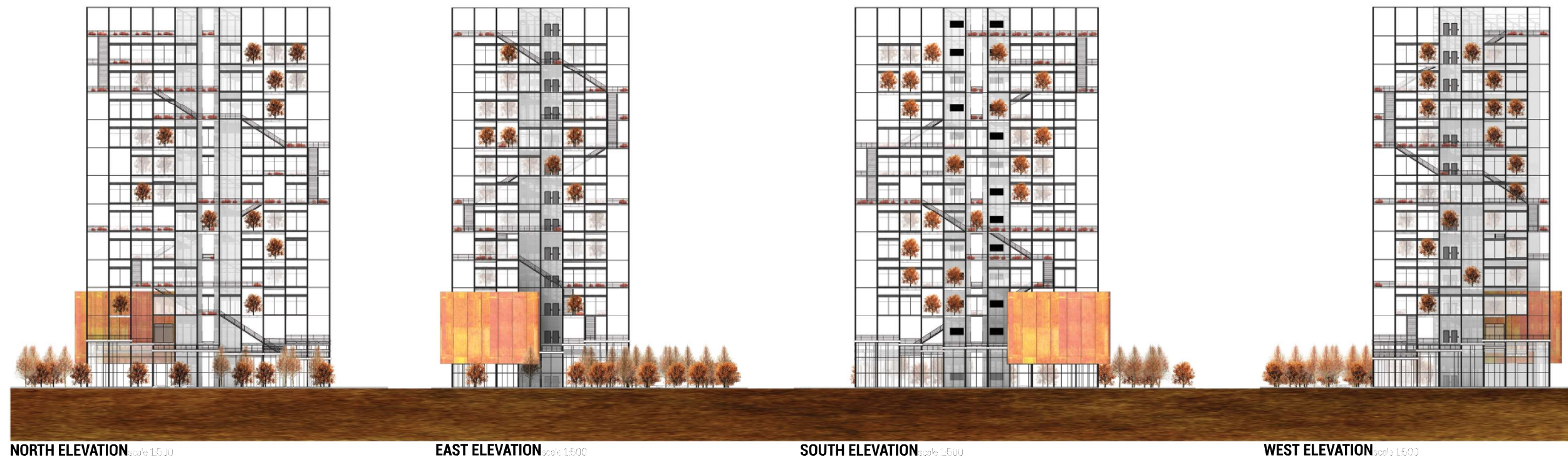




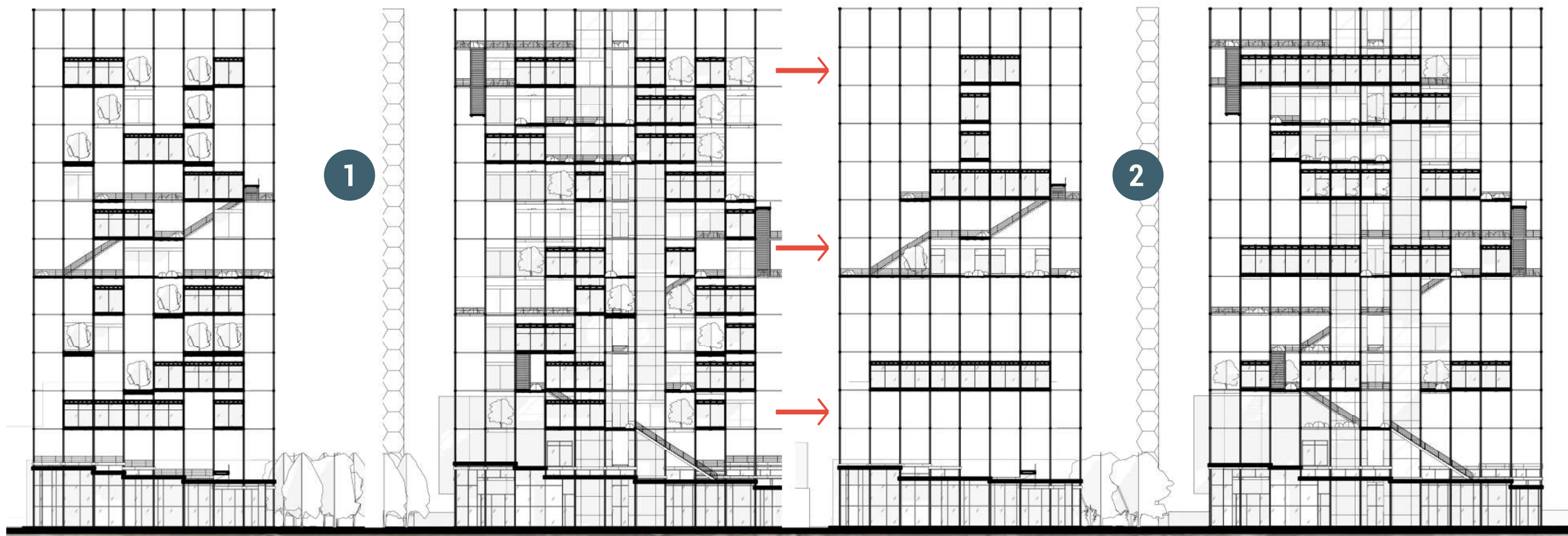
GROUND FLOOR PLAN scale 1:200







### Sections showing movement of pods







Long Section Perspective View



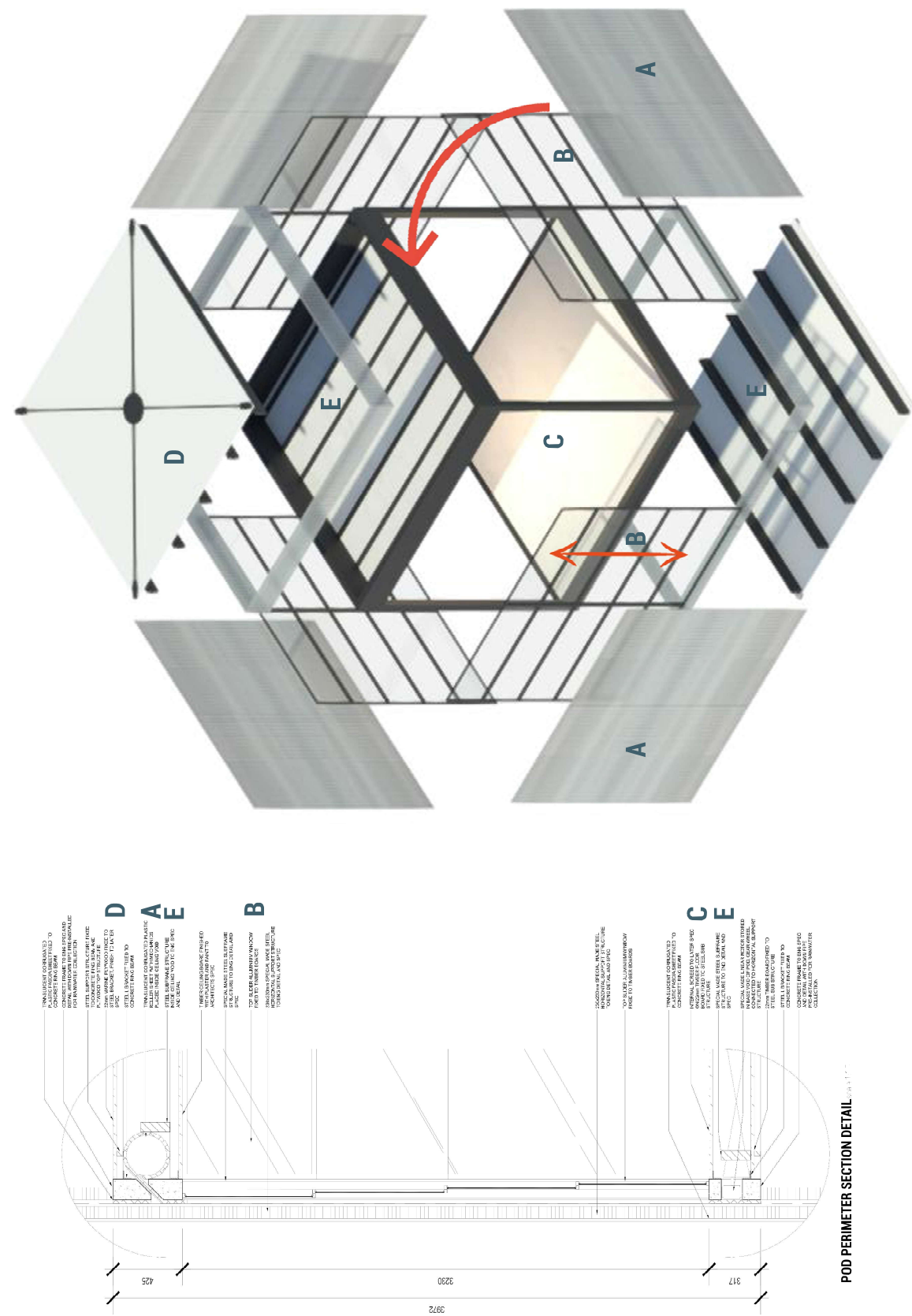
Cross Section Perspective View





