

# **IVAAIU Urban Instrument: Hyper-Complex Civic Monument for Seoul**

**by**

**Donguk Lee**

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Signature of Author: \_\_\_\_\_  
Department of Urban Studies and Planning  
May 23, 2013

Certified by: \_\_\_\_\_  
Professor Emeritus Tunney Lee  
Thesis Supervisor  
Department of Urban Studies and Planning

Accepted by: \_\_\_\_\_  
Associate Professor P. Christopher Zegras  
Chair, MCP Committee  
Department of Urban Studies and Planning





**IVAAIU Urban Instrument**  
:Hyper-Complex Civic Monument for Seoul

IDEA  
VISUAL  
AUDITORY  
ARCHITECTURE  
INFRASTRUCTURE  
URBANISM

Donguk Agos Lee

Supervisor | Tunney Lee | Professor Emeritus | Department of Urban Studies and Planning | MIT  
Reader | Alexander D'Hooghe | Associate Professor | Department of Urban Studies and Planning | MIT  
Reader | Carlo Ratti | Professor of the Practice | Department of Urban Studies and Planning | MIT



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Submitted to the Department of Urban Studies and Planning  
on May 23, 2013 in Partial Fulfillment of the  
Requirements for the Degree of Master in City Planning

## **ABSTRACT**

This thesis aims to plan and design an urban monument in Seoul, Republic of Korea, that can reflect the political movement of the city at the urban area which has been historically associated with political representations of the government and civic organizations.

The advent of digital technologies allows a massive amount of social and political ideas of citizens to be collected efficiently through online networks, and enables this gathered data to be linked to physical environments through digital interactive interfaces. In this system, when users input data, interfaces respond to it by generating physical components interactively; therefore, individuals can create urban environments with own intentions.

However, at the same time, the technological movement also raises a demand for a comprehensive master plan which can properly control digital systems in physical space. The goal of planning and design in this project is to create an urban master plan that can integrate the political symbolism of the site and the new technological system.

**Thesis Supervisor: Tunney Lee**

**Title: Professor Emeritus of Urban Studies and Planning**

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U R B A N  
I N S T R U M E N T



## **1. Introduction**

**This thesis aims to plan and design an urban monument in Seoul, Republic of Korea, that can reflect the political movement of the city at the urban area which has been historically associated with political representations of the government and civic organizations.**

**The advent of digital technologies allows a massive amount of social and political ideas of citizens to be collected efficiently through online networks, and enables this gathered data to be linked to physical environments through digital interactive interfaces. In this system, when users input data, interfaces respond to it by generating physical components interactively; therefore, individuals can create urban environments with own intentions.**

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## **2. Historic Condition**

### 2-001) Sejong Avenue as Urban Space for Political Symbolism

[Macro Context: Seoul City After the Korean War]

Since the 1950s, Seoul has gone through four stages of changing its regime system. The first government manifested the reclaim of the city after the Korean War. Most of the urban infrastructures were demolished when the war ended. To recoup this loss, the administration concentrated on the reconstruction, forming a massive and fast urban development type. In 1961, a military coup happened, and over thirty years of military regime periods started. By using forceful governing, the administrations had expanded the city rapidly. Since 1995, the city started to be governed by the independent mayors elected by citizens. Each mayor tried to represent and prove his own way of developing Seoul within four-year term. Even though the city is transformed into more democratic status than before, the legacy of previous governments, which is the high-handed development process, still has remained.

However, the city is facing one of the most radical changes in a political system at the moment. A new mayor of Seoul, Wonsoo Park who was elected in 2011 can be considered as the first anti-construction leader. He declared that the most of the city development budget is planned to be invested in social infrastructures rather than physical infrastructures(Park, 2012); consequently, several physical development projects have been either cancelled or suspended, and a substantial amount of the previous construction budget has been dissolved or transferred. The city is at the first turning point from the uncontrollable expansion to the internal intervention.

Period	Years	Character of Each Government	Construction Phase
1	1948-1960	Initial government after the Korean War <b>Reclaim of the city</b>	Reconstruction
2	1961-1993	Three different military regimes (by two military coups and one succession) <b>Expansion of the city</b>	Rapid Construction
3	3-1 1995-2002	Independent Seoul mayors elected by citizens <b>Establishment of democratic development process</b>	Moderate Construction
	3-2 2002-2010	Independent Seoul mayors elected by citizens <b>Sophisticated democratic development process (Combined character of Period 2 and Period 3-1)</b>	Rapid Construction
4	2011-	Independent Seoul mayor elected by citizens <b>Development of social infrastructures</b>	On Hold

Figure 2-001. Four Major Periods of Political Transitions in Republic of Korea after the Korean War

[Micro Context: The Sejong Avenue After the Korean War]

This thesis focuses on the specific area of Seoul, the Sejong Avenue. Due to the location, which is adjacent to the city hall and the Royal Palace, this area has been considered as a symbolic place of the city throughout the history. The citizens have been sensitive to buildings and spatial features physically occupying this area, and each government has used this avenue for the manifestation of political attainment. Therefore, during the changes of regimes, the urban space also has been transformed coinciding with the differences of the political ideologies(Son, 2003). The physical presences, functions, occupancies of the buildings and public spaces in the avenue have been moved, deleted, duplicated and recreated.

Figure 2-002. Changes of Gwanghwamun  
in Sejong Avenue since 1950s,  
Source: Seoul Urban Planning Story(Opposite)

/2-002-1

- Gwanghwamun in Sejong Avenue(1960s)
- Reconstruction of Gwanghwamun
- Presence of Former Japanese government Building behind Gwanghwamun

/2-002-2

- Gwanghwamun in Sejong Avenue(1990s)
- Demolition of Former Japanese Government Building by Youngsam Kim Administration

/2-002-3

- Gwanghwamun in Sejong Avenue(2000s)
- Dismantlement of Gwanghwamun for Relocation by Moohyun Roh Administration

/2-002-4

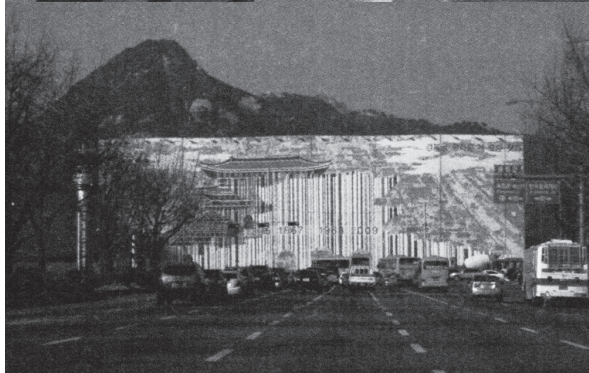
- Gwanghwamun in Sejong Avenue(2010s)
- Current status after adjustments



/2-002-1



/2-002-2



/2-002-3



/2-002-4

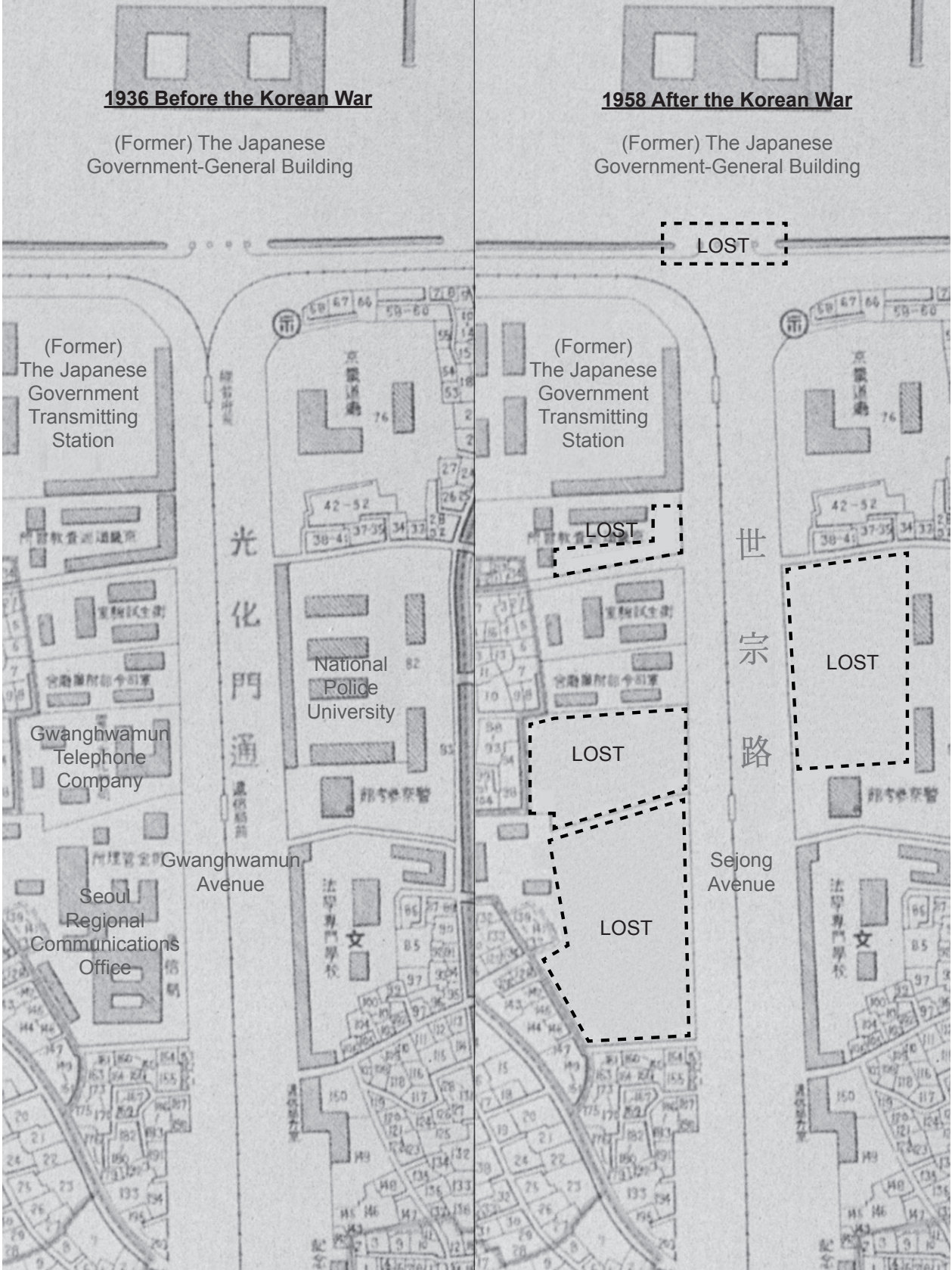
## [Sejong Avenue in Period 1: Initial Government after Korean War(1948-1960)]

Since 1948, after the nation is divided into two parts according to the differences of political ideologies, both North and South Korea had started constructions of new monumental buildings in their capital cities, Pyongyang and Seoul. Both countries had tried to prove the powers of their ideologies through the glittering edifices. North Korea built the major architectures of the city, including Kim Il-Sung University built in 1948 and the Pyongyang station built in 1954. South Korea also had started the redevelopment process of central Seoul including the Sejong Avenue.

