

**SANCTUARY FOR THE GADGET FREAKS:
RE-CONCEPTUALIZATION OF URBAN SPACES IN THE AGE OF IOT**

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ABSTRACT:

The increasing number of gadget ownership and people's dependence on the Internet of things (IoT) in everyday life, encourages us to reassess the concepts of 'Placemaking' of the digital era. If historically considered, Generation Y (born 1985-1995) and Generation Z (born 1996-2005) were either introduced to this lifestyle from birth or slowly ascended to the digital world of IoT. Moreover 'Generation Alpha' (born after 2005) being born in the sea of gadgets will have a much more accelerated use of IoT. This expedited use of gadgets suggests taking into consideration how they would impact the evolution of public spaces. This research examines the influence of IoT in the development of 21st-century urban spaces and analyzes the burgeoning needs of people from such urban spaces. This research finds out what are the novel architectural elements and typologies that can address such needs. Case studies and precedents of open urban spaces such as Potsdamer Platz in Berlin, Central Park in New York, with the introduction of new public spaces such as E-Sports arenas and Interactive museums, are analyzed in the paper. Investigation of pioneering

theoretical arguments on urban space from JB Jackson, Christian Nordberg Schulz, and William H Whyte, as well as observing phenomena such as 'Arab Spring' provided an analytical perspective on urban conditions and their relation to the digital world. Researching the current affairs that are conducted by these gadgets like social media, online gaming, e-shopping, e-learning, and online entertainment- this paper finds out proper architectural elements to compliment them in the physical dimension. By considering the need and culture of the youth of the 21st century and analyzing the ongoing trends related to the IoT this paper researches the architectural elements which are vital for the conceptualization of 21st-century urban spaces.

INTRODUCTION

The term 'Internet of Things' (IoT) refers to the phenomenon of how data and connectivity works through the network of different devices without the help of any human input. It is a term that describes the criteria where all the smart devices, connected using the internet are always communicating with each other.¹ Although by this definition, IoT may not require human input to operate the world of data space, its predominant purpose of existence remains the welfare of human civilization. To find the novel architectural analogy which complements the existence of gadgets and their users, these human factors are needed to be assessed for translating the burgeoning needs of the people. The early 21st-century has been the pioneer in the development and implementation of IoT in every sector of human interactions. Generation Alpha, who are born after 2005, is going to be the first generation who will never perceive a world that was not dominated by the IoT. According to journalist Adrienne Pasquarelli Schultz, in her article, "move over gen z, generation alpha is the one to watch", mentions being born into a sea of technological novel objects, people of generation alpha will be heavily influenced by the gadgets from early life. She also points out a shocking observation, which

¹ Burgess, Matt. What is the Internet of Things? Wired Explains. Feb 16, 2018. <https://www.wired.co.uk/article/internet-of-things-what-is-explained-iot> (accessed March 29, 2020).

indicates that generation alpha would prefer more of the gadgets than to play with a pet outside in open spaces.² Unlike their predecessors who were gradually exposed to technological advancement, generation Z will have a more advanced digitally oriented need. Their perception of space and surrounding built form and experience will vary from the people of the late 20th century. The increasing number of gadgets used in the world and the dependence on these gadgets begs the question: how will these devices manipulate our conceptualization of physical space? To develop a physical place for the people who are heavily inclined towards the digital realm the digital culture and the usage patterns (online gaming, social media, internet shopping, etc) of these gadgets are to be analyzed. So, the analysis can be used to translate the ideas into a physical experience.

Methodology:

Analyzing past trends and changes in usage patterns of urban space, reviewing literary works of architects and urban theorists such as William Whyte, JB Jackson, Christian Norberg-Schulz, Mikio Wakabayashi, and Michael Fox are discussed. To understand and predict conceptual usage patterns for

² Schultz, Adrienne Pasquarelli and E.J. MOVE OVER GEN Z, GENERATION ALPHA IS THE ONE TO WATCH. Jan 22, 2019. <https://adage.com/article/cmo-strategy/move-gen-z-generation-alpha-watch/316314> (accessed March 12, 2020).

21st-century urban spaces, case studies were conducted on Central Park- New York, and Potsdamer Platz, Berlin. These case studies provided a clear indication of how the gadget generations utilize public space. To interpret the needs of the 21st-century user, interviews with Generation Z and Generation Y (more oriented toward the concept of the IoT and its use) were conducted to better understand how gadgets are currently being used in civic and public spaces. An online survey was conducted on about 200 people to gather data on how did the people generally used their gadgets in the existing public spaces and to figure out their preferences regarding these spaces. The questions were based on their age group and their personal preference in urban public space and digital space. Analysis of the patterns of technological influence of enhancing urban spaces was conducted to predict the architectural typologies of the 21st-century urban space. The collected data is analyzed based on the personal opinions of the subjects and categorized by their inclination towards using their gadgets in social media, online gaming, online shopping/window shopping, audio, and visual entertainment. The research looks at E-sports Arena as the physical counterpart for online gaming. Analysis of works by the architectural group 'team labs' and Y dreams (BTEK technology center) and Use of virtual and augmented reality by different theme parks show that how these interactive spaces can encourage people to connect in terms of media and entertainment. Also, the paper analyzes phenomena like 'Pokémon Go' and 'Arab

Spring' to figure out the involvement of location-based social media in urban space generation. Moreover, the research connects the elements such as Restaurant and Bars as the physical counterpart of the digital social media space.

Discussion:

According to dictionary.com, the term 'Generations' refer to an entire body of people who are born and living at a certain time frame. It is usually categorized roughly 30 years among human beings.³ The impact of behavior, the general characteristics, and the needs of a generation varies according to the timeline they are accustomed to. Based on the definition and observed characteristics, it can be assured that The people of generation Y otherwise known as 'Millennials' are the people who are born from 1986-1995 has a different and unique character to the people of generation Z who are born from 1996-2005. Considering human behavior as a basic factor in architectural design and planning, Ardina Susanti, a lecturer of architecture from STD, Bali, researched 220 generation z subjects from Indonesia, to understand the need and preference for public space. The research on generation Z and the development of urban space based on their needs show a clear view of how they react to different spaces. Susanti's research was conducted based on Gen Z's needs and preference for the use of

³ Dictionary.com. n.d.
<https://www.dictionary.com/browse/generation>
(accessed March 25, 2020).

urban and public spaces.⁴ Looking through the research data it is seen that the generation Z subjects prefer city parks in terms of outdoor spaces. For indoor spaces, Gen z mostly prefers shopping malls for socialization, spending leisure, and entertainment purposes.

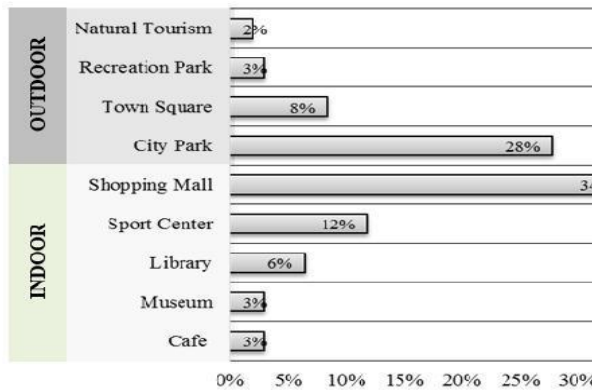


Figure 1 Preference of Public Space of Generation Z⁵

Considering the people who will be born after 2005, Generation Alpha, will never see a world without the internet or be able to conceptualize life without the everyday technological devices? Based on the precedent studies It can be speculated that when generation alpha reaches adulthood, their involvement in the digital realm and physical realm will be more spontaneous than ever before.

⁴ A Susanti, T W Natalia. "Public space strategic planning based on Z generation preferences." IOP Conf. Series: Materials Science and Engineering. IOP Publishing, 2018.

⁵ Ibid. Page -4

Urban spaces and youth of the 21st century

Mikio Wakabayashi, A professor of sociology from the WASEDA University of Japan, in his paper 'Urban Space and Cyberspace,' introduces a very compelling argument about the conceptualization and design of urban space in the age of media and information technology. Here he discusses two phenomena such as 'Disneylandization' and 'Cyberspace'. During the last quarter of the twentieth century, the large capitalistic countries engaged in the development of thematic building design, to mimic spaces such as the British country style, medieval Italian city, or an urban resort. Wakabayashi refers to these changes as 'Disneylandization.' The Disneylandization of the urban environment is a social transformation of architectural and urban space into a medium of consumption-oriented information. On the one hand, it is based on innovations in the information technologies dealing with behavioral information, and on the other hand, it is interrelated with the emergence of consumer society into a state where it is increasingly oriented towards the enjoyment of aesthetic information. 'Cyberspace' on the other hand, has been persuaded by architects and engineers in the past 2 decades as it provides the way to develop virtual reality and connects the physical and digital. As the development of communication technology in the 21st century is far more evolved from the 20th century, Wakabayashi argues that socialization and communication of the past century were more physical, whereas in the

21st century these are based on both physical and digital environments. According to his arguments, both the factor of Disneylandization and the cyber city can be analyzed to develop a sense of place which will eventually lead to the conceptualization of the urban space of the 21st century.⁶

Looking at prominent megacities around the globe, such as New York, Los Angeles, Dubai, Dhaka, which are surfing at the forefront of technological waves - the urban spaces these cities feature are either neglected or do not comply with the development of the contemporary buildings which it surrounds. Unless the urban plazas fall under the premises of newly developed buildings, the lack of activities in stand-alone public urban spaces, causes them to be negative and/or undesirable backyard spaces. If these urban spaces are to be brought to life and work as a vital organ of the city space, their designs have to be reconfigured to reflect the needs of the general people of the 21st century.

Lawson and McNally's analogy about the design guideline of urban spaces can be considered as a very logical criticism. When the design of a park or urban place is observed, the majority of times the needs of the local population are not thought about. In a newly conceptualized urban park, the Sanctuary for nature belongs to the protected animals, the urban plazas and

outdoor theaters are addressed toward events and the elements of beautification are more geared towards attracting tourists.⁷ So, there remains a huge gap between the designs of urban spaces on what they are doing and what they are intended to do. Although the intention may have been to serve the people of proximity, most of the time the finished design does not concern the end-user. Moreover, the designed urban spaces, which are designed and developed thinking about the needs of the end-user, refer to the needs of the last quarter of the previous century. Based on the demand of generation Z and Generation Alpha, for these urban spaces to work efficiently new layers of interventions are required.

The Case of 'New York Central Park and 'Pokémon Go'

While analyzing the urban spaces of New York, William H. Whyte draws a complete picture of why some of the urban open spaces work and why some of them fail to be activated. Whyte's research discusses the phenomenology of urban spaces highlighting the elements of sun, wind, trees, and water and their role as different layers in activating an urban open

⁶ Wakabayashi, Mikio. "Original Article Urban Space and Cyberspace: Urban Environment in the Age of Media and Information Technology." *International Journal of Japanese Sociology*, 2002: 7,15.