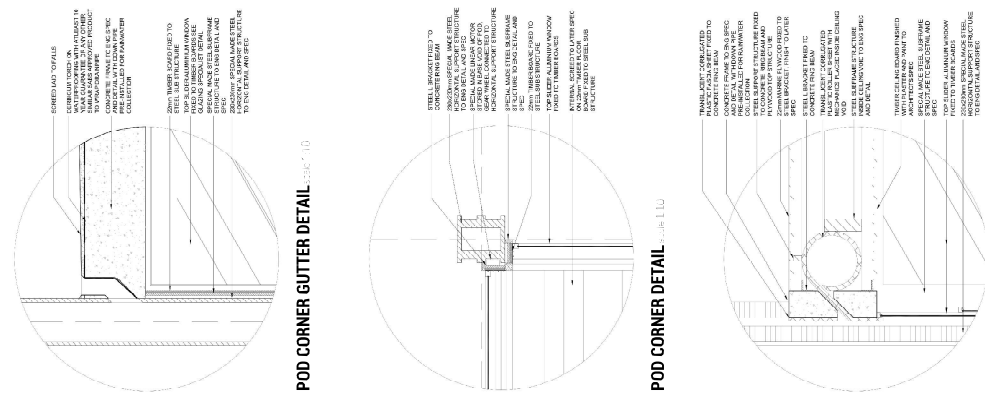
116





### POD PERIMETER SECTION DETAIL

## POD FLOOR PLAN DETAIL



### POD TOP ROLLER/GLAZING DETAIL

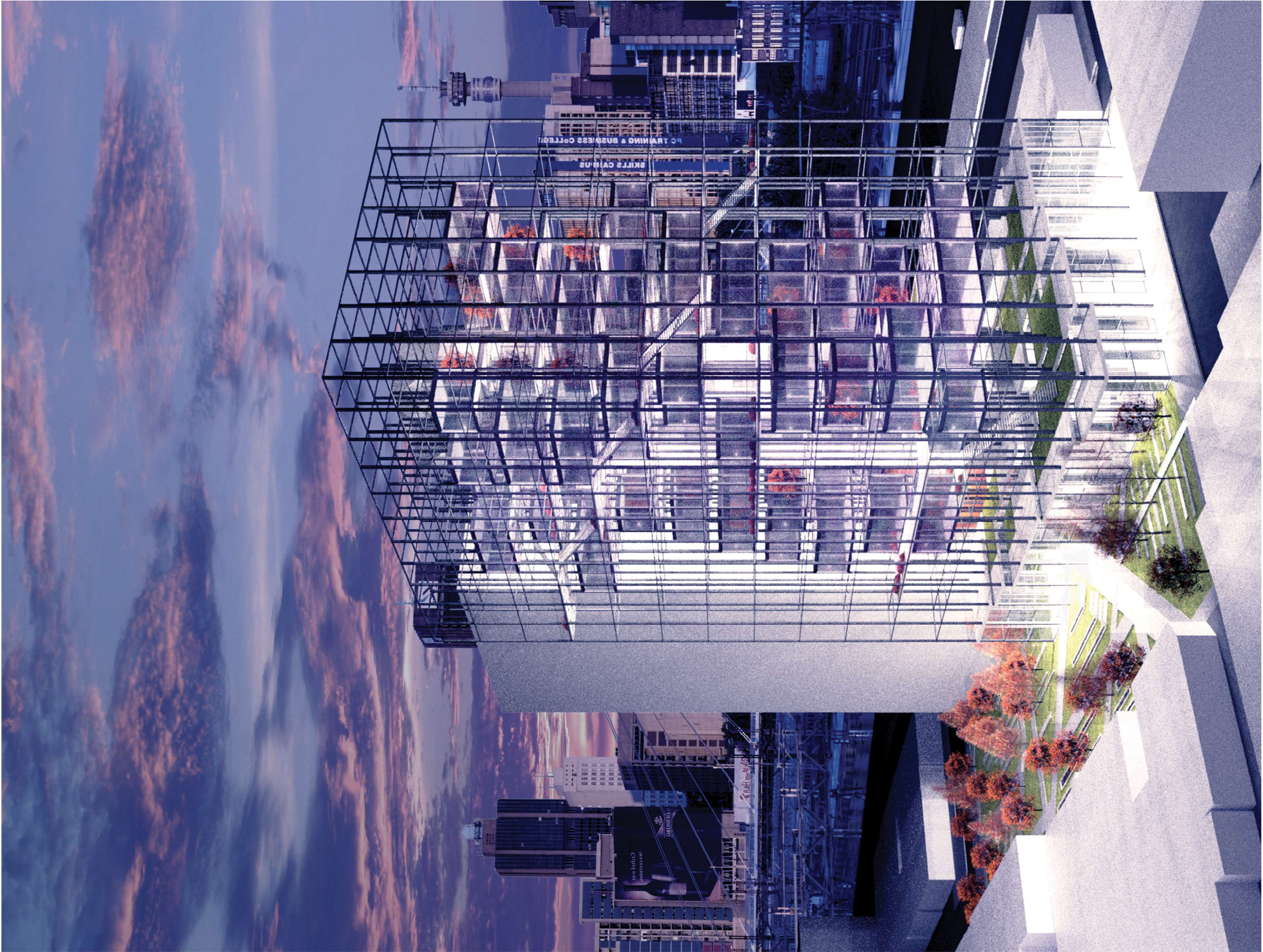


OPTIONAL ITERATION OF FLOOR PLAN



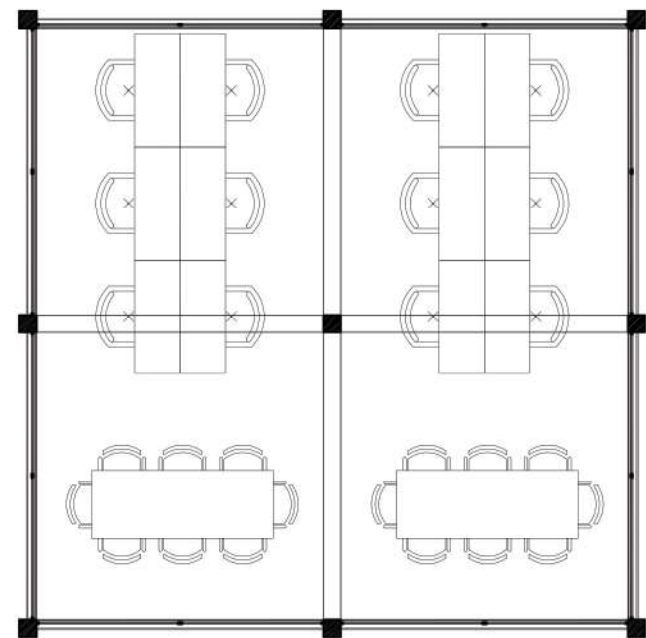
ALTERNATIVE ITERATION OF FLOOR PLAN