However, in this period there was a discrepancy between the aspiration and capacity of the South Korean government. After the truce of 1953, the government had not enough budget to process mega constructions in the aftermath of the war, and the reconstruction of Sejong Avenue was no exception. Therefore, the city designed and implemented the Temporary Building Permit Policy, which allows the private owners of parcels to build temporary buildings with their budgets. According to this policy, the temporary buildings built by individuals can be removed and rebuilt by the government when it attains a sufficient budget. Adaption of this policy had led the construction of micro-scale buildings around the Sejong avenue.

In 1952, the government announced a new urban plan for Seoul which contains the expansion of eighteen major roads in the city, including Sejong Avenue from 53 meters to 100 meters width. Also it has plans for the implementations of nineteen new urban squares, including Gwanghwamun square size of 70,700 square meters at the center of the avenue and Seoul City Hall square size of 20,900 square meters at the south end of the area. The destruction of buildings and wiped out urban areas during the Korean War allowed the government to plan an ample amount of the new public spaces(Son, 2003).

Figure 2-003. Map Contrast of the First Transition, Map Source: Seoul Maps of 600 Years(Opposite)



**1936 Before the Korean War**

(Former) The Japanese  
Government-General Building

**1958 After the Korean War**

(Former) The Japanese  
Government-General Building

(Former)  
The Japanese  
Government  
Transmitting  
Station

(Former)  
The Japanese  
Government  
Transmitting  
Station

National  
Police  
University

Gwanghwamun  
Telephone  
Company

Seoul  
Regional  
Communications  
Office

Gwanghwamun  
Avenue

Sejong  
Avenue

LOST

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## [Sejong Avenue in Period 2: Three Different Military Regimes(1961-1993)]

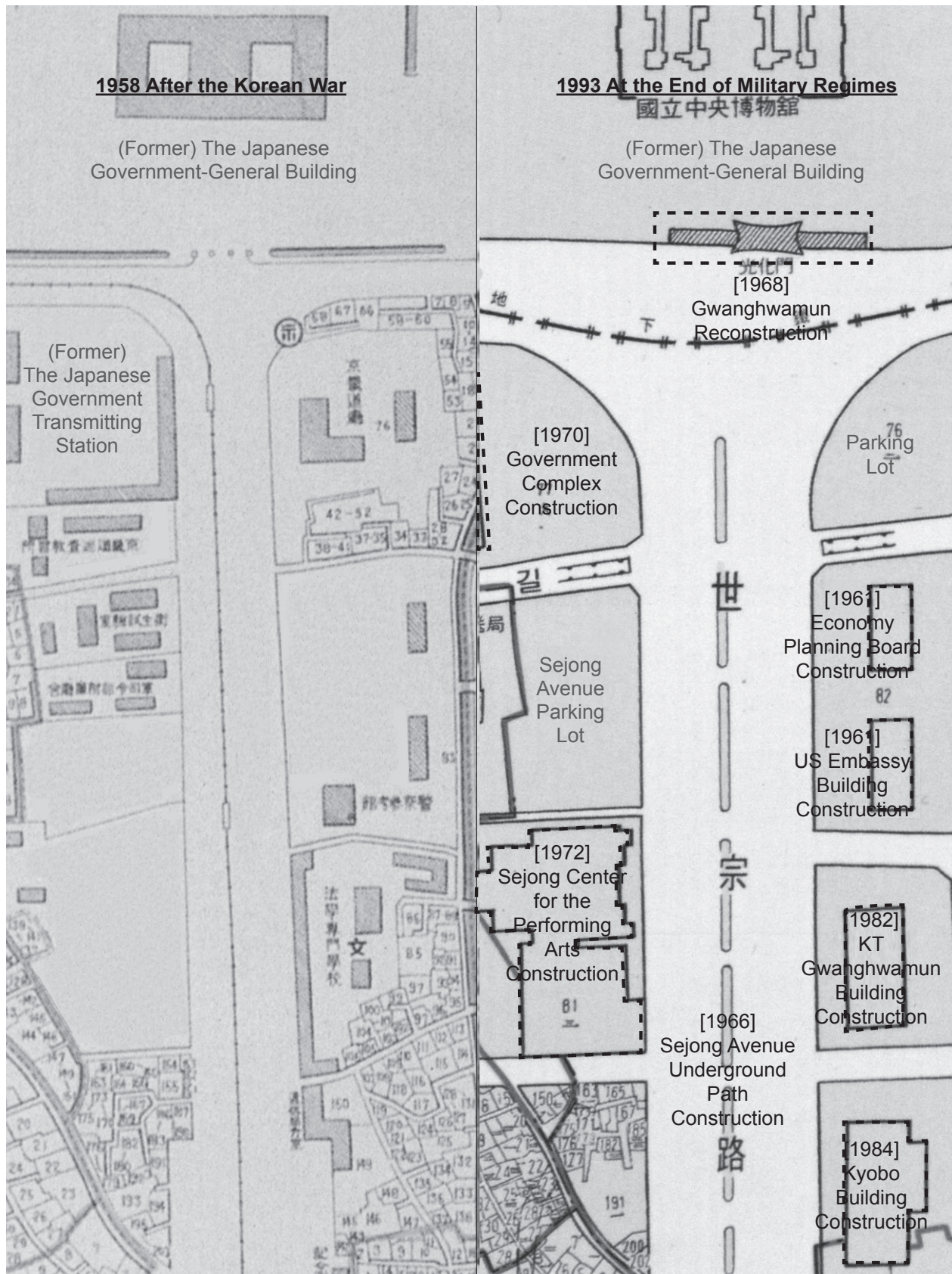
In this period, three different military regimes had the control of the city. The first military regime led by the president Chunghee Park, during 1961 and 1979, the avenue had changed most substantially. This government had brought the great success of economy, and had attained capacity for building monumental architecture. Also the organizational structure of the city office was convenient for the central government to control; mayors of Seoul had been designated by the regime, therefore the president had the high-handed power over the city offices.

Right after Chunghee Park took the control of the nation, he had to justify the regime which is built by the military coup. The new government had to prove the legitimacy of itself to two groups: international inspection groups, mainly the United States, and the national public. As one of the bases for the justification, the government emphasized the rapid growth of the economy that is achieved through coercive control. These political conditions and intentions reflected clearly to the new constructions of the area. In 1961, both the United States Embassy in Korea Building and the Economy Planning Board were built as the first and second high-rise buildings in the area. Taking out a substantial loan from the Philippines government, the regime built these edifices as the frontages of the avenue(Son, 2003).

Other major constructions in the site were built during the middle of the same regime. President Park designated mayor Hyunok Kim who had radical development plans for the city. He dug up the entire avenue and created underground path in 1966. In the following years, the Government Complex and the Sejong Center for the Performing Art were built. The current form of the avenue is mostly outlined based on the physical result of this era.

Figure 2-004. Map Contrast of the Second Transition, Map Source: Seoul Maps of 600 Years(Opposite)





**1958 After the Korean War**

(Former) The Japanese Government-General Building

(Former) The Japanese Government Transmitting Station

**1993 At the End of Military Regimes**

國立中央博物館  
(Former) The Japanese Government-General Building

[1968]  
Gwanghwamun Reconstruction

[1970]  
Government Complex Construction

76  
Parking Lot

Sejong Avenue Parking Lot

[1961]  
Economy Planning Board Construction

[1961]  
US Embassy Building Construction

[1972]  
Sejong Center for the Performing Arts Construction

[1982]  
KT Gwanghwamun Building Construction

[1966]  
Sejong Avenue Underground Path Construction

[1984]  
Kyobo Building Construction

### [Sejong Avenue in Period 3: Independent Seoul mayors who were elected by citizens]

Starting from 1995, the mayors of Seoul have been elected by citizens and empowered as the independent administrative leaders of the city. Therefore, each mayor has tried to establish own political identity during each four years' term. Between 1995 and 2010, there were four full-time mayors of Seoul, and they made four major changes of the form of Sejong Avenue.

In 1996, mayor Soon Jo, who was inaugurated between 1995 and 1998, disassembled the Japanese Government-General Building with the cooperation of the president Kim Young-Sam to present that his political party can reflect the public ideas better than the previous military regimes and to establish the differentiated political authenticity.