⁷ Laura Lawson, Marcia McNally. "Putting Teens at the Center: Maximizing Public Utility of Urban Space Through Youth Involvement in Planning and Employment." *Children's Environments*, Vol. 12, No. 2 (Board of Regents of the University of Colorado), no. Vol 12.NO 2 (1995): 209.

space.⁸ In the 21st century, the demographic intervention of the digital realm into the physical realms forces us to think of a new layer amid the existing ones. As this research is concerned about how people use gadgets in these urban spaces, it is only logical to discuss how these gadgets can be introduced as a different layer into preexisting environmental qualities.



Figure 2 New York Central Park and surrounding urban context

One of the most prime examples of engagement of youth with a typical large-scale urban space can be observed during the uprising of location-based augmented reality game 'Pokémon Go' in 2016-2017. 'Pokémon Go' is a Mobile game based on the famous show 'Pokémon' and developed by Nintendo initially released in mid-2016. And by the start of 2017, the game had been downloaded over 650 million times internationally. The game inspired people to walk around the neighborhood and different places of the city to take on an adventurous journey and capture 'Pokémon' using their daily driver smart devices. The game was designed in such a way that it was inspiring people to go into the digital world all the

⁸ H. Whyte, William. *The Social Life of Small Urban Spaces*. Washington D.C.: The Conservation Foundation, 1980.

while interacting with the elements of the real world.⁹



Figure 3 Everyone, Playing Pokémon go in Central Park, New York, 2017 Picture - Business Insider

New York central park was one of the most prominent places for the players of 'Pokémon Go'. The game developers used the topographical features of the park and embedded them in such a way that the physical presence of the park became the digital sanctuary for the youth.

Alex Heath, a reporter from Business Insider draws an intuitive picture of how the people were reacting to various 'Pokémon Go' events in the central park and how depressed people got when the server fell for the game. After the server went down, everyone lost their interest in the park, suddenly the park was not so much enjoyable anymore to the youth, it was just an open green park.¹⁰ The description of the report indicates the need for the youth of the 21st century and how they engaged with the urban space and what held their interest during occupying this space.

⁹ Niantic. n.d. <https://nianticlabs.com/about/> (accessed 03 26, 2020).

¹⁰ Heath, Alex. "I went on a 'Pokémon GO' Safari with dozens of people in central park." *Business Insider*, Jul 20, 2016.

Sony Center at Potsdamer Platz in Berlin



Figure 4 Internal shaded Plaza at night, Sony Center at Potsdamer Platz in Berlin

The Sony Center in Potsdamer Platz, Berlin is designed by famous architect Helmut Jahn. It is one of the prime examples of the 21st century, which shows how the essences of a designed urban space may fail to answer the needs of the user properly. Historically, Potsdamer Platz was one of the most prominent business districts of the early 20th century. The place was partially destroyed on the verge of the Second World War. The establishment of the Berlin wall stranded the square. In 2000, the new Sony Center was opened to the people of the world as an urban nodal point with heavy commercial value. According to Sony's narrative,¹¹ although the complex has faced its fair share of history on its own and went through numerous modifications to feature different attractions to invite people, with the state of the art technology and entertainment, by the introduction of the

¹¹ Sony Center. n.d.
<https://www.sonycenter.de/en>
(accessed 03 28, 2020).

digital layer, the Sony Center became very popular with people. The formation of the surrounding buildings, the umbrella-like semi-transparent shade in the plaza gave it a festive look throughout the day. Many times during festivals and international events, the large screen at the Center of the covered plaza become a nodal projection point to lure people in.



Figure 5 Sony Center and surrounding Urban Context of Potsdamer Platz, Berlin

Although Sony's narration may seem to be fruitful it barely scratches the surface about how the urban space around the Sony Center reacts to its native users. William Howard Magruder, in his master's thesis conducted by the 'Faculty of Graduate Studies in the University of British Columbia, analyses the geography of Berlin and the transitional space of the Potsdamer Platz. His analysis of the Sony Center, clearly states, how the public spaces of Berlin eventually become private spaces through the process of Germany's rejection of communism and converting to the power of consumerism.¹² From the time of Berlin's

¹² Magruder, William Howard. "Memory and Spectacle at Potsdamer Platz : An Architectural geography of Berlin's New

post-war redevelopment, despite the choice of people to enable the Potsdamer Platz to be an atypical European city Center, the big companies like Sony wanted the Potsdamer Platz to be featured as a global commercial center so that their companies' headquarters can be located there. Eventually, the big conglomerates and the governing people of the city set out for developing the Potsdamer Platz as a European business hub. As a result, different buildings were designed by internationally renowned star architects which eventually, influenced the Potsdamer Platz as a very intriguing famous tourist spot. The ideation of converting Potsdamer Platz into a globally influential center somewhat came into being, but at the cost of ignoring its citizens. As a result, Sony Center although successful in upholding Sony's corporate image. It fails to be a proper public space. Although it is intentionally developed as a conceptual face of public space, the privately own land only allows selected visitors to admit and experience the site via the scope of the large conglomerate viewport as they wish. So the freedom of memory gets lost in the process. The administrative body of the Sony Center plaza inside neither allows people to use the place publicly, moreover controls the activities and restricts anything they don't seem fit. As a result, most of the activities go on facing the untouched or non-formally designed spaces alongside the Potsdamer Platz. The average public favors

the park in front of the Sony Center rather than the center itself. The narrow alleyways surrounding Potsdamer Platz become colorful with food, street performances, music, and dancing, while the old parts of Berlin walls become the canvas of the artists and convey unique and powerful messages of freedom.¹³ The failure of the development of Potsdamer Platz draws a very good figure about how an urban space chooses to ignore the needs of the people and how people themselves find a place where they feel free. After solving the dispute of East Berlin and West Berlin and the removal of the wall, different places of Potsdamer Platz became very popular with the youth of Berlin. Previously owned communist residential areas became cheap as they got abandoned, which provided a very promising place for the young generation to move in. The urban park in the middle of the city where the wall used to be, evolved into a yearlong festive center. The number of street performances in the surrounding network of alleyways encourages informal public activities and engages the passer-by. The establishment of a variety of restaurants and coffee shops in the narrow alleyways resulted in places for social hangouts.

Center." Masters Thesis, University of Columbia, 2007: 2.

¹³ Berlin- Rick Steves' Europe Travel Guide .
Performed by Rick Steve. 2015.



Figure 6 Sony Center and engagement of the people with surrounding space at Potsdamer Platz (Illustration – Saumyabrata Roy, 2020)

Introduction of a new layer in urban space development

In the book “Discovering Vernacular Landscape’ author JB Jackson writes about how different alien elements got introduced to the US landscape addressing the need for time and eventually after repeated usage, became vernacular elements. The automobile revolution of the past century derived the ideation of the roadside strip and the parking lots due to the huge demand for parking space. Eventually, after repeated usage within the next decade,

these became the prime elements of vernacular practices. This question introduces the idea that the force of new elements can provoke new direction into the development of an architectural hypothesis.¹⁴ Although the world is going through similar changes in terms of IoT, the pattern of the technology used is different and unique from each region. Where China is more into tracking the data usage of each citizen, their IoT is more developed towards controlling and monitoring the movement patterns of their citizens. The United States’ reaction to the freedom of speech in social media resulted in the booming development of social media-based IoT. So to be more site-specific development of an architectural element, just like any vernacular design element the culture and the usage pattern of the Gadgets of that region are needed to be assessed. So the integration of technology hypothetically could introduce a layer of vernacular force in the development of architectural building typologies and urban design.

Gadgets and their involvement in daily life

Now let's see the prospects of using technology in daily life on a personal level. While talking about the Internet of things and the connections of these devices with the youth of the 21st century, Gadgets have become the devices to be considered. According to Dictionary Gadgets are small

¹⁴ J.B.Jackson. Discovering the Vernacular Landscape. Yale University Press , 1986.

electronic devices.¹⁵ To be more specific, Gadgets are usually considered as small technical devices that are much enhanced with cutting-edge functionality that funnels a certain part of the digital realm in a more focused way. To be a part of the era of information technology, all the people of the modern civilized world have been shifted towards owning one or multiple gadgets. From the research of Monica Anderson, it can be seen that the gadgets consumption in the US is going up in an incremental factor (Figure 3)¹⁶ And the most common gadget that a person owns is a mobile phone.

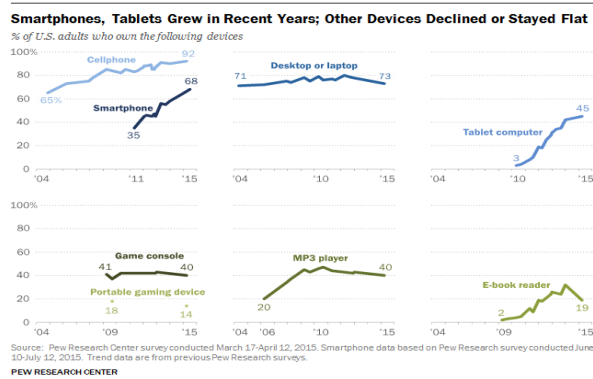


Figure 7 GAGET Ownership in USA 2015 (Anderson 2015)¹⁷

Discovering the elements of urban space for the 21st century

Norberg-Schulz in 'Genius Loci' discusses the totality of space. He indicates how the environmental character of a place is determined by the material substance, shape, texture, and color of the space.¹⁸ In terms of totality, for the urban open space of the 21st century, innovation and the fast-paced development of the digital world forces us to consider the introduction of digital culture into his theory. Maybe in the far future, the futuristic cities will be characterized like the fictional spaces as Aldous Huxley constructed in his fiction, 'A Brave New World'.¹⁹ But it can be anticipated by the patterns of development that the introduction of the digital layer to the urban open space will certainly be an undeniable factor.

Innovations of Information technology provide a preconditioned way to develop the new design of architectural and urban development. Cutting-edge technology featuring the complex image and sound processing is capable of creating substitute digital spaces for physical sites. Wakabayashi, in his paper 'Urban Space and Cyberspace', argues about the rationalization of cyberspace. According to his definition, although Cyberspace or Cyber-city is not situated in the physical

¹⁵ Breuer, Rolf. Your Dictionary. n.d. <https://www.yourdictionary.com/gadget> (accessed March 19, 2020).

¹⁶ Anderson, Monica. The Demographics of Device Ownership. Oct 29, 2015. <https://www.pewresearch.org/internet/2015/10/29/the-demographics-of-device-ownership/> (accessed Mar 02, 2020).

¹⁷ Ibid.

¹⁸ Norberg-Schulz, Christian. Genius Loci: Towards a Phenomenology of Architecture. New York: Rizzoli International Publications INC, 1979.