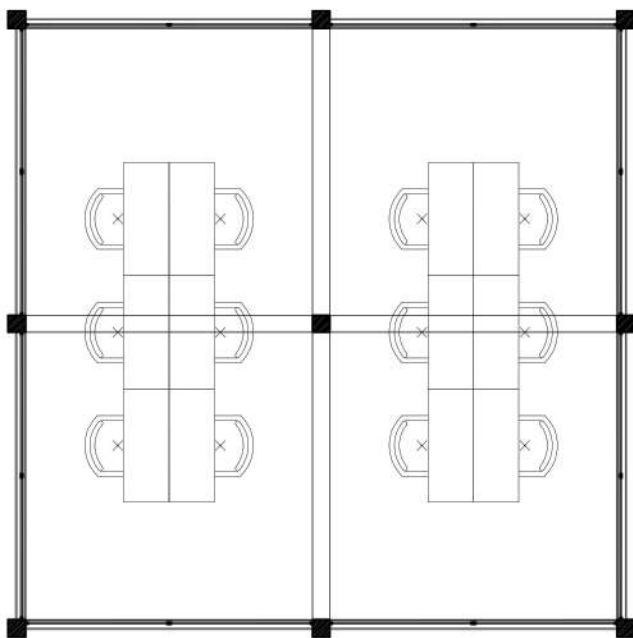




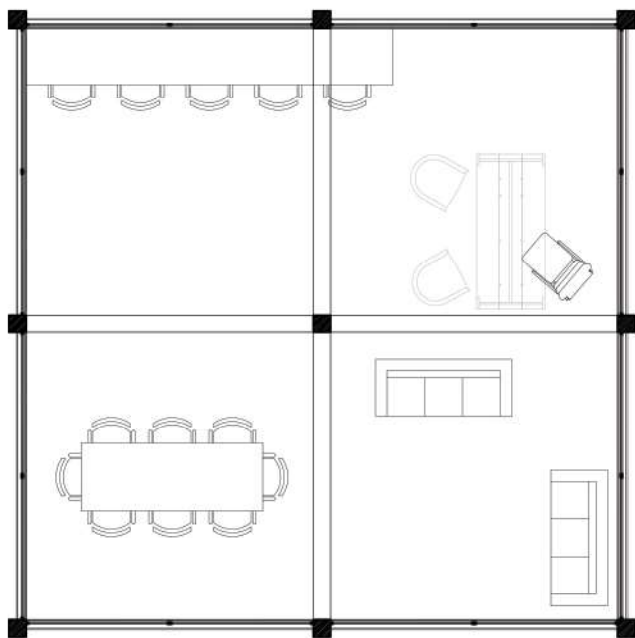
Plans of various Pod combinations



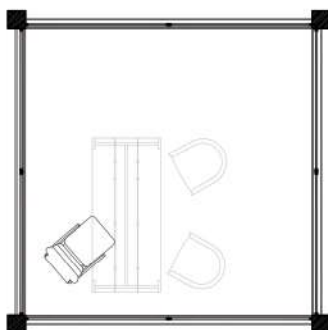
Game Development 4 pod Option  
120



Game Development 4 pod Option



Game HQ 4 pod Option

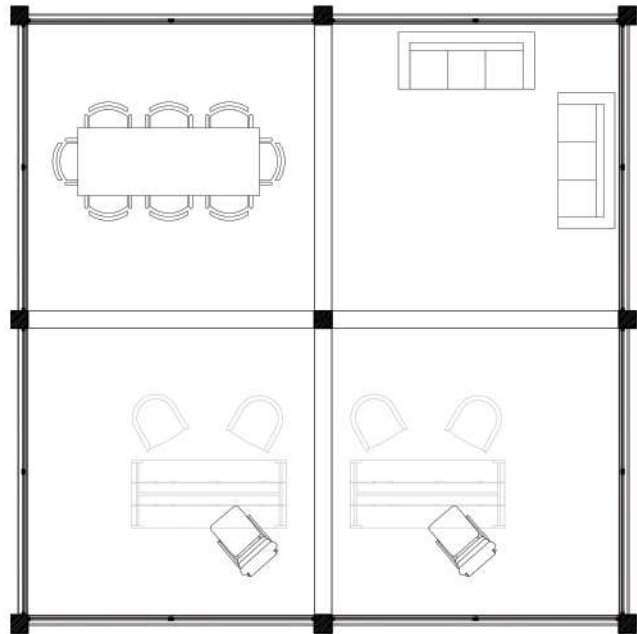