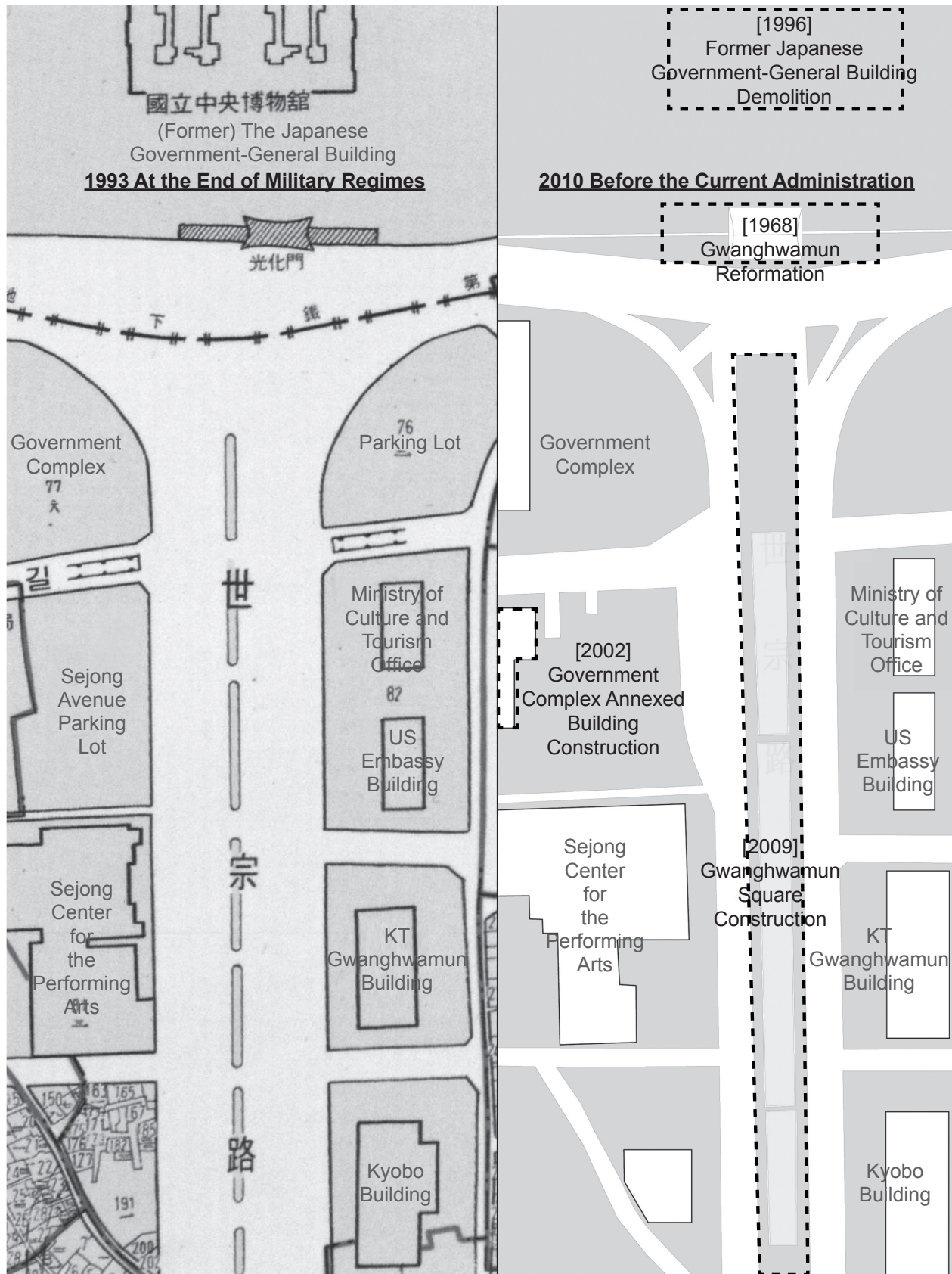
In 2002, mayor Gun Go, who was inaugurated between 1998 and 2002, built Government Complex-Seoul Annexed Building. The design of this building was described by the government that the shape of the architecture symbolizes a public-serving government.

The next mayor Myeongbak Lee, inaugurated between 2002 and 2006, initiated the construction of Seoul Square and the restoration of Cheonggyecheon. These projects presented more sophisticated development plan and provided better quality of public space in and around the avenue than before; the success of these projects contributed substantially to the presidential election of this mayor in the following years.

Mayor Sehoon Oh, inaugurated between 2006 and 2011, built a new public square in the middle of the avenue and tried to prove that his administrative office can provide well-planned public space through a better understanding of new design movements than previous ones.

During this period, not only the mayors of the city, but also the national governments have tried to promote themselves through new monumental projects in the avenue. Constant alterations of Gwanghwamun have been made by the different administrations to distinct themselves from each other(Chung, 2008).

Figure 2-005. Map Contrast of the Third Transition, Map Source: Seoul Maps of 600 Years(Opposite)



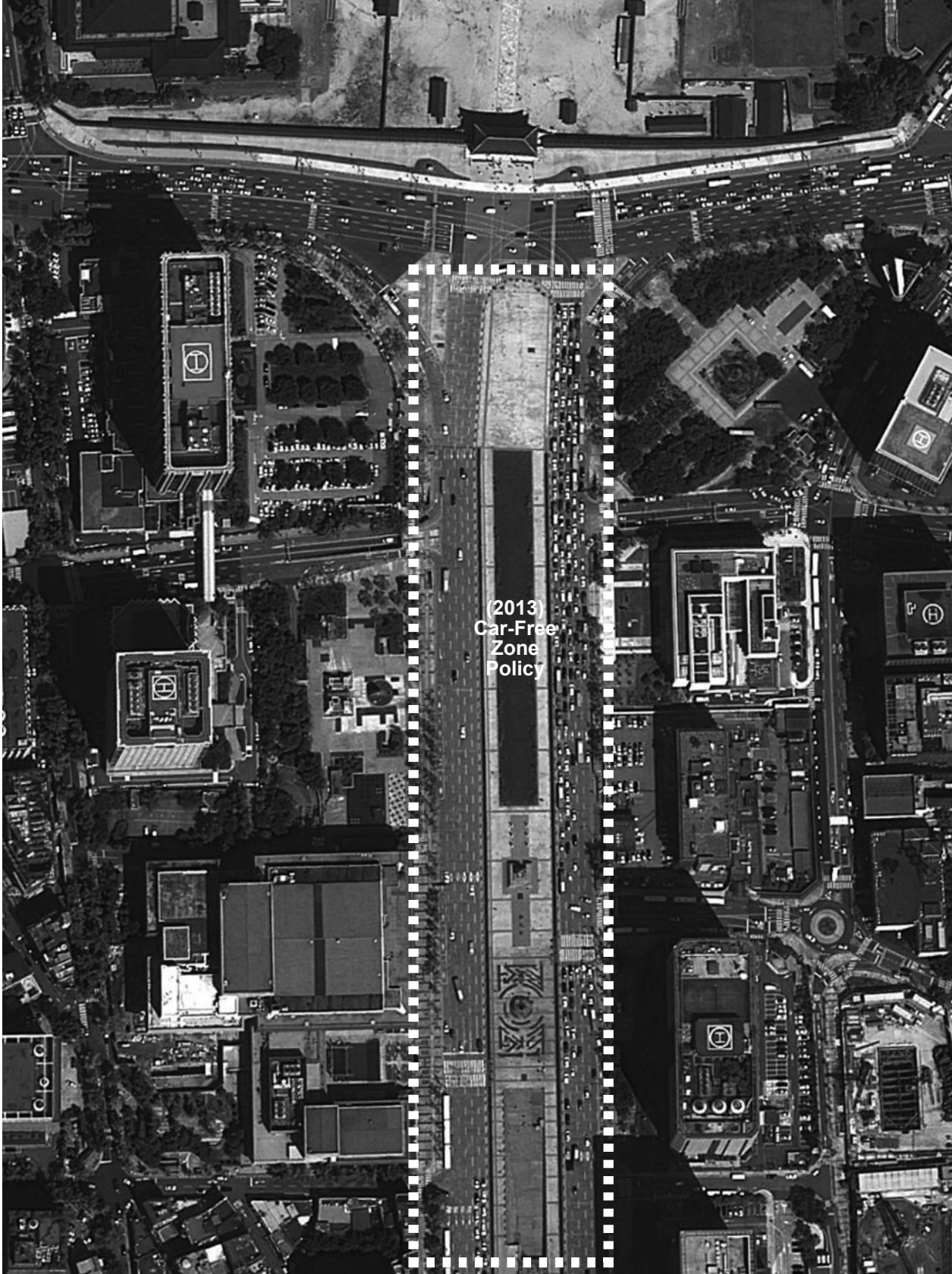
[Sejong Avenue in Period 4: An independent Seoul mayor who does not advocate mega constructions]

This period can be strongly contrasted with the former ones due to the fact that there is no intention of the administration to build, alter or change the edifices in the Avenue. Mayor Wonsoo Park has been tried to suspend and cancel major construction projects in the city. In the case of Sejong Avenue, no physical change has been made or announced by the government during this period.

However, an alternative approach of the avenue has been in progress. Starting from March 2013, once in every month, the city blocks cars from entering the Sejong Avenue and use the ten car lanes as a part of a pedestrian zone. Subsequent to this policy, the city office announced that it will be adapted more frequently than now. This new change also interlocks well with the mayor's new policy, Pedestrian Friendly City Seoul Vision, which tries to encourage pedestrian culture in the urban spaces of Seoul(Ra, 2013).