¹⁹ Huxley, Aldous. Brave New World. United Kingdom: Chatto & Windus, 1932.

realm, it addresses the negatives and dissatisfaction associated with the physical environment. While the design of cyberspace is designed to free a person from a social or geographical boundary, on the other hand, they also recreate the sense of place in the virtual world as a reflection of the real world.²⁰ Marzena Sietrzewitowska, a post-doctorate architectural researcher in the department of architecture at the Lubin University of Technology, researches about the public space for the 21st-century youth and their expectation from the space. Sietrzewitowska observes that the young generation of the 21st century prefers multi-functional spaces and often intends to prefer the spaces which are not formally designed for them. She derives that this pattern of behavior generates from their need to be independent and original.²¹

The article Placemaking and the Future Cities by 'Project for Public spaces' with 'UN-Habitat' indicate ten ways that urban space can be improved. It establishes a guideline on designing better public spaces through the act of placemaking. According to the guideline, creating squares and parks with multi-use destinations will improve an urban

space's ability to serve the people more effectively. It also mentions the establishment of buildings which will help it to support the placemaking agenda. These buildings are to be designed not only to respond to the environment but also to relate to the culture and the need of the people it intends to serve.²² To understand how these urban spaces can be activated spontaneously, understanding the digital culture may provide fruitful results. For analyzing this gadget-based digital culture, going through the concepts of social media, online gaming, online shopping, and interactive entertainment elements may play a vital role.

Interactive Architecture and its influence on Urban Space

Michel Fox in his book "Interactive Architecture" discusses the role of the internet and gadgets and how they influenced the world of architecture. He presents different case studies in which the interactive elements of buildings and urban spaces influence a better perception of the space and enables people to experience the mundane interestingly. In his words

'The influence of technological and economic feasibility within a connected world has resulted in an explosion of current exploration with the foundation of interaction design in architecture. The internet of things has quite rapidly come to

²⁰ Wakabayashi, Mikio. "Original Article Urban Space and Cyberspace: Urban Environment in the Age of Media and Information Technology." *International Journal of Japanese Sociology*, 2002: 7,15.

²¹ Sietrzewitowska, Marzena. "Public Spaces for the 21st century Youth- Need and Expectations." *Czasopismo Techniczne Architektura- Technical Transactions Architecture*, 2013: 99-113.

²² Habitat, UN. "Placemaking and the future of cities." 2012: 4,8,10.

define the technological context of interactive designs all-inclusive existing within the connectedness in a way that affects essentially everything.²³

A case study of 'teamLabs' works

'TeamLabs' is an International art collaborative platform that consists of an interdisciplinary group of specialists, artists, architects, engineers, CG animators, and programmers. This unique company established in 2001, practices the confluence of art, science, technology, and the natural world. 'TeamLabs' work provides a unique view of how a public environment can be interactive. Engaging the people with interactive digital arts enables them to enhance the experience of the progression through the site.²⁴ As people go through these designed spaces, the elements of the surrounding space change in shape and react to the movement of the visitors.



Figure 8 'teamLab' Borderless Shanghai, Shanghai

Augmented reality and Interaction of Space in Architecture

With the fast pace development of gadgets like the 'Microsoft HoloLens', Google glass, and various AR devices it can be predicted that the world of augmented reality will play a vital role in the development of human interaction. Application of augmented reality can be found in almost any smart device today and based on the projections of their and their acceptability by the mass public, it can be predicted that augmented reality will be a vital part of our daily life by the next 10 years. This puts the use of augmented reality as the forefront medium in the development of urban experiential spaces. In a study to find out the necessity and application of three-dimensional augmented objects and their influence on urban and architectural planning, Author Cerulis and Briggsmanis researched the scopes of 3D outdoor augmented reality for architecture and urban planning. In the conclusion of their research, they mention how the Netherlands architecture institute affirmed the importance of using 3D augmented reality attributes in architecture and urban

²³ Fox, Michael. "Introduction : Catalyst Design in a connected world." In *Interactive Architecture : Adaptive World*, by Michale Fox, 11. New York: Princeton Architectural Press, 2016.

²⁴ Team Lab - About. n.d. <https://www.teamlab.art/about/> (accessed March 10, 2020).

scenarios. After the end of their research in 2013, Cerulis and Briggsmanis also indicated the initiation of implementing their research through the Urban Augmented Reality (UAR) project.²⁵



Figure 9 Use of Microsoft HoloLens in workplace interaction using Augmented Reality

Imbert in his research paper "Adding Physical Properties to 3D Models in Augmented Reality for Realistic Interactions Experiments", discusses how using the physical attribute to an augmented object may enhance the realistic interactions with such objects and the people.²⁶ Although this is predominantly a software-based question, this dimension provides information on how the augmented interaction is to be featured

²⁵ Arnis Cirulis, Kristaps Brigis Brigmanis. "3D Outdoor Augmented Reality for Architecture and Urban Planning." *Procedia Computer Science* 25. Elsevier, 2013. 75.

²⁶ Nicolas Imbert, Frederic Vignat Charlee Kaewrat, Poonpong Boonbrahm. "Adding Physical Properties to 3D Models in Augmented Reality for Realistic Interactions Experiments ." 2013 International Conference on Virtual and Augmented Reality in Education . Elsevier, 2013. 364.

in the interactive development of space. Some notable theme parks are also using virtual reality technology with their existing physical elements to provide a mixed-use experience to the users. Although VR has been around for quite some time, the mass availability and hassle-free implication have ennobled theme parks in the USA such as Disneyland, to use them recently as an addition to their existing rides in roller coasters and theaters.



Figure 10 Use of VR headset in a roller coaster in Disneyland

The immersive mixed reality in different arenas has been very successful in engaging urban youth. In a report from Vrscout, reporter Bobby Carlton writes about the experience of the 'Mixed Reality Trampoline Park' by Urban Air in Altoona, Philadelphia. The sports arena featuring state-of-the-art immersive technology helps to engage the user in a very unique way. The players not only get the fun side of playing virtual games but also get the physical exercise from experiencing the games. The game arena situated on top of a giant trampoline, featured with the full 360 surround sound system along with motion sensor technology, engages the player with

unparalleled permutation and a combination of interaction.²⁷

Water Pavilion by MIT Senseable City Lab

The influence of networks and sensors in everyday life is introducing a different typology of architectural spaces. One of the Pioneers who are working on the factors of IoT and the development of architecture is Prof. Carlo Ratti. Professor Ratti is an Architect, Activist, and Inventor. He is currently working as the Director of 'Senseable City Labs' at MIT. The groundbreaking works of 'Senseable City labs' mostly deals with how data influences the development and design of architectural spaces.²⁸ One of their Groundbreaking design implementations was the Water Pavilion at Spanish Expo. The pavilion was developed as an interactive sculpture to hold functions of a café and exhibition Center. It contains a unique idea of developing the spatial requirement at the age of IoT. Instead of having fixed elevations, the walls were made of a curtain of falling water, which acted as a permeable interactive screen towards traffic. The falling

water is directed by software that controls the water flow and movement of the built-form. The wall responds to the surrounding with sensors, which sends a flow of continuous data to the software guide the water screen accordingly. The projection of lights and the sensors made the elevation a perfect place for the digital and physical pixels to merge together.²⁹



Figure 11 Water Pavilion by MIT Senseable City Lab at Spanish Expo

Although the space is very simple in an aesthetic and functional format. The unique technology and networking between the sensors is the thing that makes it stand out and deems it proper for the architectural design of the 21st century. Although the pavilion is very successful in generating interest around the surrounding urban area on its own, a particular event can be observed to evaluate the success of that building as an urban activity generator. One day, the software which is used to control the sensor to maintain the water screen, started to malfunction. As a result, rather

²⁷ Carlton, Bobby. Mixed Reality Comes To Trampoline Parks For the Ultimate Cardio Experience. May 8, 2019. <https://vrscout.com/news/mixed-reality-trampoline-park/> (accessed March 30, 2020).

²⁸ Ratti, Carlo. "Visionary Art: Interactive Architecture | Carlo Ratti." World Economic Forum, Aug 08, 2016.

²⁹ Richards, Patti. MIT Digital Water Pavilion makes a splash in Spain. Jun 11, 2018. <http://news.mit.edu/2008/zaragoza-tt0611> (accessed Apr 16, 2020).

than using sensors to control the patterns, the rain wall elevation started to act randomly.³⁰ The most fascinating topic of that night was how thousands of people gathered around that pavilion to enjoy the funny activities which resulted from the malfunction. Kids and young people started to play with the wall, by trying to pass through the wall without getting wet. Something so simple, even by an unintentional malfunction, resulted in an interesting phenomenon that helped to lighten up that urban space.

'BTEK' -Technology Interpretation Center and 'Y-Dreams'

Parque Tecnológico, S.A. is the new technological capital of Spain. Located only 2 hours from Madrid and in the coastal city of Spain and connected to the world with the airport, the city is developed as one of the prime headquarters in the European region. Many of the world-class technological company's headquarters are located there. The Centers promoter, the technology park, wanted a cutting-edge exhibition center that can hold many exhibitions on its premises. Architectural firm ACXT designed the 'BTEK -Technology Interpretation Center' featuring the idea that the exhibition center will provide flexible space to accommodate various exhibitions of the Vizcaya Parque

Tecnológico.³¹ This built-form is designed as a flexible exhibition center that can feature exhibitions and festivals related to gadgets. Besides being a highly environmentally responsive building, it is furnished with various cutting-edge technology that supports the platform for augmented reality exhibitions. Currently, it is holding the exhibition done by the architectural group 'Y dreams'. Aimed towards young student visitors, 'Y Dreams' organized the space in such a way that the current exhibition is featured with interactive panels augmented reality, and virtual reality. 'Y dreams' arranged the space in a storytelling manner. Visitors can play and interact with panels and learn about cutting-edge technology. Some of the interactive projections also require group activities to work, which enhances social interaction. The idea of the exhibition is to inform visiting students and encourage them about the technological innovations of Vizcaya Park.



Figure 12 BTEK technology interpretation Center

³⁰ Ratti, Carlo. "Visionary Art: Interactive Architecture | Carlo Ratti." World Economic Forum, Aug 08, 2016.

³¹ ACXT, BTEK - Technology Interpretation Center /. Arch Daily. nov 01, 2009. <https://www.archdaily.com/135238/ward-house-mackay-lyons-sweetapple-architects> (accessed feb 05, 2020)

Online gaming in Architecture

In the age of IoT, online gaming is playing a vital role in the socialization and activity of young adults. 'Electronic Sports' and online video games also known as Esports is a major talking point of the 21st century. The online gaming world is gradually taking over the dimensions of the sports world from the past decade. It is often compared to traditional sports, as it is more preferred and widely accepted by the 21st-century youth. With a massive worldwide appeal, passionate fans, and billion-dollar revenues in E-sports, the E-sport arenas are dominantly acting as an attraction point for the urban youth.³² 'Newzoo', one of the most prominent sources of getting analytical and insights of the gaming market published data in 2018, which shows how much exponentially the Esports are catching on with the 21st-century youth.³³ The data shows the overwhelming growth of users and enthusiasts alike.