Office pod Option

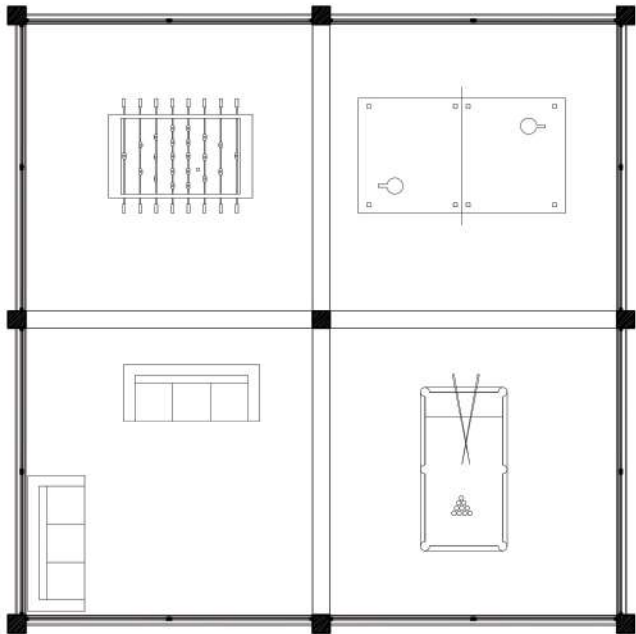


Bedroom pod Option

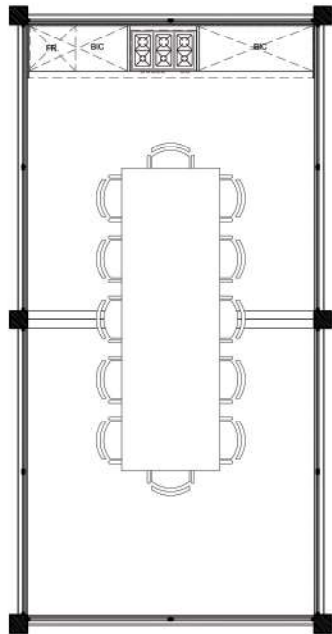
Plans of various Pod combinations



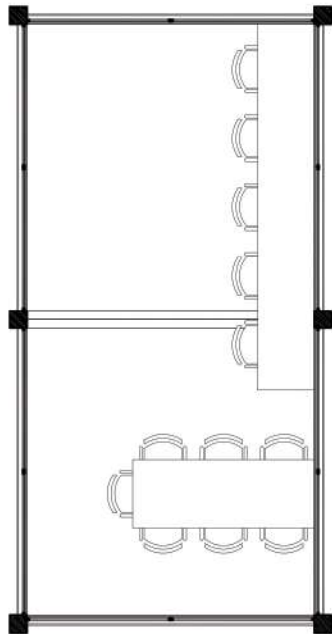
Game Development 4 pod Option



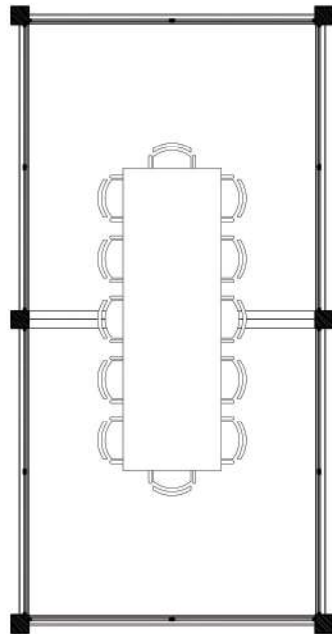
Recreation 4 pod Option