**Even though the physical structures in the avenue has not been changed, the area has been experiencing another type of radical change.**

Figure 2-006. Current Status of Sejong Avenue, Satellite Image Source: Google Earth(Opposite)



(2013)  
Car-Free  
Zone  
Policy

## B-002) Rise of Democratic Desire and Advancement of Digital Information Technologies

### [Rise of Democratic Desire]

Throughout the history of Republic of Korea, the nation has been developing the democratic status of the country in a slow phase. Almost half of the history of the country was occupied by the military regimes. However, the situation has been gradually changed; the nature of the government is getting radically decentralized and civic-oriented. The nonphysical infrastructures of the city has been transforming rapidly. Since the Korean War was ended in 1950s, this point can be considered as one of the most critical evolving points of the political status of the nation. Civic ideas are being reflected more than ever before due to the association of developed social infrastructures and generations with democratic aspirations.

### [Advancement of Digital Information Technologies]

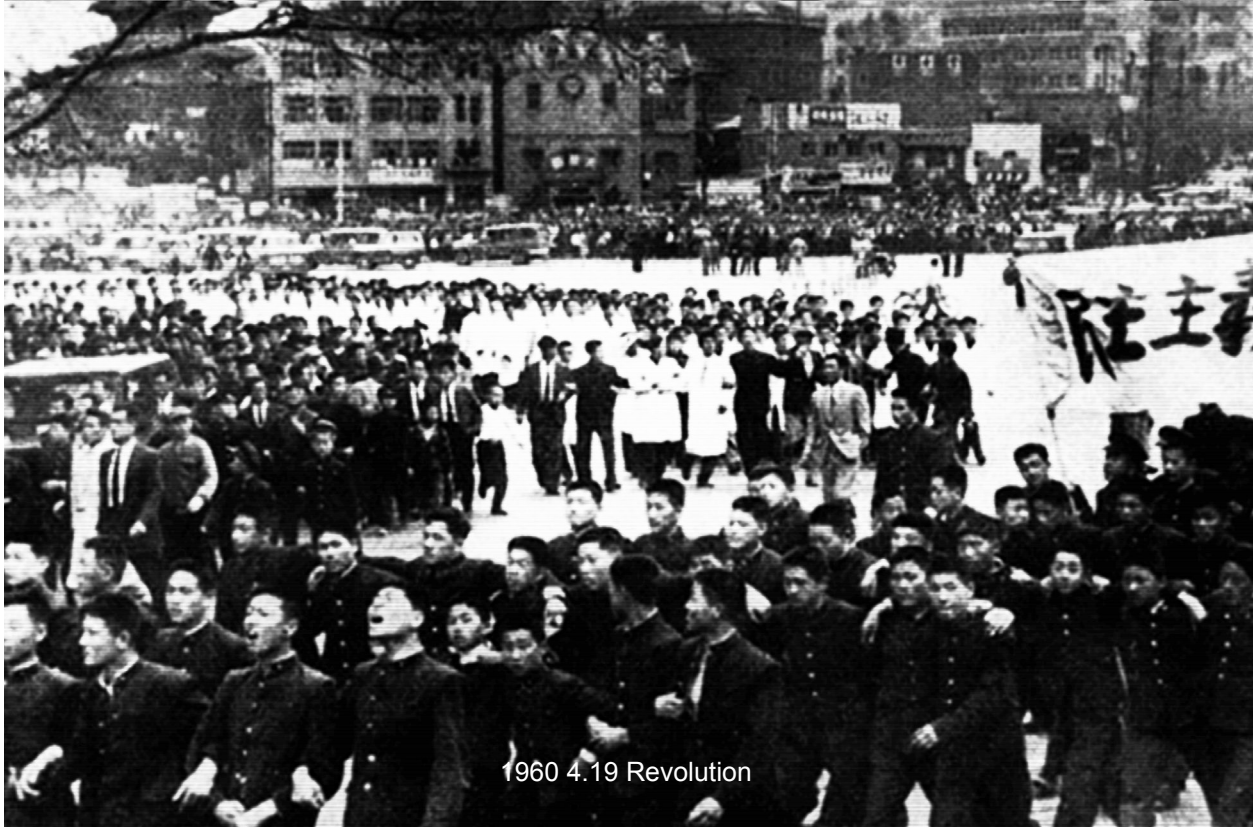
The advent of new social technologies, including Twitter, Facebook and smartphone broadcasting systems, already substantially contributed to the election of the new mayor in 2011: strong public attention was drawn to the micro digital messages, which called tweets, of candidates on Twitter, and citizens encouraged each other to vote by using their Facebook pages. An unofficial broadcasting program based on a smartphone system also did a significant role in the election. Besides, the new administration announced 'the Twitter administrative procedure' as one of their new policies in order to interact with the citizens of Seoul through easily accessible Twitter pages, and this approach has gained substantial supports from the public.

As the manifestation and promotion of these political and technological movements, the Sejong Avenue should be reconceptualized. Even though the avenue has been harnessed by the regimes as the place for their representations of the political ideologies, this area also has been operated by the public for the demonstrations of their civic ideas. Reflecting the liberal movements in the city, the avenue can be replanned as a new civic monument.

Figure 2-007. Contrastive Usages of Avenue, Source: Minjo Jeon(Opposite Above) Dongailbo(Below)



1980s During a Military Regime Period



1960 4.19 Revolution

## 2-003) Demand of New Plan

### [Demand of New Plan for US Embassy Office]

The U.S. embassy office, which is one of the major buildings in the Sejong Avenue, is planned to be relocated in following years. This architecture has been occupying the symbolic location right next to the Royal Palace since 1961. This is one of the tallest buildings in the avenue which makes itself as the focal point of the area. Given its significant location and form, a new plan for this building is a highly sensitive issue for the nation. While the government has not yet announced any future plan for this site publicly, this thesis aims to suggest the new plan for this site.





## [Demand of New Monument]

In coordination with the political transition towards the democratic status, the avenue has been gradually transforming since the 1950s. The form of Sejong Avenue has been changing to afford more public functions than before, which presents the growing attention to civic needs. The planning method of this thesis tries to continue, highlight and expand these civic-oriented changes, and create a new civic-monument to reach a pinnacle.

Figure 2-008. Current Presence of US Embassy Office, Source: Donguk Agos Lee(24-25)



Figure 2-009. Public Gathering for Greeting US President Lyndon B. Johnson, Source: Seoul Museum of History(26-27)





### **3. Conceptual Structure of New Monument: IVAAIU Instrument**

#### 3-001) Need of Urban System for Big Data

One of the most dramatic changes in modern cities is the increment of data which has been brought by the advent of a digital information technology. This significant volumetric change of data gives discretion to individual citizens to recognize their living environments more accurately than before. Not only the size but also the accessibility of data has been altered substantially. This new data trend tends to be more open to public than before. Compared to exclusive information societies in former ages, the current system has been developing an open system that can be easily accessed by public. By referring to the provided information, each person can make a smart decision. Most of the parts in living conditions such as politics, economics, nature and culture, now turn into domains that could be judged and controlled by public with the support of accessible massive information.

Politics is a sector which interacts sensitively to this new trend of big data. President Barack Obama's 2012 US presidential election is appraised as the success of exploiting big data. Obama's data science campaign team has approximately ten times the size of the Mitt Romney's unit; the team chose online social media and smartphone systems as methods for public campaigns. Also by using their big digital database of the previous election, they were able to perform a target-specified campaign (Issenberg, 2013). In case of Seoul, the recent campaign of the mayor Wonsoo Park was also highly depended on social media systems and digital data, and made a successful election.

To achieve the association between politics and digital information technologies, proper spatial platforms should be planned in urban areas. This type of infrastructure can act as a physical interface for the distribution of the political and social ideas of public through digital data system; the spatial structures can be engaged to the political and social problems of the city by using the advanced technologies with the participations of the members of society, including emerging artists, independent programmers, designers, non-governmental social organizations and individuals.

Nevertheless, the current infrastructures in cities have not been fully developed to control the increased size and complexity of digital information. Besides the developments and implementations of related technologies have been mostly made by private corporations and academic researchers without sufficient collaboration. The problem in this situation is that these organizations cannot build infrastructures in a comprehensive way with sole capacity. A new type of infrastructure needs to be developed by various participants of a city.

### 3-002) New Type of Digital Infrastructure

Before the age of digital information technologies, the government made investments mainly in transportation, water, and electrical infrastructures which manage the physical elements of a city. However, the recent investments have been also made in an infrastructure that controls non-physical material, digital data. The value of this type of data has been increased substantially, and now can be compared to the values of other principal living elements that need to be controlled systemically.

Referring to one of the researchers of a digital system, the data infrastructure is the form of a hardware or software that can integrate a data source, storage and network (E-Infrastructure Reflection Group, 2012). This definition clearly depicts the function of this type of an infrastructure. However, at the same time, it does not contain the meaning of itself in physical urban environments.

Recently, a significant number of cases present possibilities that a digital system can be exposed to public spaces and interact with citizens. By adapting advanced technologies, such as street level sensors, interactive interfaces and digital controllers, ample amount of data in urban conditions can now be used as a source for interaction with citizens. For instance, at the case of Cloud project, which is designed by SsD Architecture, light and sound of the structure interacts with the movement of visitors by using a real-time responsive interface and creates a dynamic urban environment (Ssd Architecture, 2012). Recent experimental projects have the digital system actively merged into the physical context of a city, and this movement implies that an urban data infrastructure has a strong potential to accommodate public within itself.