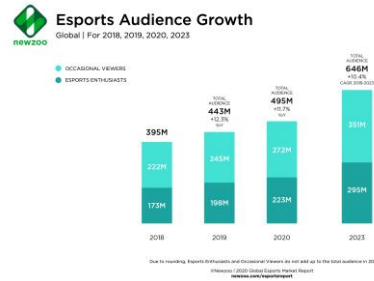


Figure 13 Esports Audience Chart by Newzoo

Esports Arenas

Due to the uprising of online gaming, there is a sudden need for development based on E-sports. To accommodate this challenging digital phenomenon into the physical form, the concept of E-Sports Arenas comes to life. Just like traditional sports arenas, the Esports arena is typically huge arenas that are specifically designed to host the competitions of the online games, its gamers, and their fans/Supporter. In the past decade, E-sports Arenas are getting introduced everywhere around the world. The US real estate organizations also just started to take a share in this market. Even big Universities in the USA with the biggest athletics programs in the NCAA, like the University of Washington and The Ohio State University, are launching E-sports initiatives.³⁴

³² Jones, Katie. How the eSports Industry Fares Against Traditional Sports. Sep 03, 2019. <https://www.visualcapitalist.com/> (accessed Apr 22, 2020).

³³ Newzoo. 2018 Global ESPORTS Market Report. Market Report, Newzoo, 2018.

³⁴ Bloom, David. "Esports Stadiums Are Popping Up Everywhere." Forbes. May 31, 2019. <https://www.forbes.com/sites/dbloom/2019/05/31/esports-stadiums-are-popping-up-everywhere/#53ebc71d2521> (accessed Apr 22, 2020).



Figure 14 Interior of E-sports arena at Arlington, Texas

The movement, related to online gaming and Esports arenas is older and more developed in Asian countries, especially in China. Many of them have e-sport related complexes that include business parks, training facilities, themed apartments, and other projects.³⁵ In the US this trend is still at its juvenile period. The largest e-sport arena in the US is in Arlington, Texas. It is dubbed as one of the most flexible and adaptive e-sports stadiums in the world. This arena is not only a state-of-the-art competition venue but also an extremely versatile space with 50 plus gaming centers that are always open to the public with ultramodern training facilities and studios to broadcast gameplays. The inside of the arena features dramatic lighting with 85 ft. big huge game display boards alongside

³⁵ Spivak, Jefry. "A New Kind of Arena Is Developing: Esports." *Urban Land*. July 29, 2019. <https://urbanland.uli.org/planning-design/a-new-kind-of-arena-is-developing-esports/> (accessed Apr 22, 2020).

additional control rooms and observer room to moderate gameplays.³⁶



Figure 15 New E-Sports Arena at Pennsylvania

In March of 2019, a project was initiated in Pennsylvania to open and build a 65,000 square foot Esports arena, which is to be finished by 2021. While discussing the inside experience of the E-sports Center, former US E-sport champion Jovan Vins shares his perspective on the requirement of an Esports arena.³⁷ He comments about the seating arrangements of the players so that they are optimized according to the need of the game being played. Vins also describes the use of top-tier tech for a smooth and lag-free experience.³⁸ As a gamer and the

³⁶ Dachman, Jason. "S V News." *Sports Video*. Jan 24, 2019. <https://www.sportsvideo.org/2019/01/24/inside-esports-stadium-arlington-north-americas-largest-and-most-flexible-esports-venue/> (accessed Apr 20, 2020).

³⁷ Vins, Jovan. "What Are The Requirements For An Esports Arena Design?" *Gaming 4.cash*. 2019. <https://gaming4.cash/blueprint-esports-arena-design> (accessed Apr 22, 2020).

³⁸ Vins, Jovan. "What Are The Requirements For An Esports Arena Design?" *Gaming 4.cash*. 2019.

player of the arena, Vins believes that the organization and orientation of seating and components should be done in such a way, that the players can have a destruction-free gaming environment while always being in the eyesight of their fans. During the lengthy games, which sometimes go even more than 10 hours, the competitors roam around freely inside the arena and socialize in different areas such as common rooms and breakout spaces. As a result, food courts, bars, and common meeting spaces also become a prominent demand of gamers and enthusiasts alike.

Social Media in Architecture

Social media plays a vital role in the life of 21st-century youth. When discussing digital social media, the first thing that comes to mind is prominent social media platforms like Facebook, Instagram, Twitter, TikTok, Snapchat, etc. However popular these platforms are, they are always riding the surfboard on the wave of short-lived trends. Although the effectiveness of each platform may not be a logical path to pursue. The effect they have on society and the physical space are something worth going in-depth about. For example, Instagram is a very popular and intuitive photo-sharing application that is used and admired by the people of the 21st-century. One of the direct links of this platform about how it influenced the physical space can be understood by analyzing a popular term called

<https://gaming4.cash/blueprint-esports-arena-design> (accessed Apr 22, 2020).

'Instagramable Building'. According to 'Archdaily', the term 'Instagrammable buildings' refers to the visual aesthetic of the building and/or an architectural space that is visually striking and contemporary enough, those general posts receive more appreciation in social media, when that building is featured.³⁹ However it may be fruitful of the marketing and popularity of the spaces, it provides a very little role for the actual users of those spaces, except giving them good pictures to share. But one thing is certain that digital social media is actively influencing the placemaking concept. To get featured, architects and designers are now actively looking forward to creating spaces that will look good on social media.

One other prominent achieving factor of digital social media is how it provides information even in the most unprecedented situations, where the traditional media fails to contribute. The relation between social media and the urban space can be observed when looked upon the phenomenon of the 'Arabian Spring'. The unprecedented uprising began in 'Tunisia' when a small-town street vendor called Mohamed Bou Aziz set himself on fire in front of the municipal office as a protest against corruption. Such action eventually sparked the fire of revolution in the whole Arabic region against many corrupt governing bodies within the next few months.

³⁹ Comberg, Ella. Arch Daily. June 16, 2018.

<https://www.archdaily.com/896444/a-new-guide-by-architects-explains-what-makes-a-space-instagrammable> (accessed March 17, 2020).

During that time Facebook also released 'Facebook Live' which enabled people to use Facebook to share live videos throughout the world, which helped first-hand information of the revolution to reach the furthest corners of the political spectrum. Nezar Aisayyad and Muna Guvenc in their paper 'Virtual Uprisings: On the interaction of new social media traditional media coverage and urban space during the Arab Spring' analyses the geography of urban uprising during the Arab spring, with a focus on the relationship between virtual and physical dimensions. The analysis shows the interaction between social media and physical urban spaces and how they influence and transform each other. During the protest, virtual claims made through different social media platforms such as Twitter and Facebook helped the uncoordinated revolution to conjure up stunning momentum which would have taken years without the presence of such platforms.⁴⁰ Through their detailed research it becomes very clear that although social media plays a vital role in the development of social uprising, the physical spaces in the real world need to complement them for them to be fruitful.

Restaurants and Bars are some of the most prominent social gathering spaces that are being carried on from the past century and still favored by the users. It is not only the drinks and the food that makes these spaces popular; the concept of being private

amid a public space with a value of passive security plays a vital role in the mind of a social individual. Moreover, to cope up with the demands of the new technologies the industry introduced things such as super-fast Wi-Fi, location tagging, wireless payment systems, etc. These technological embracements act as a physical translation of the digital evolution. As a result, restaurants, and bars are very popular among the young people of the 21st century.

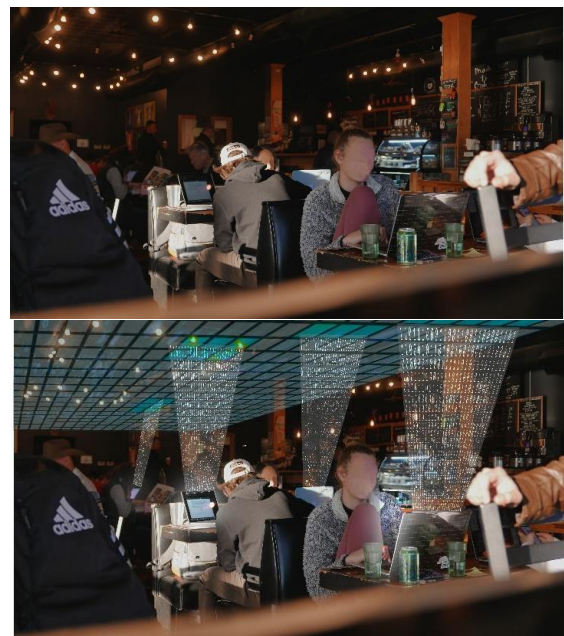


Figure 16 the observation at Kofenya Coffee shop by author

While understanding the phenomenon of usable and most frequent use of public spaces, it was observed that the modern-day coffee shops act as a good place for the unwinding of the current youth. Comparatively cheap price of coffee, a sense of undisturbed security, and a place with free Wi-Fi connectivity, the coffee shops are

⁴⁰ Nezar AlSayyad, Muna Guvenc. "Virtual Uprisings: On the Interaction of New Social Media, Traditional Media Coverage and Urban Space during the 'Arab Spring'." Urban Studies Journal Limited, 2015: 2019,2021,2027.

becoming the beating heart of the socialization of the young generation. These things help the customers to travel through the vast dimensions of the digital realm uninterrupted. An interview with a customer at Kofenya (A prominent coffee shop near Miami University in Ohio), revealed that she was there mostly because of browsing the web and chatting with friends in between the class. It turns out that food was the secondary but the digital sanctuary and gadget-friendly ness was the primary purpose of her visit.⁴¹

Lee Humphreys, a researcher from the Department of Communications in Cornell University in his paper 'Mobile Social Networks and Urban Public space', studies the phenomenon of location-based software to understand how the mobile social networks play a role in urban public spaces, Dodgeball, a location-based service form google, which was based on New York, that allowed the users to let personal networks of friends know if they are located in a nearby public/semi-public space. Especially bars, restaurants, etc. In his research author explained how the location-based notification application played a value in the social interaction of the physical space.⁴² Although the research was done from the perspective of communications software development, it indicates how the IoT is navigating the realms of social interaction of the 21st century. And the study also

⁴¹ Interview by Roy Saumyabrata. (March 14, 2020).

⁴² Humphreys, Lee. "Mobile social networks and." *New Media Society*, February 9, 2010: 1-4.

indicates where the software was mostly leading these people to the bars and restaurants. Wakabayashi's argument about conceptualizing the 21st-century urban layout as a multimedia system may be fruitful here. Wakabayashi argues that the evolution and cutting edge technological revolution not only challenges the use of traditional framings and socio-spatial organization but also provides support and indicates the necessity of a new typology of urban space development.⁴³ From analyzing the social usage pattern of IoT and digital youth culture, speculation can be made that restaurants may prove to be a vital element for an active 21st-century urban space.

Counter Argument on IoT Based Development

Although the question remains if the digitization of such level should be conceptualized in the first place. The paradoxes associated with the digital life about the development of the gadgets argue, whether we give them so important or not. There is also concern about ruining the private life and the possible violation of privacy from the tech giants.⁴⁴ But given

⁴³ Wakabayashi, Mikio. " Original Article Urban Space and Cyberspace: Urban Environment in the Age of Media and Information Technology." *International Journal of Japanese Sociology* , 2002: 7,15.

⁴⁴ Bartlett, Jamie. "Will 2018 be the year of the neo-luddite?" MAR 04, 2018. <https://www.theguardian.com/technology/2018/mar/04/will-2018-be-the-year->

the rate of the transformation of the contemporary world and the accelerated use of gadgets in everyday life, ignoring their influence on future design development may not be logical.