Kitchen 2 pod Option

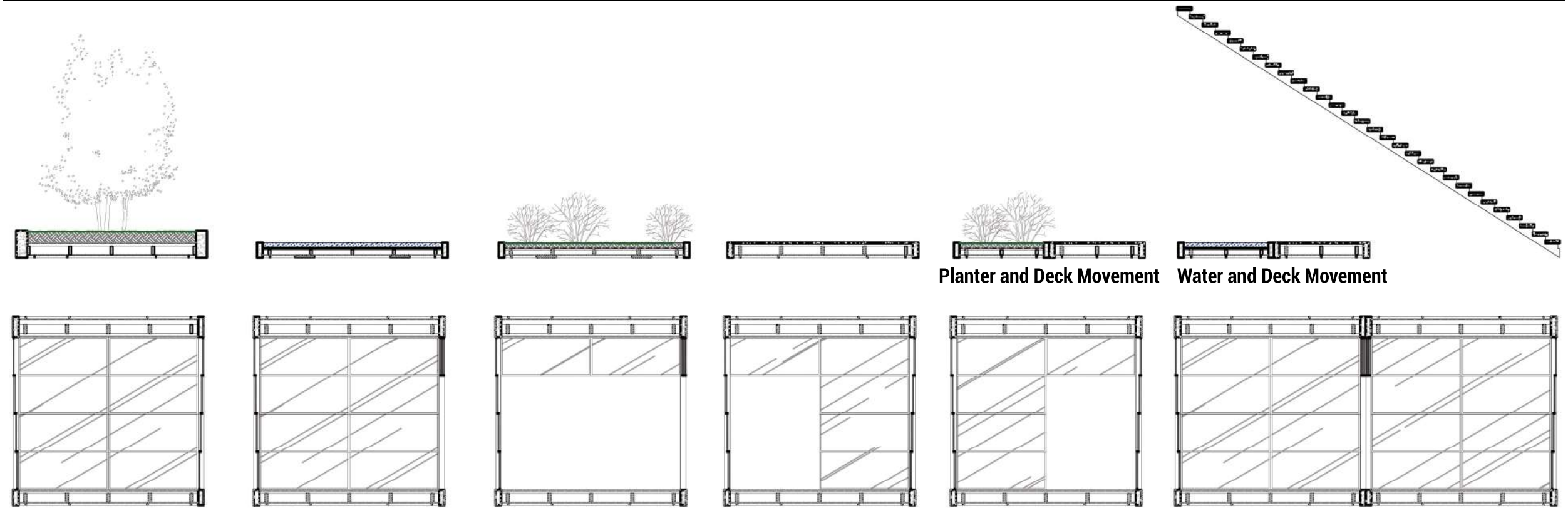


Game HQ 2 pod Option



Conference 2 pod Option

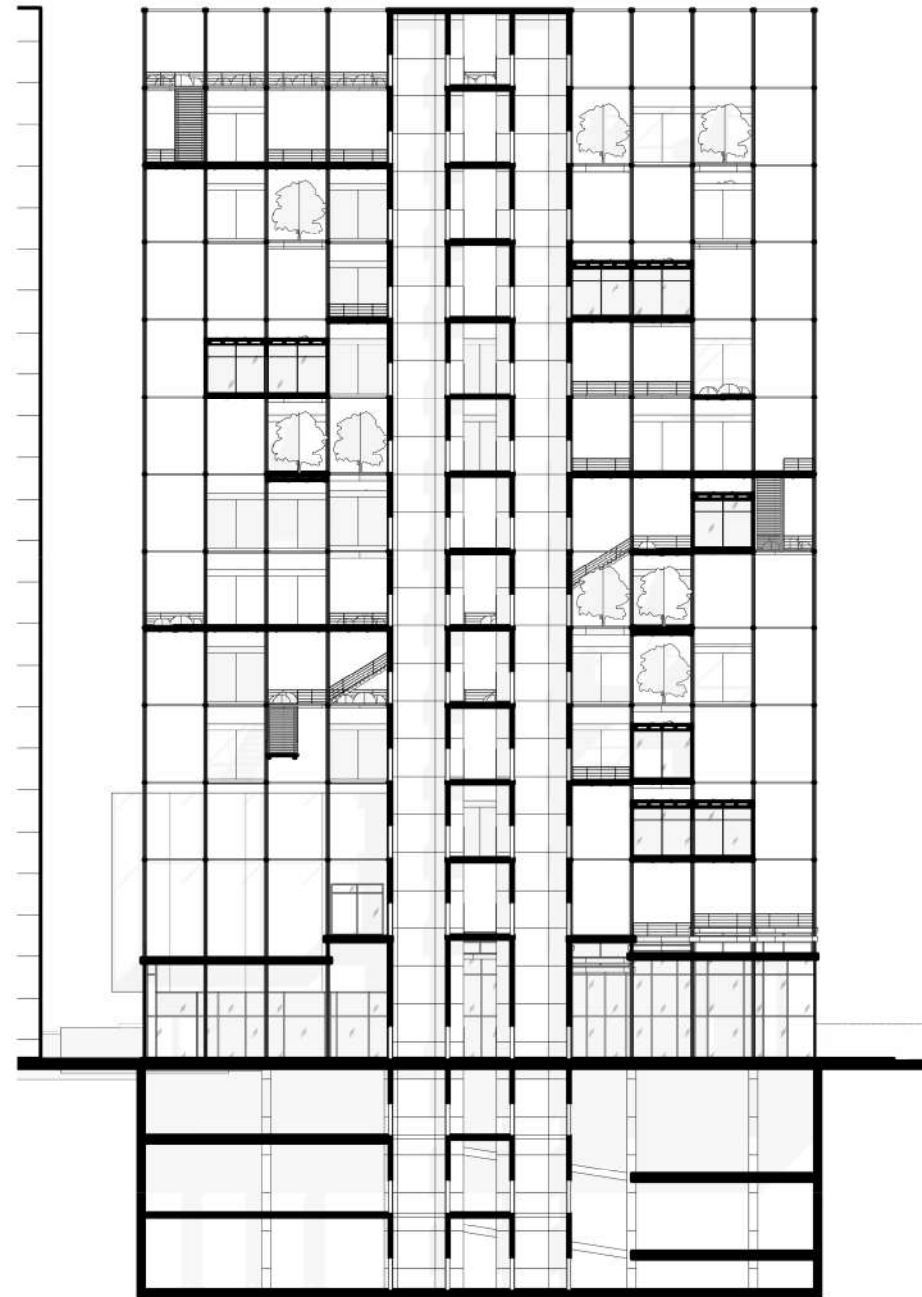
Sections of various Pods and Movement Decks



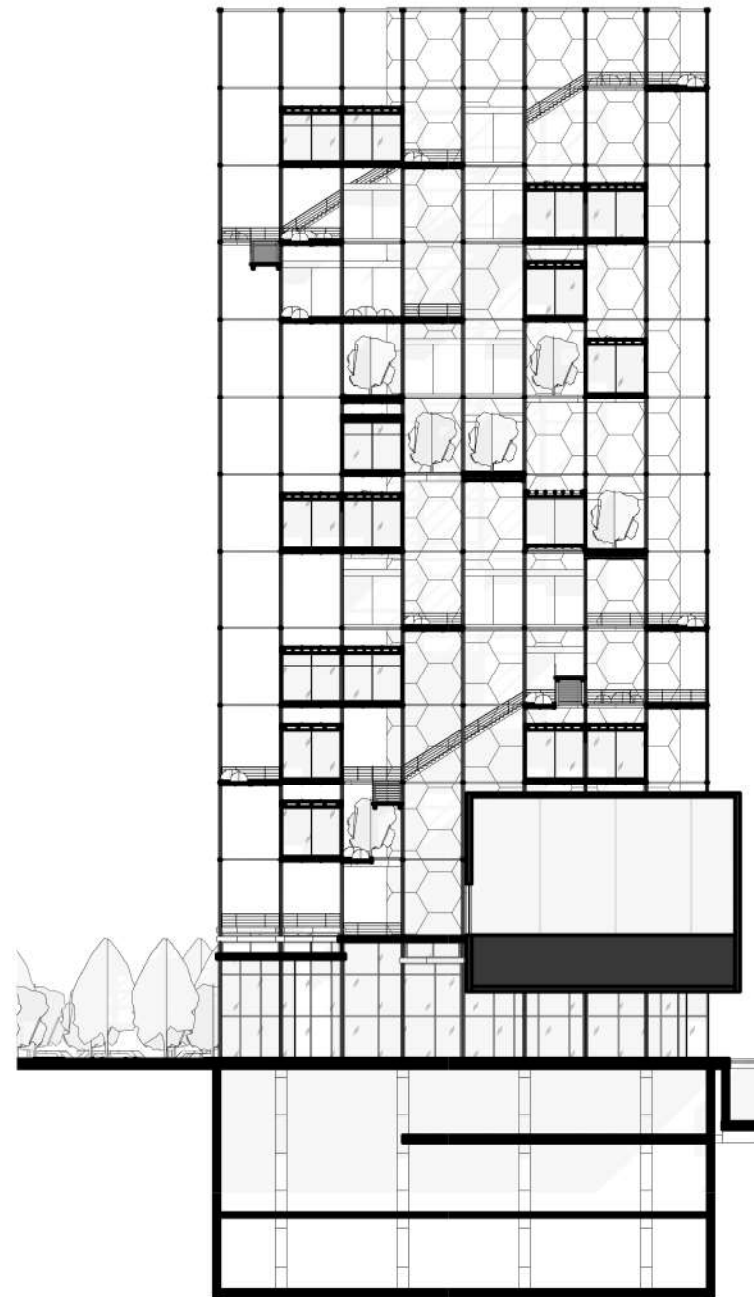
Pod open/close faces chosen by user  
122