The initial setup is important. **A new type of a digital infrastructure in cities can be defined as a system that can interact with both physical and virtual elements in urbanism.**

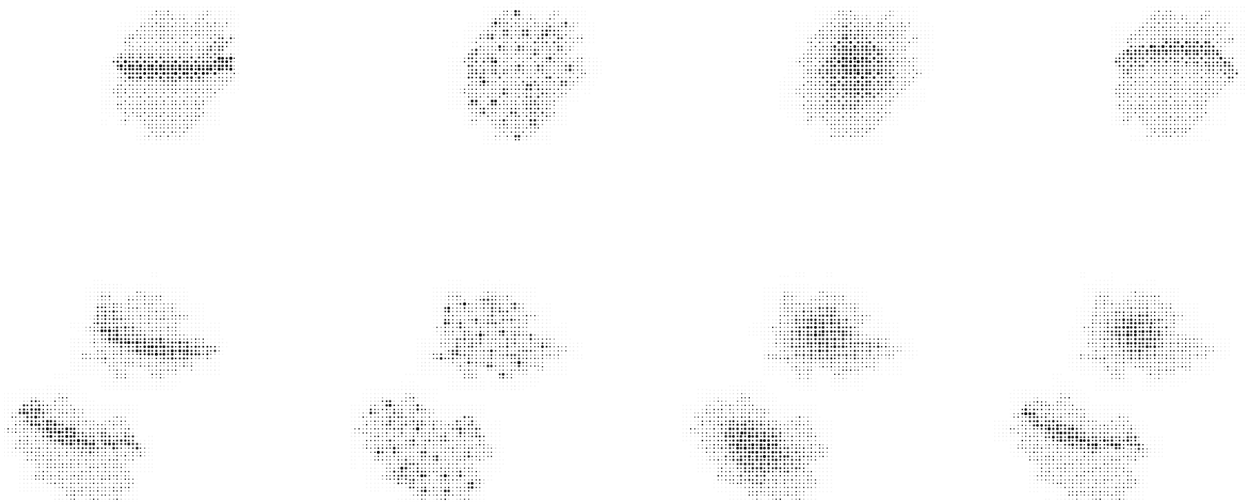


Figure 3-001. Interactive Clouds, Source: SsD Architecutre

### 3-003) Urban Instrument for Problem Solving

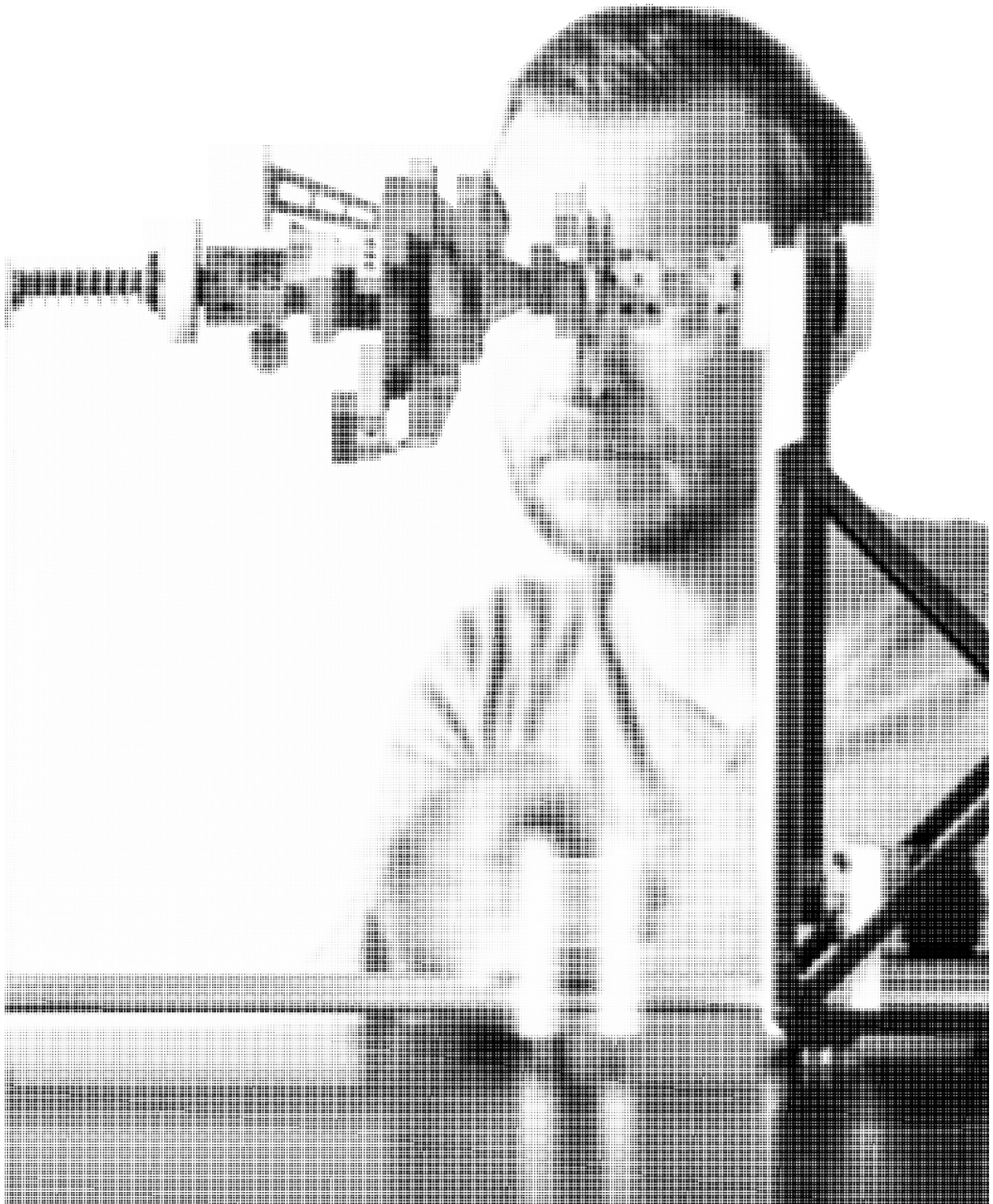
**Instrument is a device to solve a complex problem with a systemic approach. In various fields of science, technology, music and others, instruments have been devised for specific tasks with algorithms for measuring, analyzing and solving problems.**

This concept of instrument has been expanded widely by the adaptation of digital technologies. On the strength of advanced data gathering, analyzing and distributing of digital system, complex living environments in a city can be transformed into the form of a big data structure. Urban conditions can now be analyzed as multiple variables and complex equations, and instruments can be devised to solve them using a digital data system. Transportation, electricity, culture and other resources of urban space is now partially available to be controlled by digital instruments; these instruments have been gradually taking over urban environments, and give discretion to an individual to control each environment smartly.

However, it is important to acknowledge that these new developments have been happened sporadically with the absence of a master plan. An integration process is essential to control and utilize the burst of digital instruments, and an urban planning is a field that should unify these instruments within a systematic order.

Figure 3-002. Instrument for the Sonification of Everyday Things, Source: Creative Applications(Opposite)





3-004) Continuous Instrument: IVAAIU Urban Instrument

For the unification process of divergent media into urban planning, the concept of continuity is essential. Problems in a city are associated with disparate scales of physical environments, and each medium can be utilized specifically for solving an issue in particular scale. To encompass intricate urban problems into a planning process, a linkage between an issue, scale and medium should be developed.

For the first step, an urban planning field needs to unify problems in city environment strategically in levels of city, district and neighborhood. Each urban area has a goal that is genetically assigned. A planner should derive this objective and unify other issues. For example, in this thesis, the Sejong Avenue has genetic functions to represent political ideas of nation while it also has to function as a transportation hub, an administrative district and a tourist attraction. Urban planners should articulate and unify designated issues and create a comprehensive plan based on those.



The next step is the unification of scales. Issues in a city are related to diverse scales, and it is necessary to develop a continuous scale guideline to solve them. The conceptual structure of this guideline can be found in the Asada's Scale, which was initiated by Takashi Asada in the Metabolist Movement. Through this scale chart, he visualized the continuity of scale from atom to nebulae in relation to human, which is much wider than the urban planner should consider (Mori Art Museum, 2012). However, the visual structure is still partly valid for understanding the concept. In addition to this, Ray and Charles Eames also visualized this concept using the digital image technology at the Power of Ten project (Eames, 1977). These both approaches present that the different scale can be associated with disparate urban issues, and planners should have an understanding of diverse dimensions in urban environment.

To deal with diverse urbanism issues within continuous scale in an urban environment, integration of multiple media is needed. In this project, usable media are divided into six categories, [IDEA – VISUAL – AUDITORY – ARCHITECTURE – INFRASTRUCTURE – URBANISM].

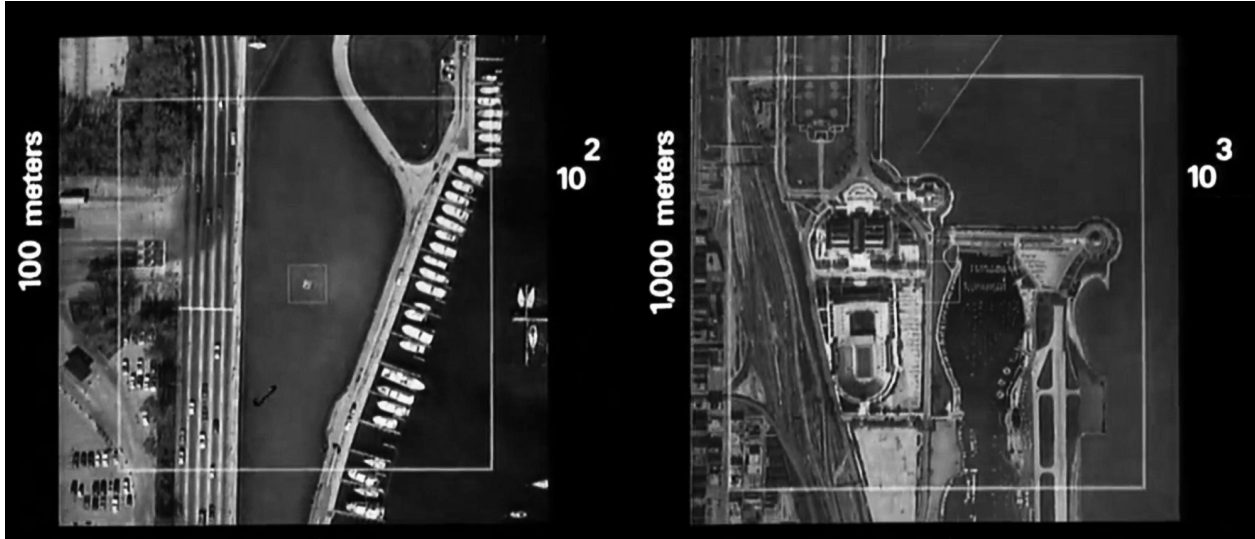


Figure 3-003. Power of Ten Project, Source: Ray and Charles Eames(34-35)