Figure 17 Toronto's Smart city by Sidewalk Labs

A prominent problem with the digitalization of urban space is always concerned with data privacy and the investors who are to be benefited from the development. One of the prime examples can be to discuss the development of Toronto's riverside development by Google's urban development firm 'Sidewalk Labs'. In the article 'Toronto's Smart City: Everyday Life or Google life' Author TF Tierney introduces her concern about the ongoing city planning proposal in Toronto's riverfront development.⁴⁵ The paper demarks the concern and the problems associated with the city of Toronto's recent contract with Goggles Urban Technology division - Sidewalk Labs. The paper conducts its

research mostly based on Benjamin Barton's Theoretical perspective called 'The Stack'. 'The Stack' indicates the process of how conglomerates conquer over the citizens to impose dominance. Tierney imposes the same logic on the idea of living inside a disciplined network developed by a private company such as Google, which is famous for selling private data for their commercial benefit. Tierney also mentions the concern of the citizens regarding the development of the city and supports their argument with proper. In conclusion, Tierney provokes a thought the riverfront development project will turn into an urban lab for google, where they will run the test for their innovations. The citizens living there will not be truly free and going to be confined as a new form of postcolonialism.⁴⁶ The paper researches a good amount on the factor of Google's development of the urban lab, it does not provide a perspective on if the city was developed by any other government institutions. In conclusion, the author reminds everyone about what are the main concerns of an efficient city and how the Internet of things (IoT) cannot be the only prime part of it. The Author wrote the paper with a very direct approach to rising concerns about the development of smart cities and she conveys the message in a very engaging way.

of-the-neo-luddite (accessed 02 29, 2020).

⁴⁵ Tierney, T F. "Toronto's Smart City: Everyday life or Google Life." Architecture Media POLitics Society (University of Illinois Urbana Champaign), 2019: 1-21.

⁴⁶ Tierney, T F. "Toronto's Smart City: Everyday life or Google Life." Architecture Media POLitics Society (University of Illinois Urbana Champaign), 2019: 1-21.

Analysis of Discussion:

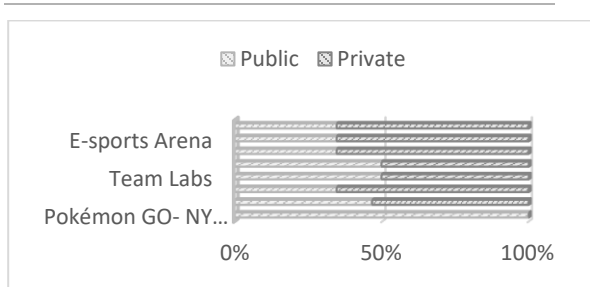
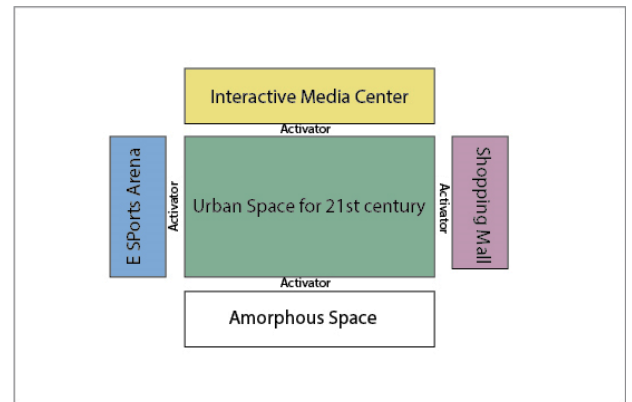


Figure 18 Categorizing case studies public vs privat

The Internet of things is playing a vital role in changing our daily lives. Analyzing the most prominent cases which are developed reflecting the features of IoT, helps to discover the gaps which are needed for an active urban space of the 21st century. While the privatization of public space is killing the public use of the space in the hands of big conglomerates, the other public spaces are not evolving to face the needs of the people. Assessing the popularity of works of 'Team Labs' and 'Y dreams', it is observed that mixed reality, virtual reality, and interactive elements can play a vital role in engaging the urban population. Based on such observations, speculation can be made that the 'Interactive Media Center' will play an important role in the development of an acceptable public urban space. In addition to drawing more attraction from the people, it also will provide a platform for groups like 'teamLabs' and 'Y Dreams' to innovate. From studying existing urban spaces like Potsdamer Platz and Central Park it also becomes clear how people react to different objects in space. Observing the recent trends in the US, it can be seen that bars and restaurants pop out as pivotal elements

of where the young generation hangs out socially. Researching for the counterpart of the digital social media platforms, urban plazas are provided to be fruitful to act as a physical counterpart of social media. And analyzing the online gaming culture and acceptance of E-sports as a mainstream sport paves the way to sports arenas that are dedicated to the need for IoT-related electronic games. In terms of design consideration, one thing to keep in mind, that the 21st century is always on the verge of innovation and technological evolution. As these innovations are happening at such an unprecedented rate throughout all the spectrum of daily life, featuring a design based on such progression might be very short-lived. So the novel building typology of the urban space is needed to be developed in such a way that the designed architectural spaces can keep up with these changes.



Sanctuary For the Gadget Freaks

Figure 19 Conceptualization of 21st-century urban space

Conclusion

Urban areas have always been at the forefront of technological development. Therefore the citizens of these urban areas get the foremost preference in experiencing the newest evolutions of the technological spectrum. To design a public space for the people of the 21st century, the need of these people has to be observed. The analysis of the case studies indicates a pattern of how the digital realm influences physical space. This paper researches for the introduction of gadget-friendly infrastructure and building typologies that will address this amalgamation of physical and digital. By observing the digital culture of the people of the 21st century about how the people use their gadgets in their daily life, this paper researches the novel architectural typologies which may play an important role in the conceptualization of the modern urban space. Although this research indicates several architectural elements that would be vital for generating an active urban space, more in-depth analysis is needed to be conducted on each element, to understand the effective integration process into the urban space master planning.

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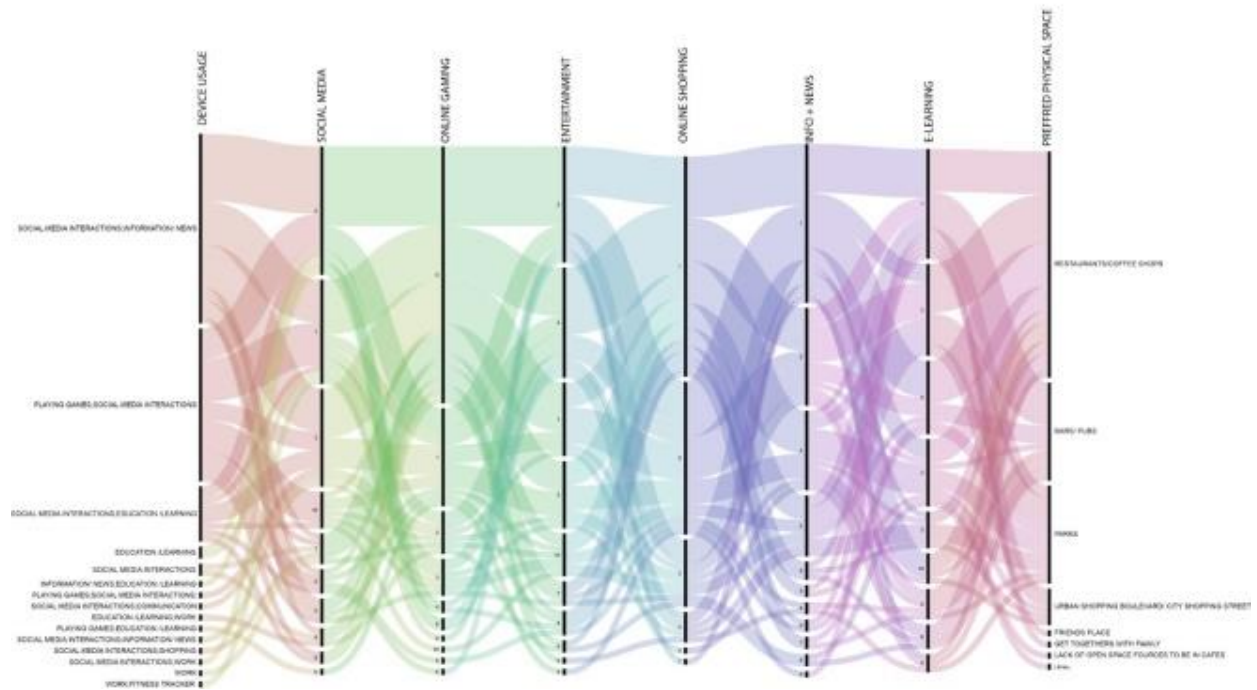
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The Design Addendum:

The design process ideates the abstracted world of digital culture and translates them into physical architectural elements. This design looks into a strategic formulation of an urban neighborhood of the 21st century. This design phase was completely done during the COVID-19 Pandemic of 2020-2021. COVID 19 was one of the most horrific tragedies that mankind had to face, but it played a valuable role in understanding the impacts of physical spaces on our physical and psychological presence. Before the pandemic, it was broadly imagined that one day everything will be digital and people would be living in a sci-fi world of science fiction where everything will be virtual and augmented. It was believed that with the high rate of development in the technological sector, that future is not so far away. The quarantine period of the pandemic

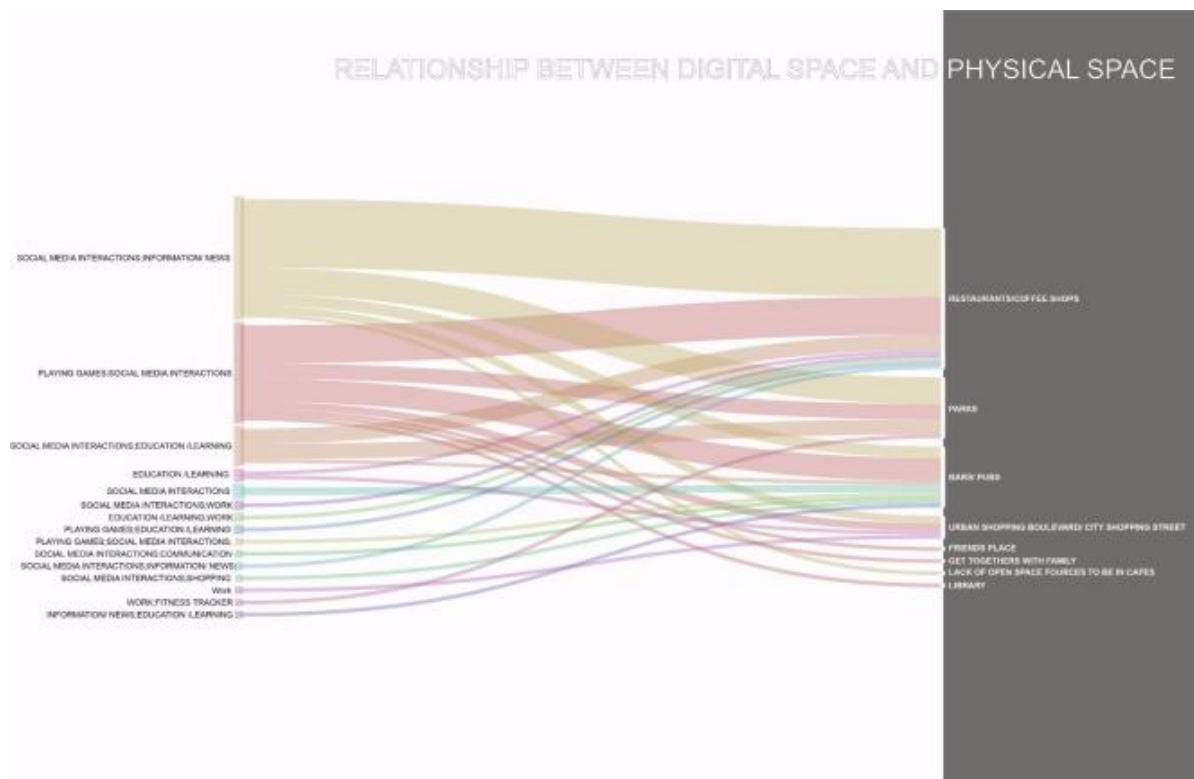
made us realize that it was possible to go digital native, but it was also miserable!! Our technologies were ready but we weren't. Technology has moved to the 21st century, the people have moved to the 21st century, but architectural spaces still haven't caught up with the transition. It was high time to start taking the steps which are going to start the conversation of how architecture is going to be evolved through this. So I spent a year researching, going through case studies, and data collecting to figure out the relation between the digital culture and their reflection into physical space.