Double Pod showing Glass raised section

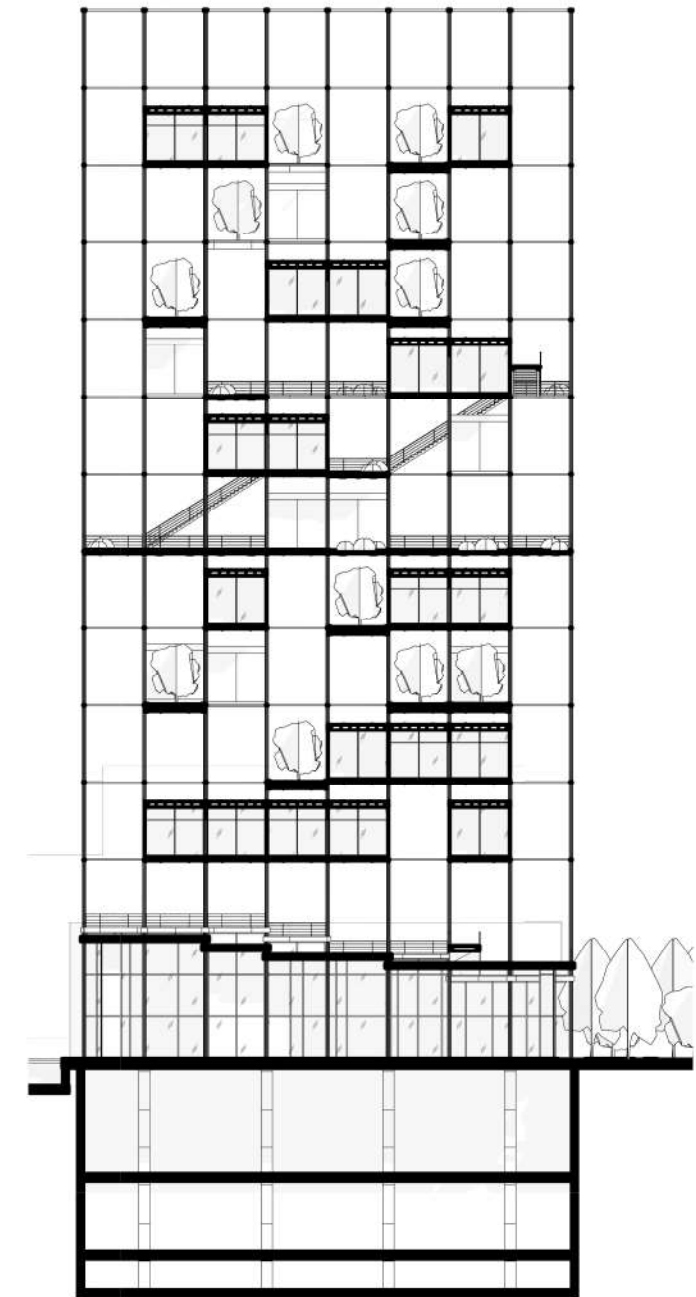




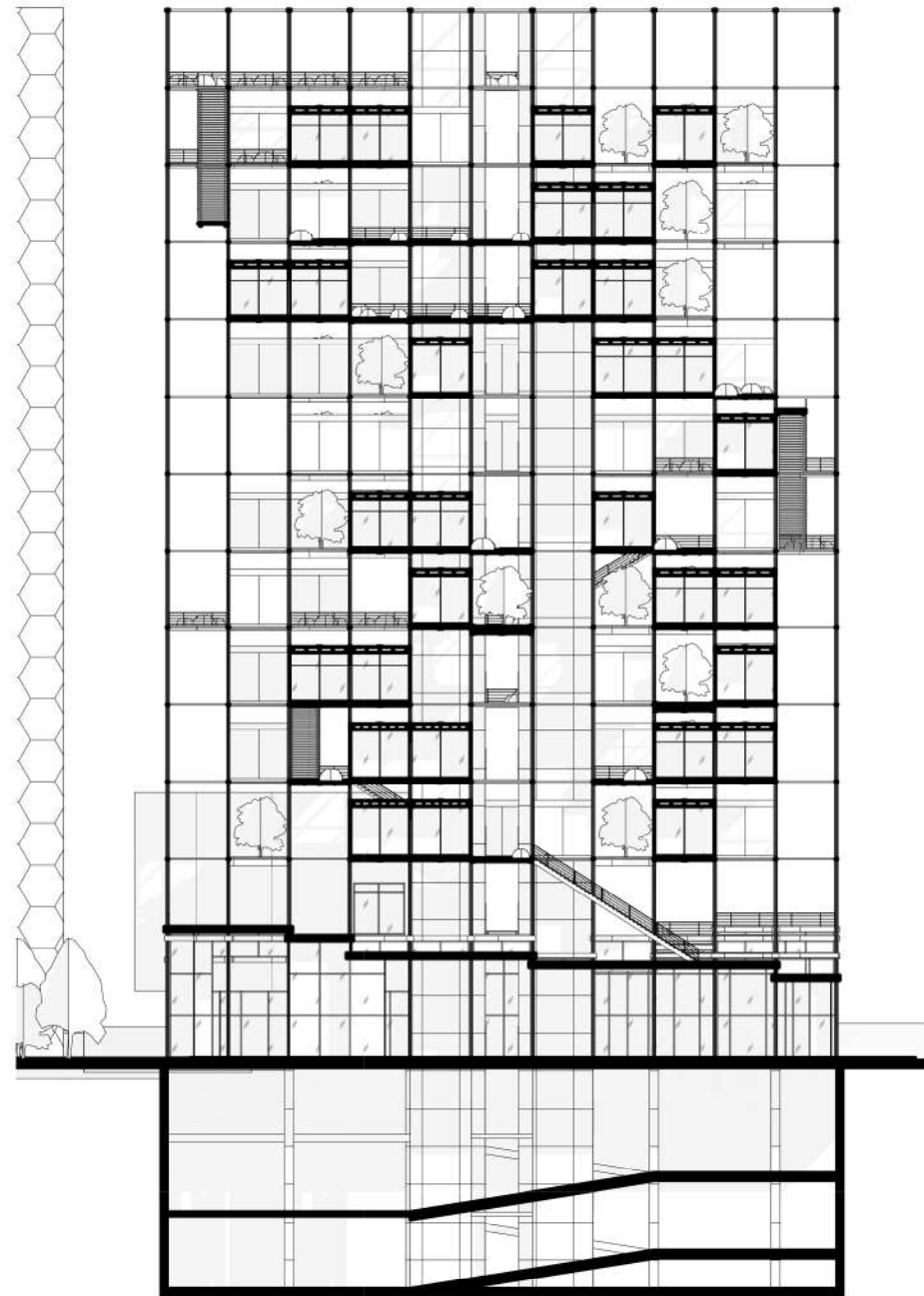
Section A-A scale 1:500