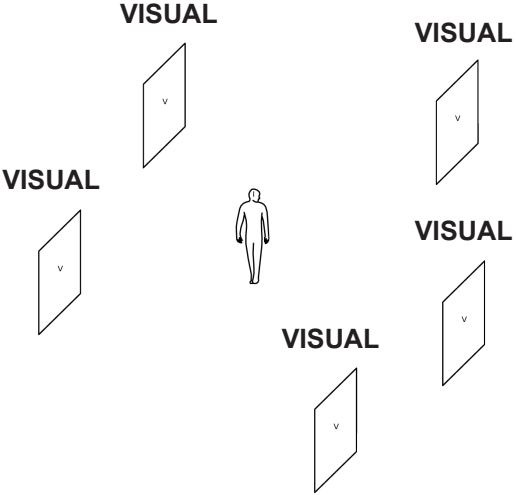
### Conceptual Categorization of Each Media

[Idea] is a medium for the reflection of an individual idea. Each personnel can express an idea through text, voice and movement, and it can be delivered in a digital data form; digital technologies, including a social network, mobile and web system, help this idea to be collected efficiently. And urban planners should use this medium as their reference of a planning process. The gathered digital data can be processed through an algorithm for the achievement of an optimal urban master plan.

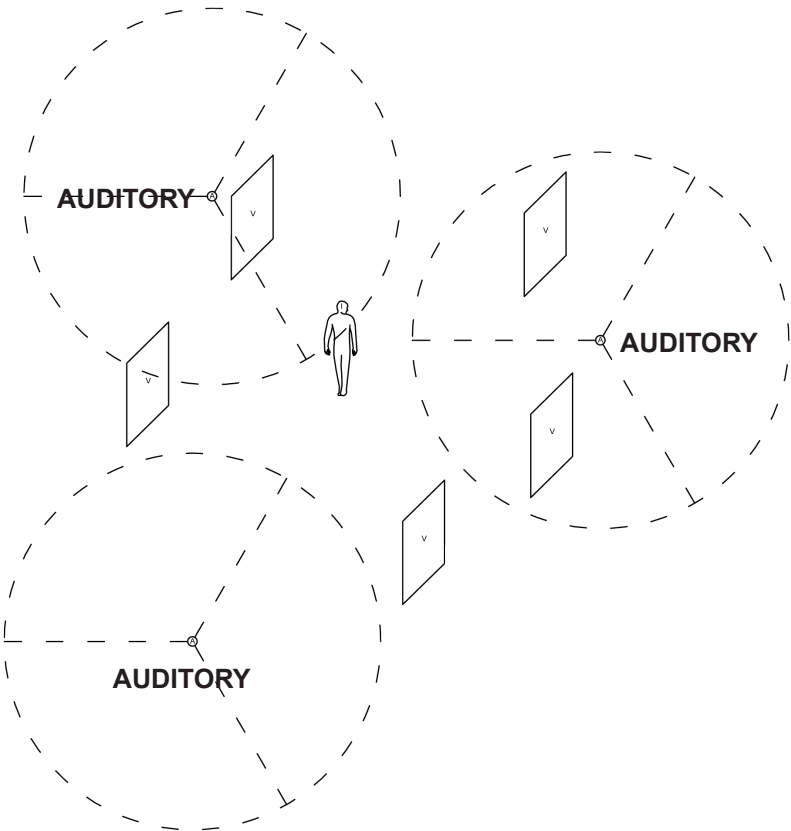


Figure 3-004. Illustration of Each Medium (Page 36-41)

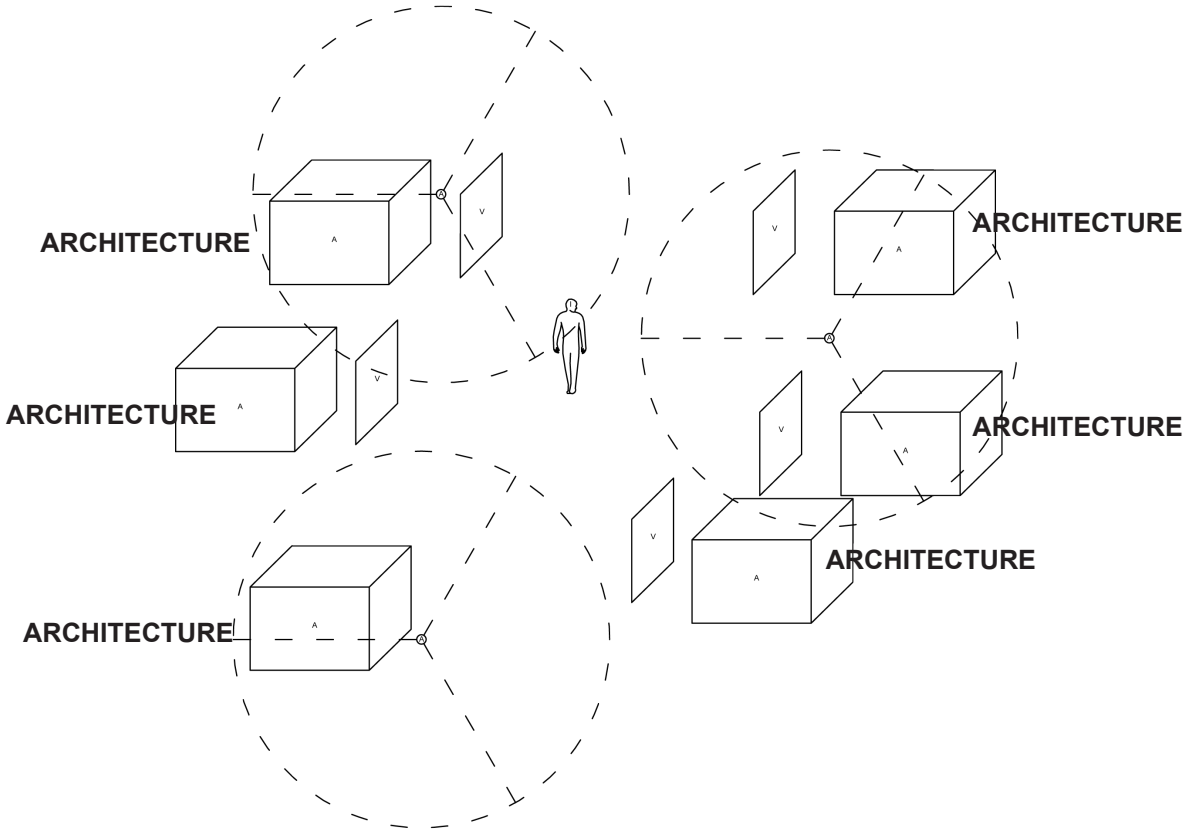
[Visual] medium can cover surfaces of a city to express ideas of people. From a micro-scale screen to a building facade, applications can be realized in diverse levels. This medium can communicate with public through a convenient way, the visual organ. Even in complex urban environments, visual elements can deliver messages to public effectively. Recent technologies emancipated the form of this media from a simple plane to various shapes, transparent levels and sizes.



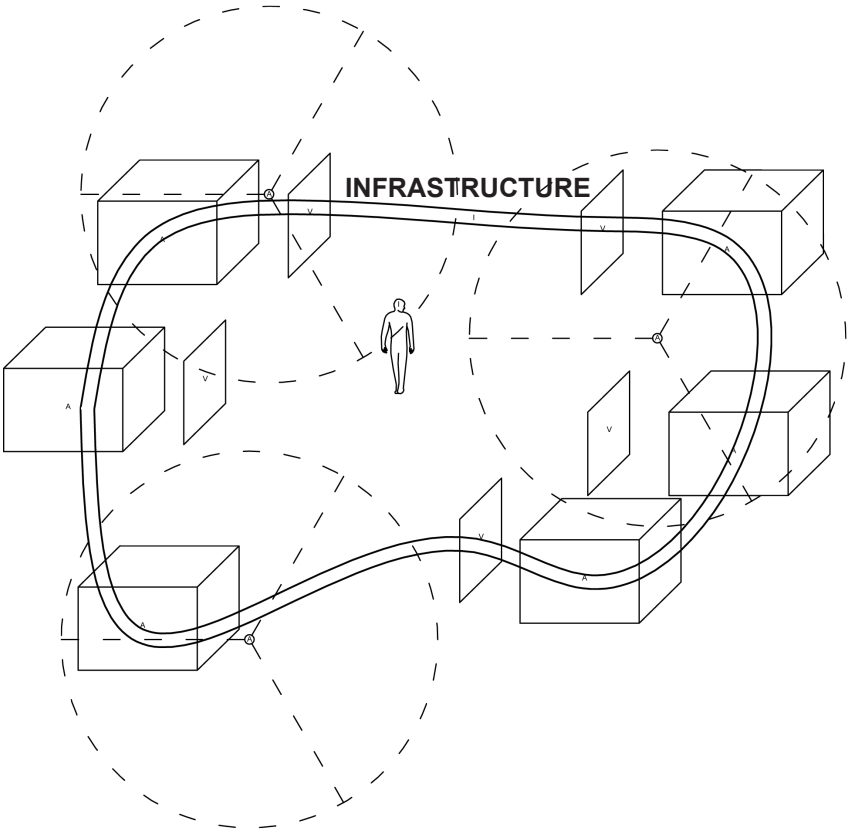
[Auditory] medium can infill different dimensions of an urban environment other than visual surfaces. The coverage of this medium highly depends on the performance of a device. According to the capacity of a sound generator, it can cover from a square meter to multiple square kilometers. Also the generator, which transmits a signal, can be located freely. In a planning process, auditory media can be applied by implementing public sound systems with geographic engagement or by creating a broadcasting program without geographic engagement.