Detailed surveys and interviews were conducted with about 80 people to understand their preference in physical space and digital space.

Sanctuary for the gadget freaks: re-conceptualization of urban spaces in the age of IoT

The survey helped to understand the relationship between people's physical and digital needs. The alluvial diagram shows the relation between the people's inclination about digital cultures such as social media, online shopping, E-learning, E-sports, and Entertainment.

The digital culture at its creations was influenced by the physical culture. But in the age of IoT, the digital space has influenced the physical spaces to take a drastic turn. This particular research looks directly into what these effects are. As major urban areas are always surfing at the surge of new

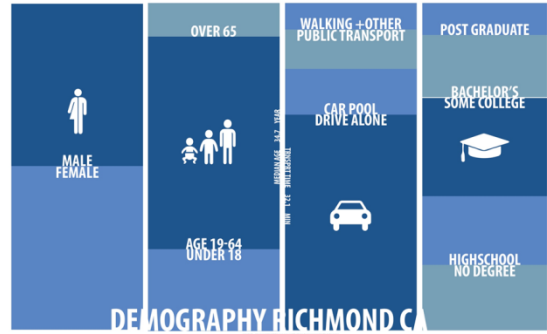
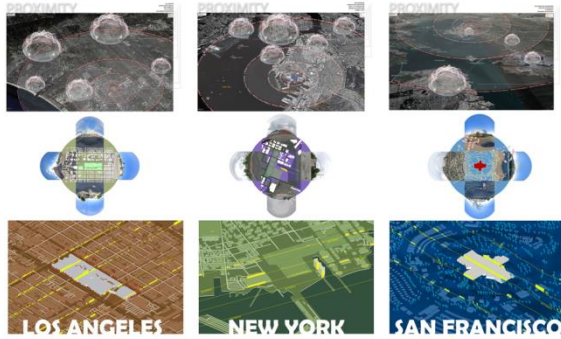


The above diagram is a more simplified version of the collected data set. It directly correlates with physical and digital spaces. For example, the data indicates that people who prefer to use social media more than any other platform also prefer physical spaces like bars/restaurants which are social spaces in the physical dimensions.

technologies, in terms of research data implementation, Major cities around the USA were researched upon which has a large tech-oriented youth demographic.

Although these data sets are very abstract, and to create a connection with the digital culture and human psychological pattern these data sets were needed to be translated into physical architectural spaces.

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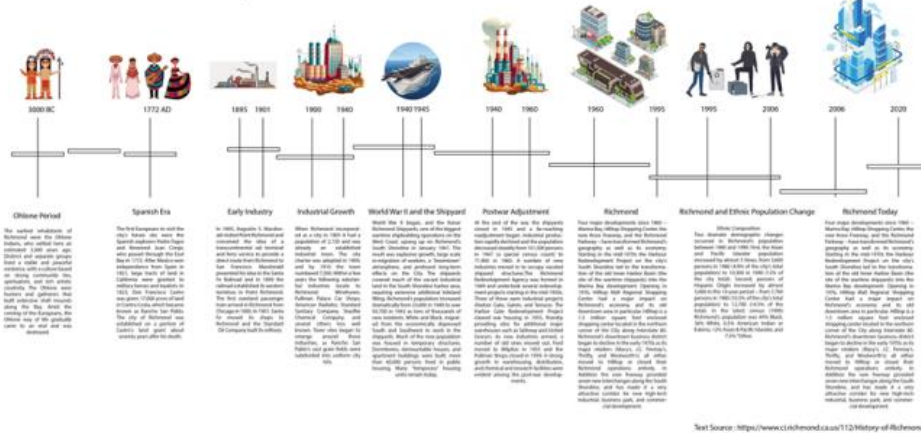


After narrowing down on multiple sites, and conducting detailed case studies in cities like Los Angeles, San Francisco, and New York, the Hilltop mall at Richmond, California was elected to be the site for the project. Located right at the edge of Silicon Valley, with a huge gadget-oriented young demographic, large a historical background, the trend of being the go-to residential spot for the youth of Silicon Valley, the hilltop mall proved to be the perfect place to implement the research.



Hilltop Mall, at its prime, was one of the prominent landmarks of Silicon Valley. But that didn't save it from dying due to the surge of online shopping. It had its heyday

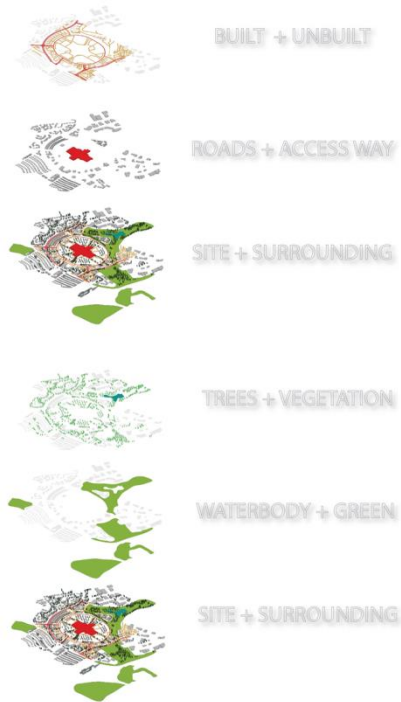
RICHMOND, CA TIMELINE



Moreover, Richmond's recent motto to be a high-tech satellite for Silicon Valley also helps the cause of implementing such a prototype.

in the era of automobiles and now It was time for this old behemoth of the suburban culture to retire and be replaced with something more time-appropriate,

Master plan Development



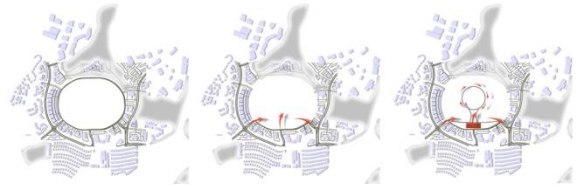
Looking at detail on the site contexts in terms of roads, access ways, and the built environment.

It was clear that omitting the parking lot and the surrounding road will make the site more approachable from nearby neighborhoods.

REMOVING THE BOUNDARY



INTRODUCING AN EFFICIENT CIRCULATION



The old mall had a surrounding road and a huge parking lot around it making it a pinnacle of introverted built-form. These characteristics were needed to be conceptualized to make the site more amorphous from the surrounding neighborhood. And the parking asphalt can be replaced by a more intelligent site access and connection layout.

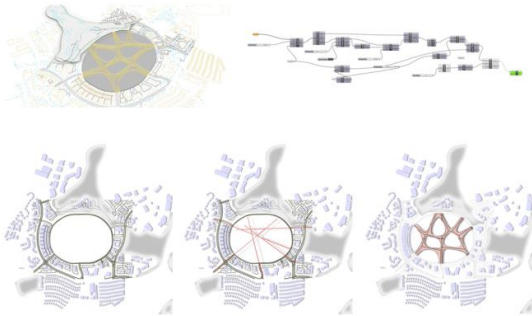
RE-CONNECTING THE GREEN



Looking at the site context in terms of vegetation and surrounding green spaces, it was clear that the suburban mall had bisected the connecting parks network. So it

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was only logical to re-establish an efficient connection between the parks.



such a way that it maximized the efficiency and connectivity inside the site. After many iterations of development, many case studies, and ongoing research later, the project master plan was developed.

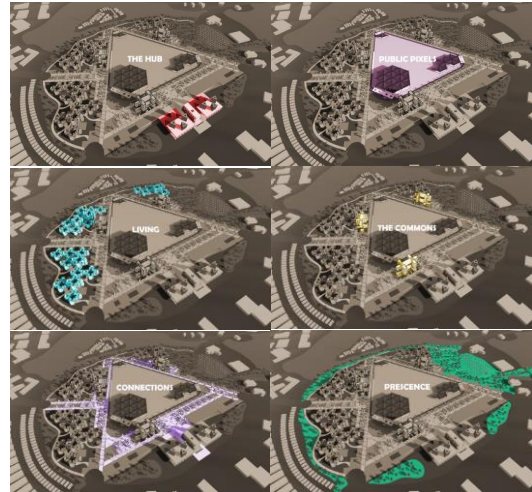
After the site surrounding connections were re-established, it was time to conceptualize the interior connectivity of the site. Using computational design methods, the inside layout of the master plan was developed in



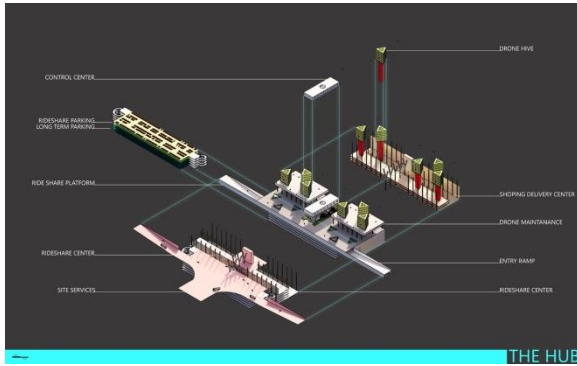
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This huge site with multidimensional attributes is a complex translation of the digital and physical relation and their interpretation. The master plan can be divided into 6 simple parts for easier description.