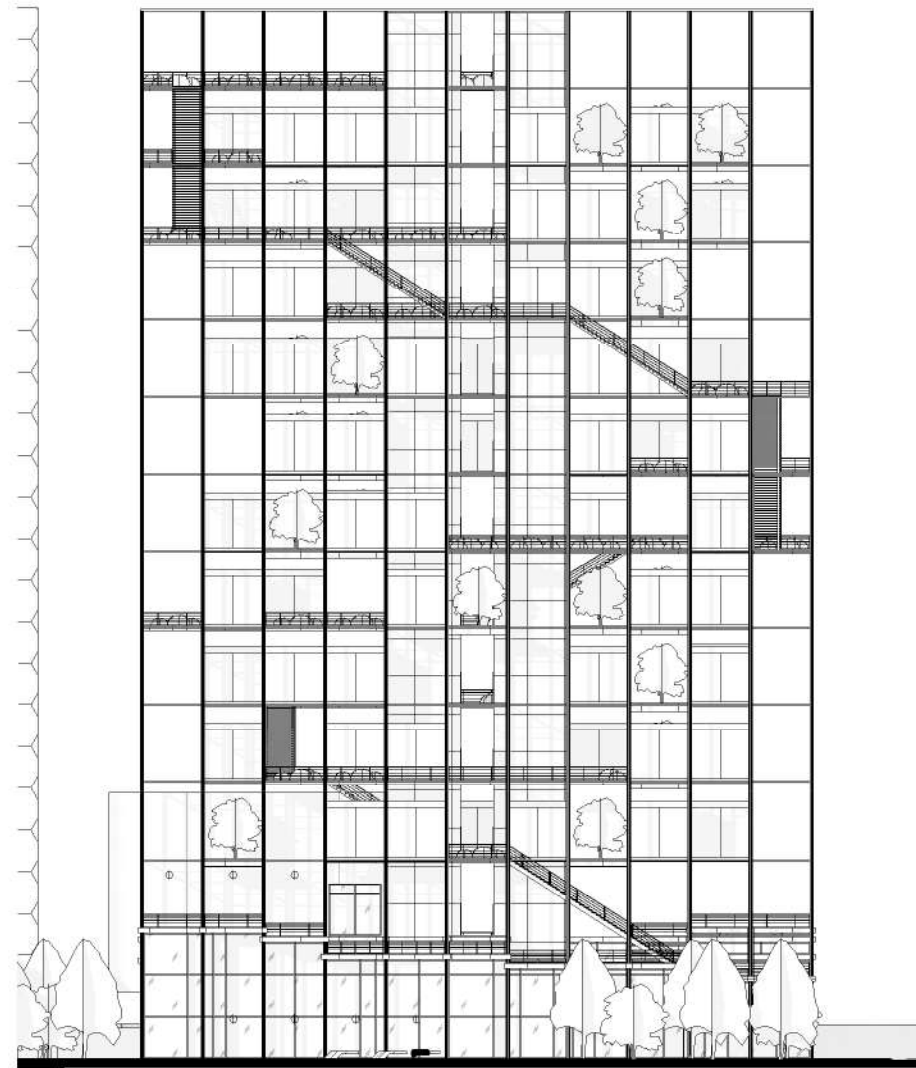
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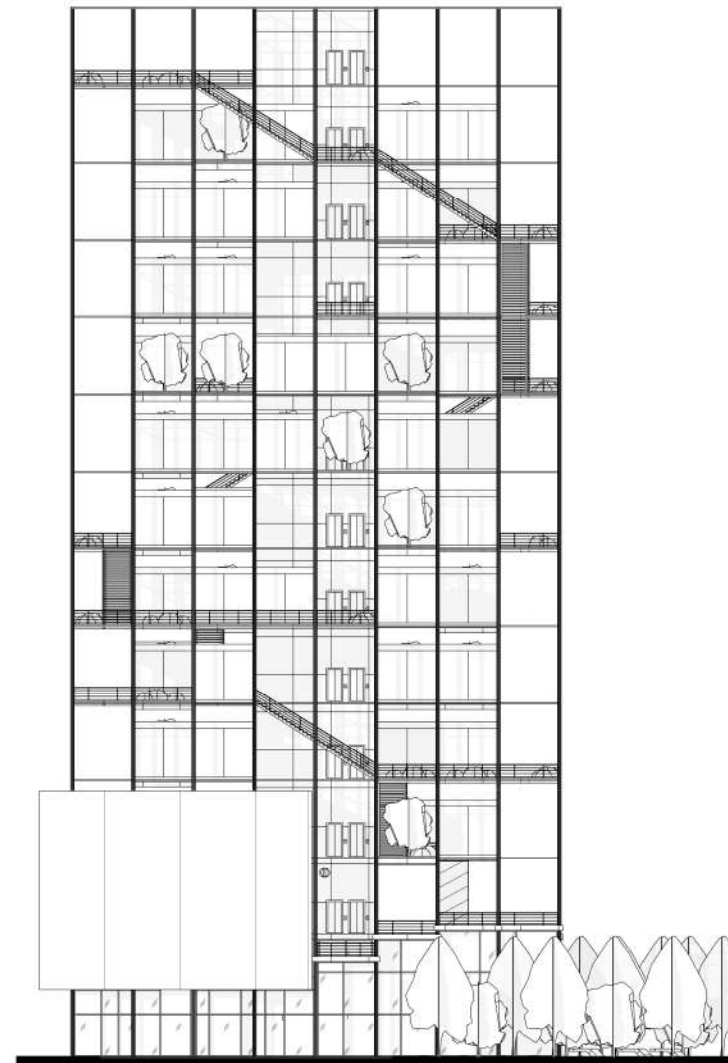
Section C-C scale 1:500