[Architecture] is a semipermanent medium which occupies a single or multiple parcels in a city. Compared to three previous media, this medium can be more engaged to lands and users with longer perspective. The components of architecture is relatively not flexible and mobile, but can accommodate the functions those should be kept constantly. Planners should synthesize temporary and permanent media strategically to compose a sustainable urban environment.

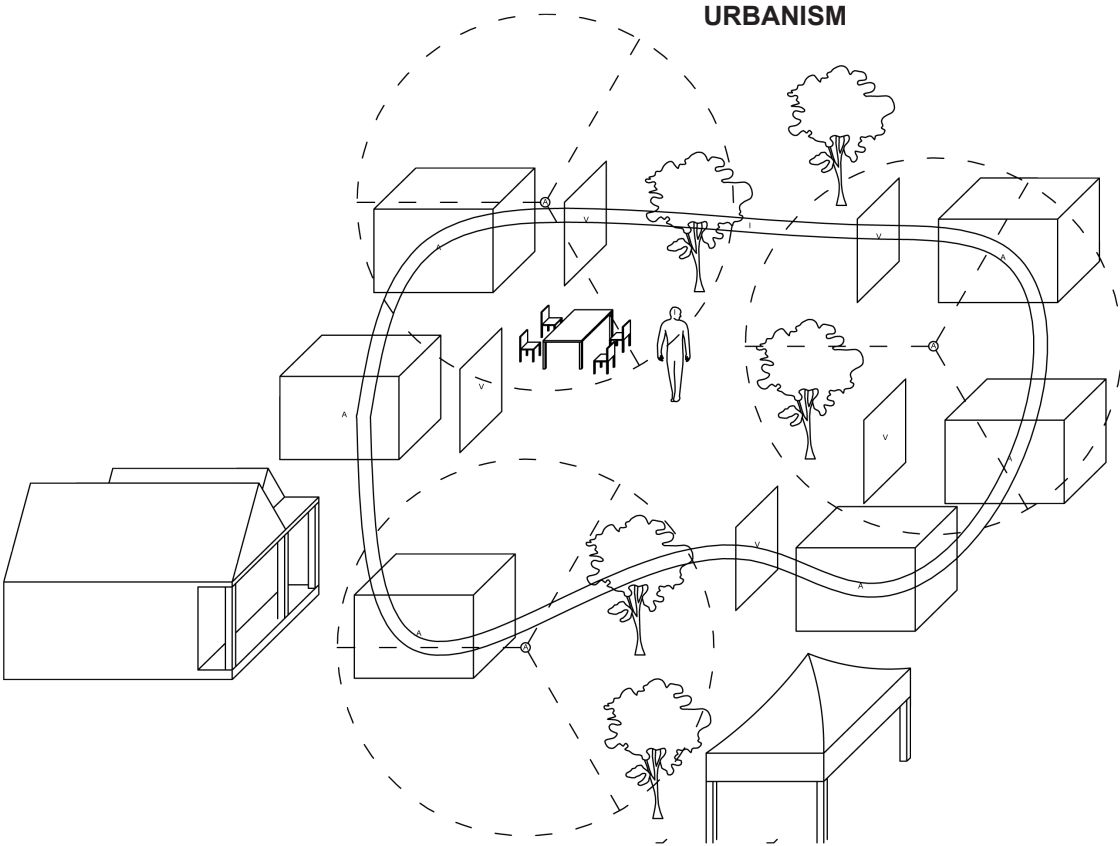


[Infrastructure] is a medium that supply, link and distribute principal elements, including energy, waste, water, mobility and **data, which is an [idea]**. Planners should create a system algorithm that can effectively manage these values in an urban environment.

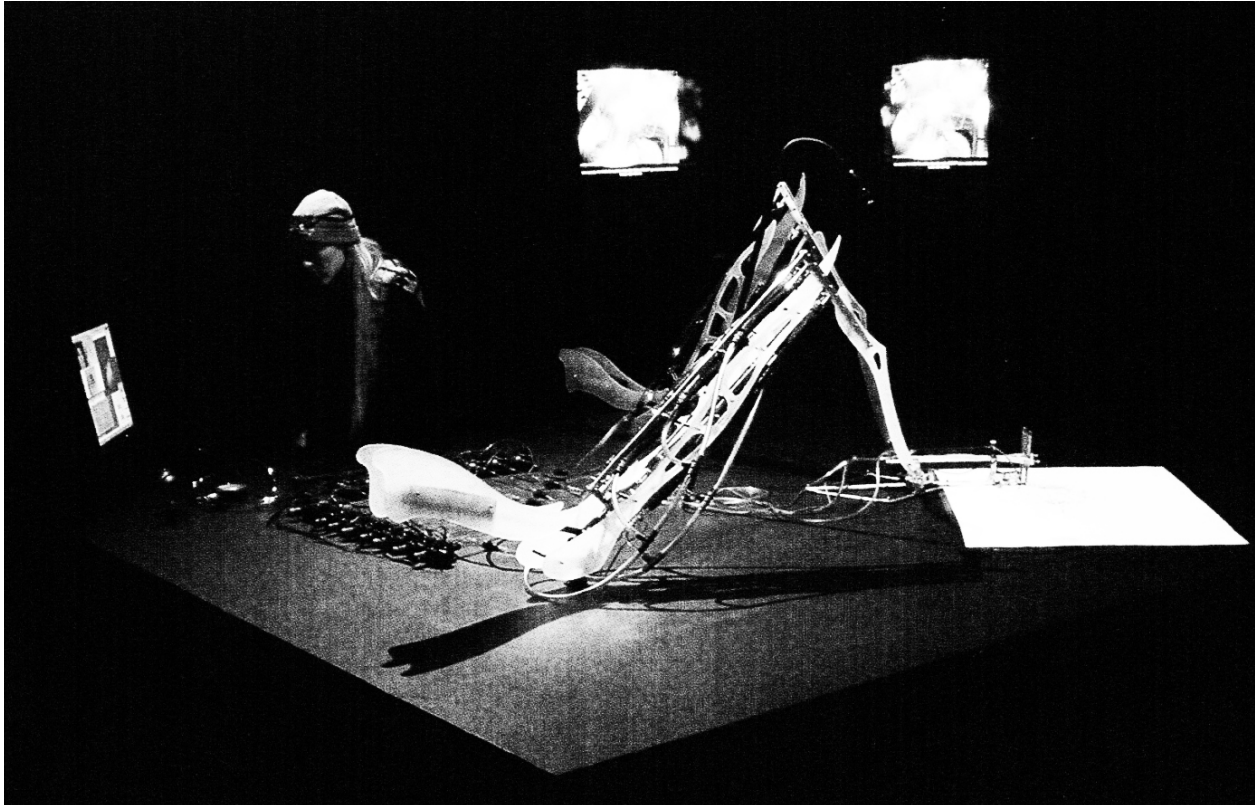




[Urbanism] is a medium that integrates the previous five different media. The final goal of this medium is to provide a sustainable urban environment to citizens. Sustainability can be achieved by balancing three major values: environment, economy and equity(Lee, 2012). Based on the comprehensive understanding of demographics, planners should create an urbansim system that can achieve the sustainability.



Based on the conceptual categorization of available media in urban planning, this thesis proposes an **[IVAAIU Urban Instrument]** which aims to unify disparate media into an integrated system. For this integration process, rather than combining all instruments into one at once, the gradual combination process is adapted. Following ten categories of instruments depict possible combinations of different types of cross-media which can embrace complex urban issues. In the project Made in Tokyo, this Japanese city with an intricate structure is analyzed with the method of cross-categorization. To understand the existing structures, the team made a conceptual tool that is created by the hybridisation of architecture, civil engineering, urban planning, with advertising, farming and such diverse programs. Even though this method is different from the IVAAIU system, both approaches try to understand and interact with complex urban issues using a cross-bred approach(Kaijima, Kuroda & Tsukamoto, 2001).