- **The Hub**
- **Public pixels**
- **Living**
- **Commons**
- **Connections**
- **Presence**



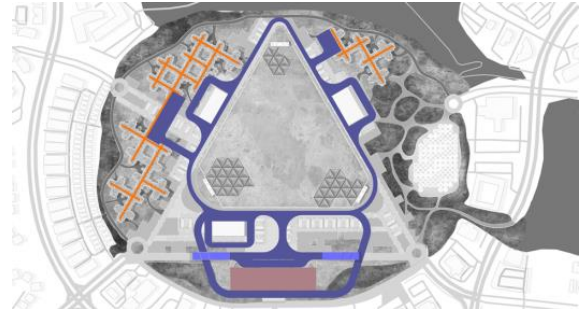
The Hub



Even 20 years ago, cars were a major necessity, but the generations of the 21st century (especially American teens) are reducing the frequency of driving and owning their vehicles.

With the ease of ride-sharing platforms like Uber, Lyft, Bird- the way we conceptualized transportation in the 20th has become irrelevant. A trip to the mall has been replaced by window shopping using your phone. On the other hand, the online one-click shopping trend and one-day shipping force us to think of new infrastructure beyond the network of multi-layered physical roads. Especially when industry pioneers like Amazon, Best Buy, Walmart are already implementing drone and robot deliveries.

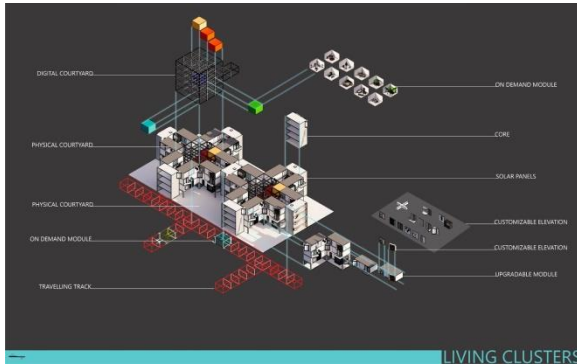
The hub was designed in such a way that it would cater to the needs of the people in terms of ride-sharing and public transport all available with a touch. It will house parking spaces with shared-ride vehicles which can be subscribed to with just a quick scan with a smartphone. And the lower parts of the hub will also serve as a fulfillment center for online shoppers. The drone hive clusters on top of the hub are serving as infrastructure to aid swift Aerial last-mile deliveries. The lower part of the hub is also connected with the service and vehicular ways of the whole site. The service layer is connected throughout the site and serves all the buildings and their services and maintenance.



The hub is a multi-dimensional connection that has different layers. The hub is considered a vital infrastructural element of the 21st century.

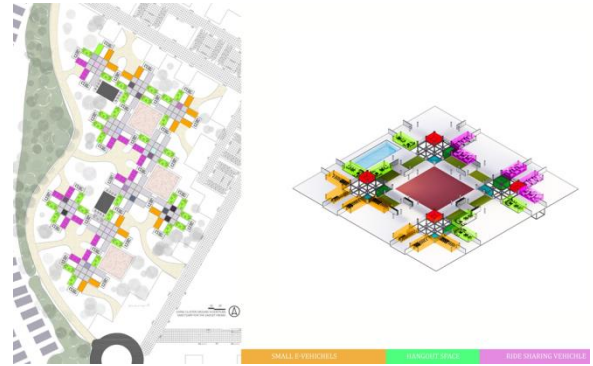


Living



The high housing cost of living in Silicon Valley and the sustainable concepts of living with maximizing efficiency and the concept of a subscription-based living platform like “Air BnB” enables us to think of a new type of living spaces. And the COVID made us realize a house can be so much more than where we get back from work just to sleep at night. Developed from the concepts of micro-living, tiny houses, and transformable furniture, 3 years ago a group of students from MIT came up with the concepts of a smart furniture system called ORI. ORI moved on to production last year. The design was conceptualized by considering the home modules shaped like shipping containers, and fitted with sensors and smart furniture systems like ORI. These

modules can be arranged into clusters where different things are individualized.

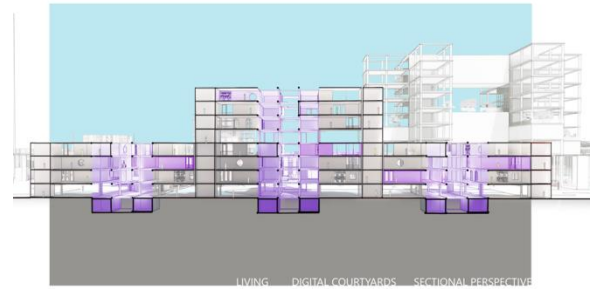
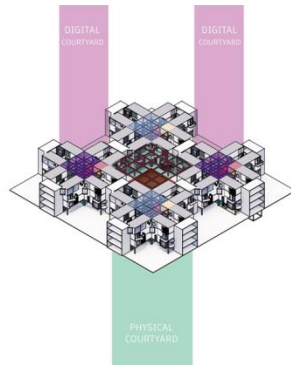


The lower part of the cluster is designated for hang-out spaces, on-demand electric cars on the peripheral side, and small personal vehicles (like scooters, 2 wheelers, bikes, Segway) on the pedestrian side. Just like a gadget freak upgrades their gadgets each year. These Residential modules can be swapped and upgraded similarly so one never has to miss out on the latest technologies. Even the elevations can be personalized and changed as you need.

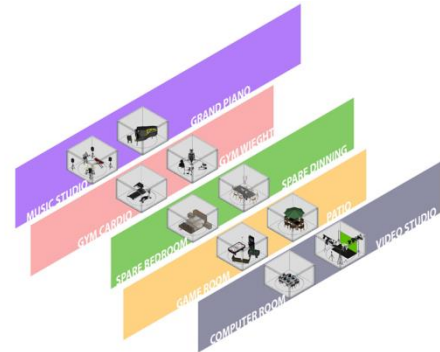


The expression of individuality can be seen throughout the clusters as each person is different so should be their living styles.

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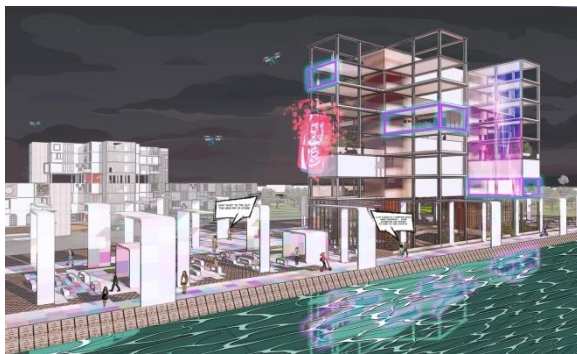
There are 2 types of courtyard-like spaces in between the stacked modules cluster arrangements. They are coined as the physical courts and the digital courts. The physical courts are courtyards in-between clusters, integrated with visual & digital overlay, one can play traditional sports like basketball or tennis or enjoy a laser tag game or Duel with the lightsaber.



The modules can accommodate from simply a gym or a game room where friends can hang out to a studio where one can produce the new YouTube video. Being replaceable also makes possible of newer business to make up new modules and keep developing the existing ones.

The Digital courtyard on the other hand is unique to its character. It is taking the concept of shared living spaces, to a more gadget-oriented on-demand subscription level. It acts as a shared space where different shared modules can be called upon and attached to a certain unit to perform certain tasks. One just needs to ask their virtual assistant, and space will show up on their doorstep within minutes.

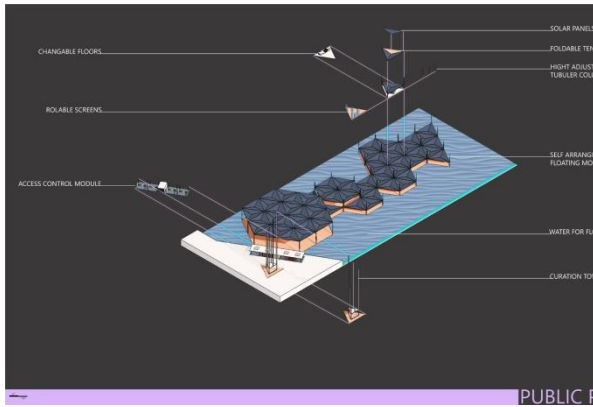
The commons



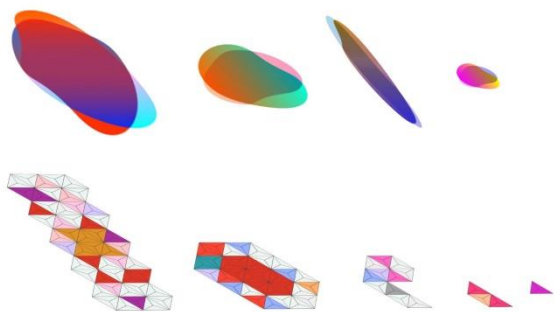
Looking at a section through the commons shows its different levels of interaction with the site from the tower-like office gardens, lofty lobby space in the ground level, and connection with the service layer underground. The commons is active day and night serving as a beacon of gather with the surrounding community.

The design of the commons is conceptualized from the need for social interaction and formal working spaces for the people of this community. The upper part of the built form is acting as a swappable, upgradable open office platform. where one can rent subscription-based on-demand office spaces. The lower parts are reserved more for the social gathering spaces such as restaurants, coffee shops, bars, and pubs.

Public Pixels



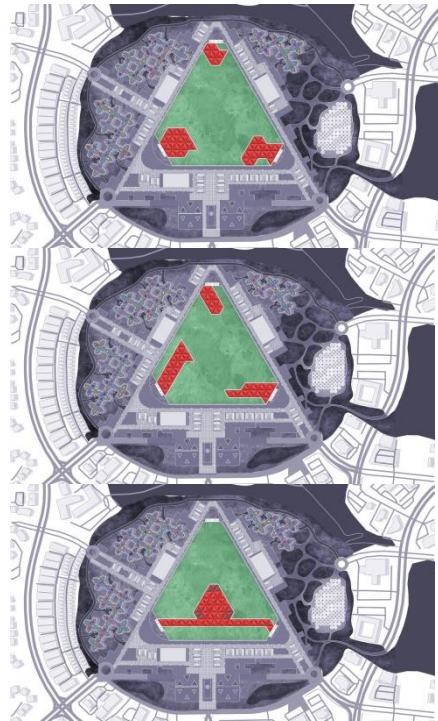
The rate of change of demand and needs are so volatile in the 21st century, that the needs of the people seem to change completely every 5 6 years. As old thing dries up, other new startups become the trend. The nature of designed spaces has to be appreciative to cope up with such a high frequency of change.



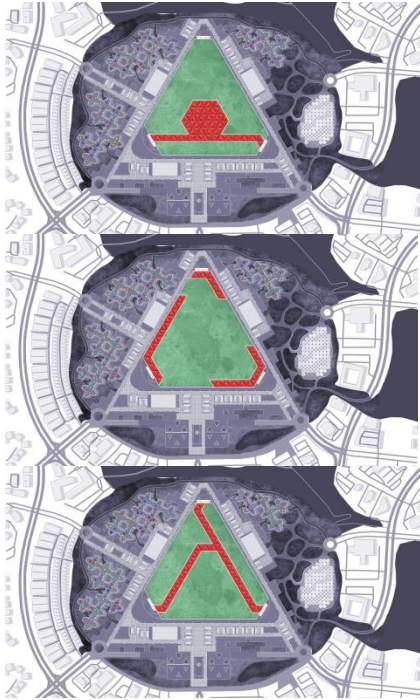
While designing a public gathering space of 21st century, Analyzing factors, such as different types of gathering, different scale of events from WWDC, world cyber games to small art exhibitions, and the newer and newer type of venue required from those events inspires the imagination of something more scalable, more amorphous.