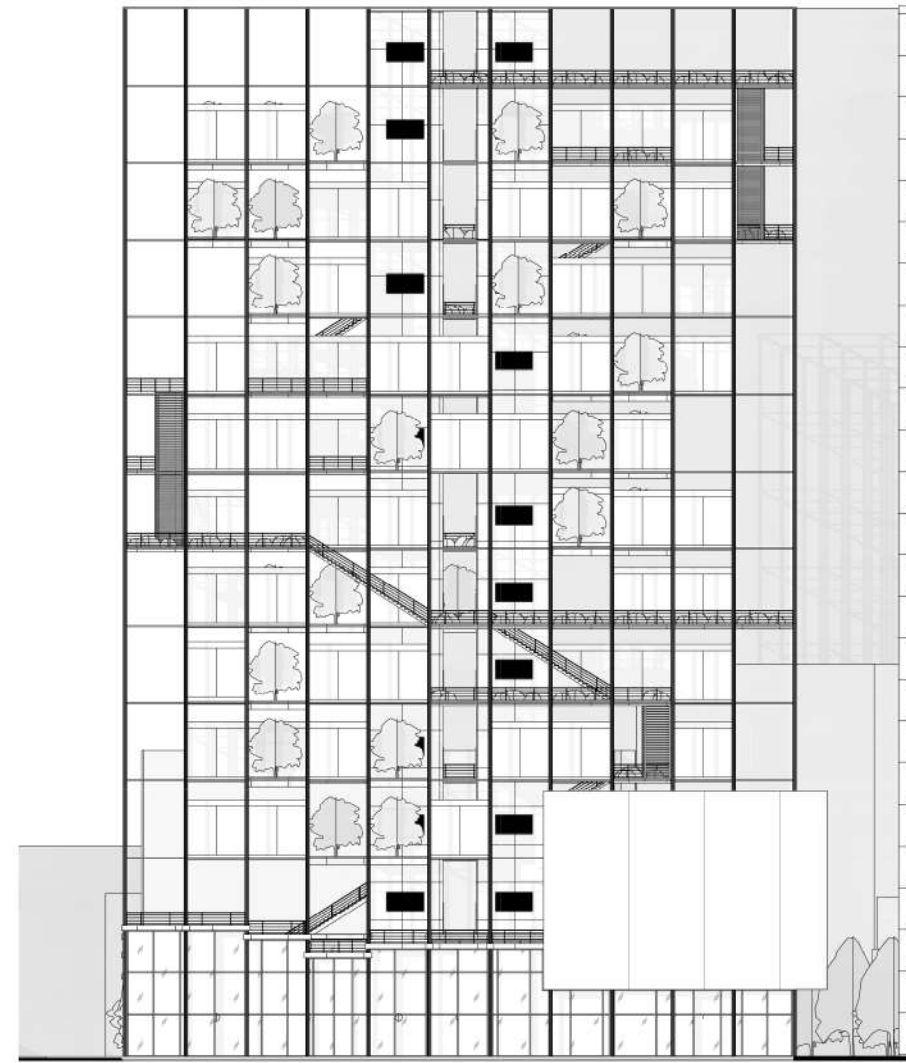
Section D-D scale 1:500  
124



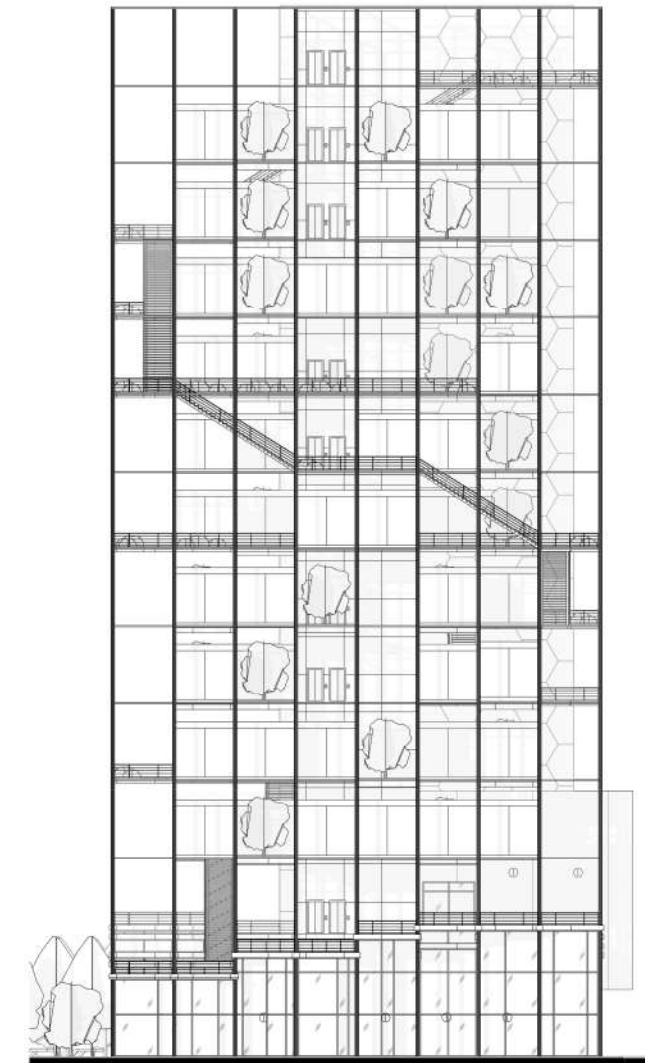
North Elevation scale 1:500



East Elevation scale 1:500



South Elevation scale 1:500



West Elevation scale 1:500





Illustrations:

- III. 1  
0290-1.jpg (2400×1200). n.d. Available: <http://www.evolo.us/wp-content/uploads/2017/04/0290-1.jpg> [2017, September 18].
- III. 2  
Edge-exterior-day.jpg (2200×1484). n.d. Available: <https://www.bloomberg.com/features/2015-the-edge-the-worlds-greenest-building/img/Edge-exterior-day.jpg> [2017, September 18].
- III. 3  
BIG-Mountain-01.jpg (560×373). n.d. Available: <https://image.architonic.com/imgArc/project-1/4/5202737/BIG-Mountain-01.jpg> [2017, September 30].
- III. 4  
how-linear-motor-works.png (400×267). n.d. Available: <https://cdn4.explainthatstuff.com/how-linear-motor-works.png> [2017, September 30].
- III. 5  
silly-architects.jpg.650x0\_q70\_crop-smart.jpg (650×391). n.d. Available: [https://media.treehugger.com/assets/images/2014/12/silly-architects.jpg.650x0\\_q70\\_crop-smart.jpg](https://media.treehugger.com/assets/images/2014/12/silly-architects.jpg.650x0_q70_crop-smart.jpg) [2017, September 30].
- III. 6  
Volkswagen\_Car\_Park\_AutoStadt\_HENN\_Architekten\_5-700x450.jpg (700×450). n.d. Available: [http://www.jebiga.com/wp-content/uploads/2013/09/Volkswagen\\_Car\\_Park\\_AutoStadt\\_HENN\\_Architekten\\_5-700x450.jpg](http://www.jebiga.com/wp-content/uploads/2013/09/Volkswagen_Car_Park_AutoStadt_HENN_Architekten_5-700x450.jpg) [2017, October 04].
- III. 7  
PR0+5mm+Polyethylene+Panel.jpg (600×600). n.d. Available: <https://secure.img1-fg.wfcdn.com/im/16358486/resize-h600-w600%5Ecompr-r85/5440/5440811/PR0+5mm+Polyethylene+Panel.jpg> [2017, October 04].

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- “Pod Vending Machine Skyscraper- eVolo | Architecture Magazine”. n.d. Available: <http://www.evolo.us/featured/pod-vending-machine-skyscraper/> [2017, September 18].
- The Edge / PLP Architecture. 2016. Available: <http://www.archdaily.com/785967/the-edge-plp-architecture> [2017, September 18].
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- How do linear motors work? A simple introduction. n.d. Available: <http://www.explainthatstuff.com/linearmotor.html> [2017, September 30].
- New elevator is like a vertical mass transit system. n.d. Available: <https://www.treehugger.com/green-architecture/new-elevator-vertical-mass-transit-system.html> [2017, September 30].





**Renders:**



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