Just like digital pixels, which can turn off and on according to the need of a device, The 'Public Pixels' were conceptualized in a way that they can be scaled according to the events.

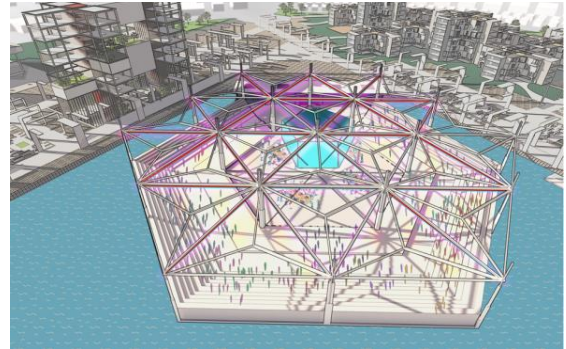
And all of these pixels can float and self-arranged themselves to different patterns according to the need of the event. These modules will be featured with solar panels so they can generate their power, and accommodate tubular columns that can go up and down just and change the height of the space in sections.



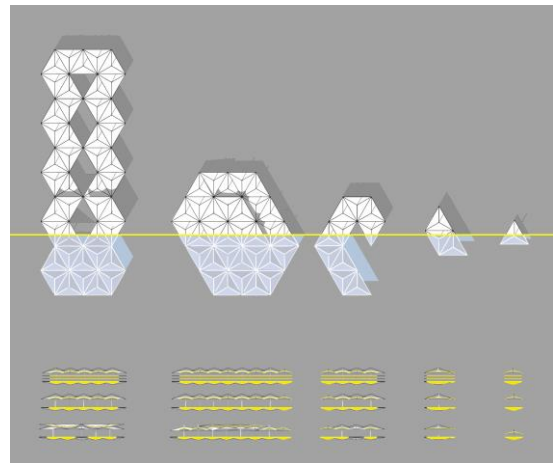
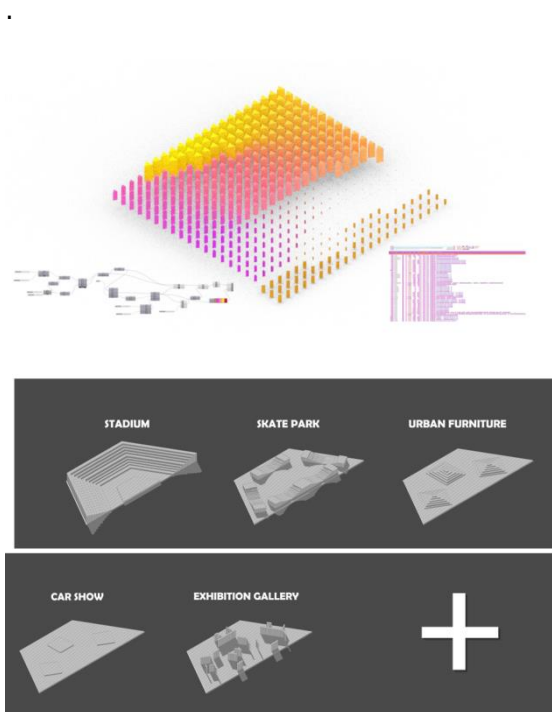
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controlled by using everyday smart devices. The algorithmic code and working mechanism were also developed during this project design phase.

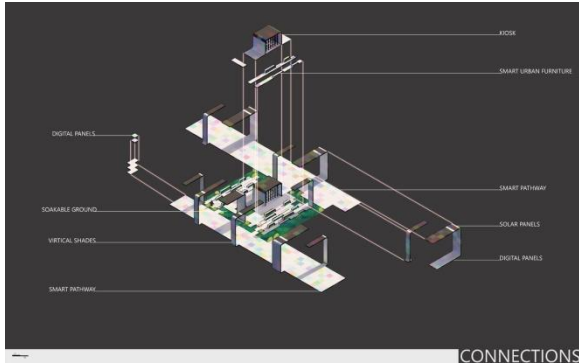


This space can be morphed from an Esports stadium to a gadget fair. The possibilities are in the thousands.



To take it one step further the design programmed the floors of each module in a way that they can be undiluted, morphed, and manipulated to create different functional requirements. All of which can be

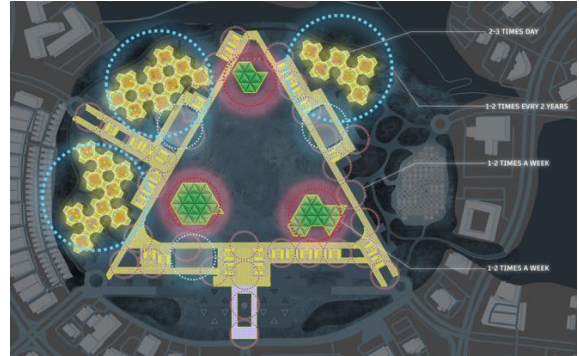
Connections



As the name suggests, the conceptualization of connections was based on connectivity throughout the site. They need to work as an infrastructure for both the gadgets (Wi-Fi, wireless charging) and the gadget freaks (ease of access, social gathering spaces, urban furniture). All the connections are developed using sensor-based pixels like displays on all surfaces so it can work as a smart pathfinder and 3-dimensional atmospheric indicator. These Pixels can also change the whole outlook of the site of different events varying from the launch of the new MacBook to celebrating the Chinese New Year.

Although there is a significant number of morphing and moving parts in the

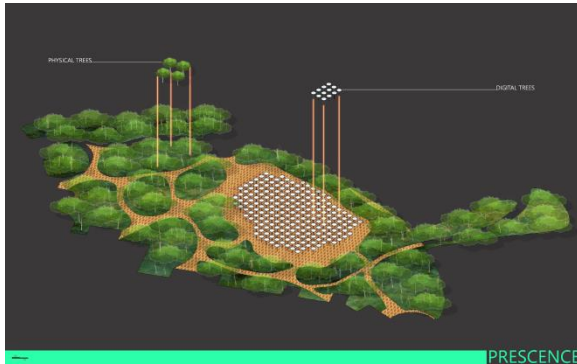
sanctuary, they do not change continuously. These changes are always curated and automated by Ai and Industry professionals. Here is a time map showing the frequency of their movement and upgradability.



But perhaps, from all the lights and sound and sounds and moving party may create a bot of psychological disruption. And to recover one needs a need a buffer, and here lies the concept of presence.



Presence



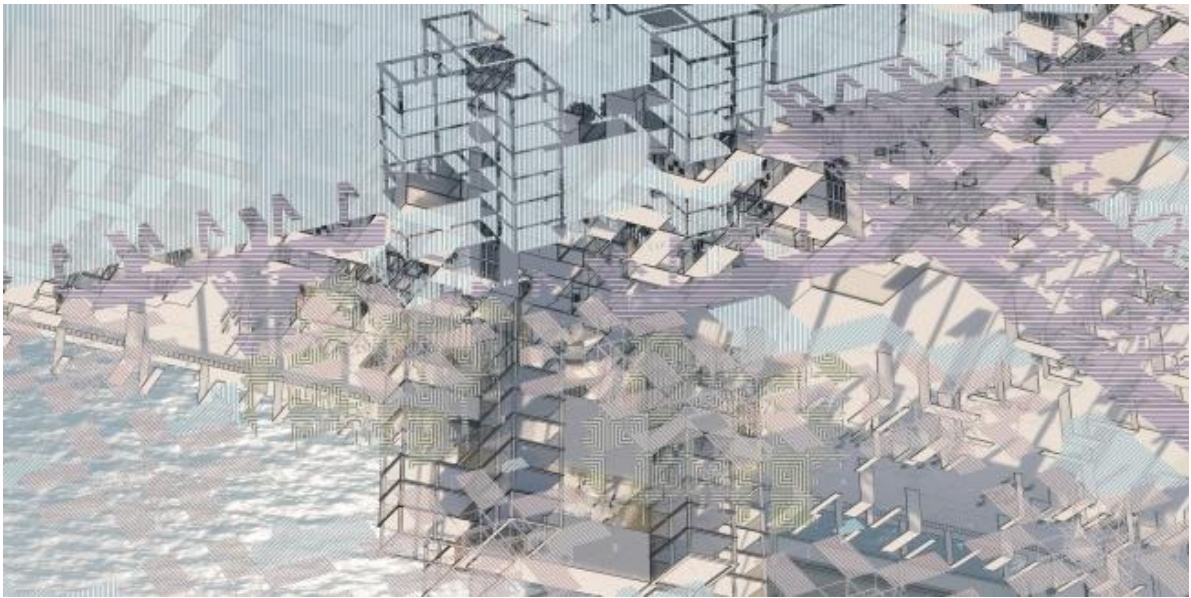
With the development of high-speed internet, smart sensors, audio-visual communications, and remote socialization using a concept of the virtual world, the concepts of physical and digital presence indicate a mixed reality. The 'presence' space deals with the part of the master plan with digital and physical trees entangled together creating a mixed existence.



This is where nature (the trees), the physical (human body), and the Digital (the piers) all live together in harmony. These mushroom-like self-powering Piers project holograms, so one can come to walk around the park with a friend right beside them, who can be a few thousand miles away.



And all of these components (hard wear and soft wear) and the people (User) all together work in harmony like a living berating organism called the Sanctuary of the Gadgets freaks.



Reflections:

All these conceptual but yet very practical solutions were developed as an approach to find the answer to the thesis question. What the Sanctuary of the Gadget freaks would look like in near future? Although the abstract nature of this project makes it harder to realize the basis of the physical embodiment. This thesis raises a lot of questions and discourses that are very unique and important. The further research scope of this answer can be to develop a tool kit that can assess these mall-type scenarios around the USA and create master plan strategies. This design strategy was a particular way of finding the solution to the burning question. But it is not the only one. There can be numerous other "What If? "Approaches to this same question". This design is just one answer to a world of deep conversation to be engaged in. But we cannot just bind ourselves in the cookie-cutter design approaches, being too afraid to venture into the unknown. We have to start somewhere. I believe this thesis raises the very important questions that

architectural scholars and practitioners need to find the answer to. So, what next? A truly democratic, tech-originated, sustainable, efficient, architecture. This is a very long and detailed conversation to be had, but it is time we start somewhere. In the past century, the Automobile industry has revolutionized architecture. Yes, At first we had to change our 19th-century horse carriage-oriented building to retrofit for cars, but then came to the innovation in architecture. When Le Corbusier's Villa Savoy was conceptualized from the turning radius of a car, a true revolution had started. Rather than retrofitting an old building with new sensors and technologies and calling them smart. We could think of a design approach that starts with the smart and then goes to the building. The architectural industry is in need of a true revolution. And questions like these and the answers are eventually going to lead us to them.

-Roy, May 5th, 2021