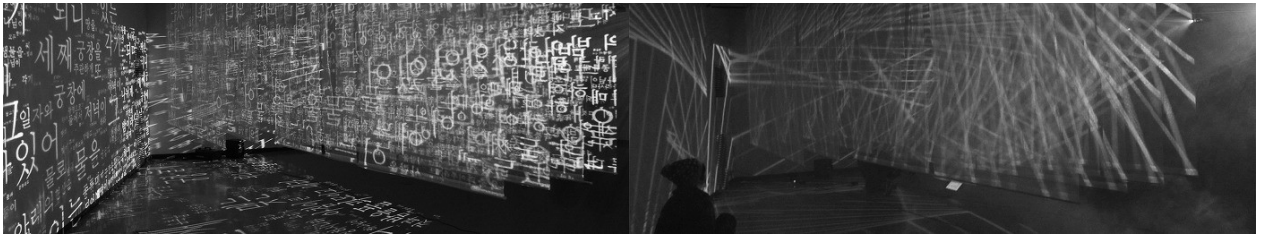
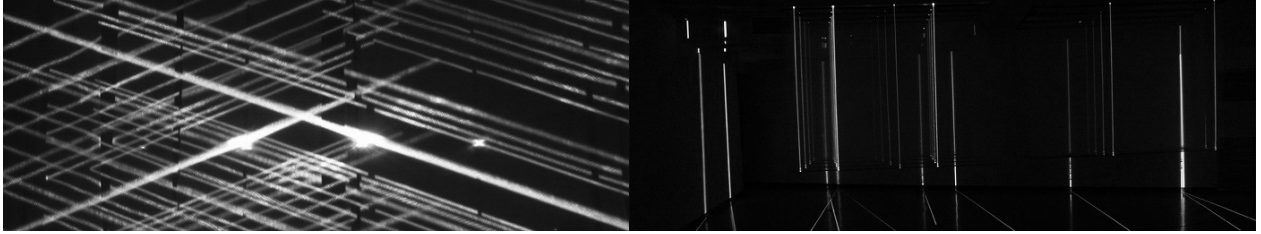
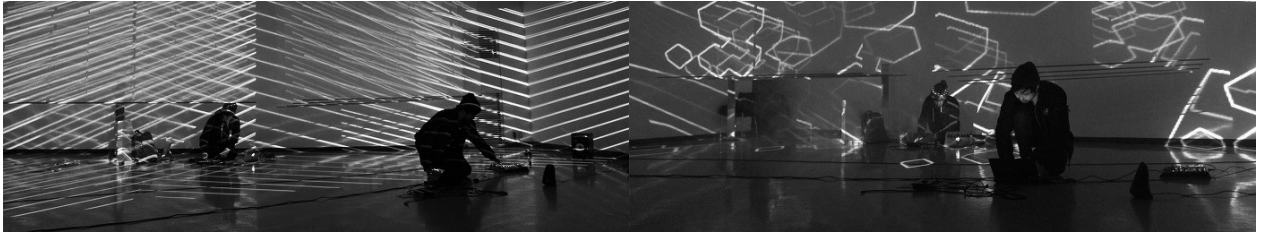


### [Idea-Visual Instrument]

This instrument can express an idea in a digital data form through a visual medium. With the support of an image processing program both demonstrators and viewers can communicate their ideas easily and effectively. A substantial amount of visual equipments has been pervading urban environments already. However, these devices have been mainly used by the government and corporations only for their promotions. The aim of this instrument is to link the social and political ideas of public and visual devices; therefore, it can overcome the insufficient chance of the civic representations.

Advanced technologies in interactive media have brought numbers of successful cases of Idea-Visual Instrument. The real-time visual projection of the ideas of users is already adapted in several systems, and experimental approaches also have been tested. At the case of the Semi Living Artist, devised by SymbioticA, Dr Steve Potter Lab, Georgia Tech University and MEART, the instrument interacts with a rat rather than a human; this interactive drawing machine reflects electrical impulses from the living neurons and draws graphics interactively(Wilson, 2010). Including this case, experimental projects have been exploring the new dimension of an interaction between an idea and visual element.

Figure 3-005. Semi Living Artist, Source: SymbioticA(Opposite)



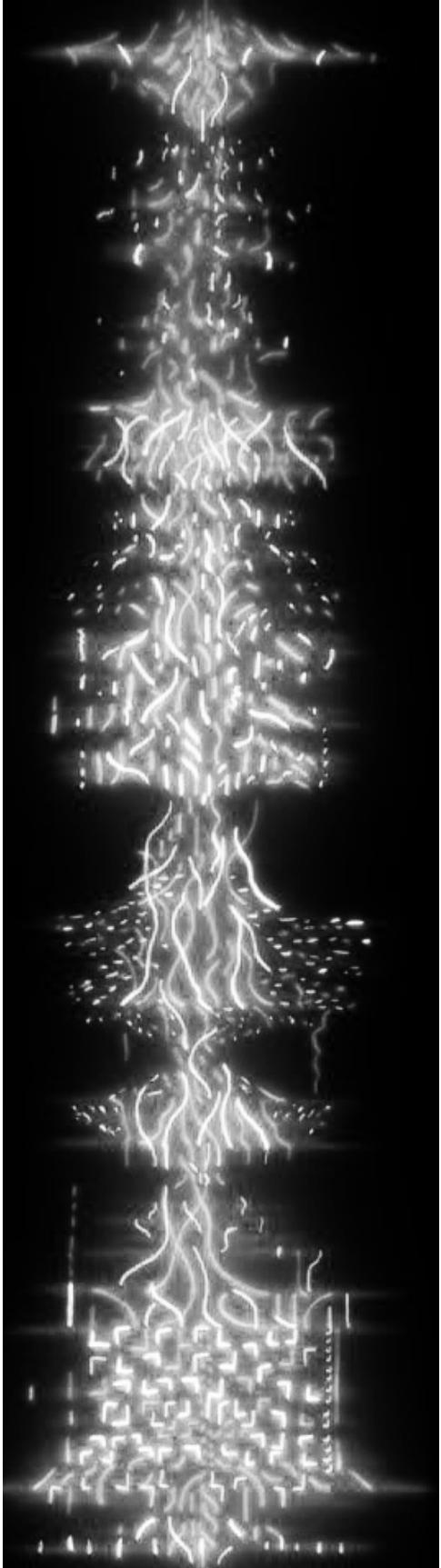
### [Idea-Visual-Auditory instrument]

This instrument utilizes both visual and auditory media in the design of urban spaces to express civic ideas. According to a context, using both media can be more effective than using a single medium. When visual and auditory components are synthesized, synergy effect can be achieved. This combination has been developed at various departments, including music.

A visual-audio performance is one of the cases which can present the potentials of this instrument. At the performances called Imposition, the electronica musician Edisonnoside and the visual artist Daniel Schwarz collaborated to show the interactive visual-audio scape. Reacting to sound, column shaped screens perform visual results that are created by a digital interface(Node13, 2013). At the other visual-audio performance by the electronica musicians Tschaan and Donguk Agos Lee and the media artist Sangchul Nam, the transparent structure was implanted to multiply the visual results of the performance(Nam, 2013). These cases explored how this type of instrument can be implanted and spatially interact within public space. Not only a music department, but also various disciplines have been testing this type of crossover media.

However, an important point should be made that this instrument should interact and reflect social and political ideas of citizens. This effective emerging instrument can be a perfect conductor for civic demonstrations if a digital interface between three media is properly planned.

Figure 3-006. Visual-Audio Performance, Source: Sangchul Nam(Opposite)



/intro

/city sounds

/voices

/city music

/imagining the city

/soaring

/dances

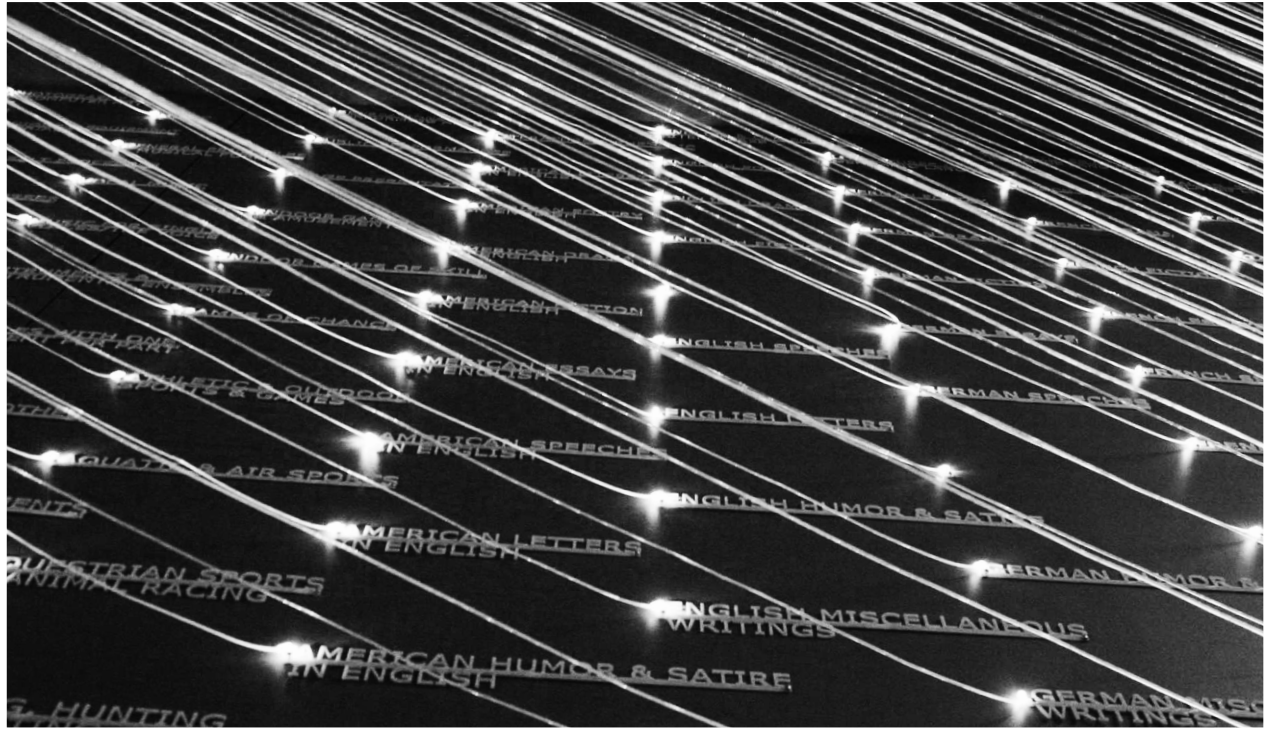
/coda

### [Idea-Auditory instrument]

This instrument can react to the ideas of public by using a sound wave. It can generate louder or softer sound, a signal or a broadcasting program. Due to the fact that a sound wave cannot be evident on visual plans, it can be easily neglected in urban planning process; however, the impact of sound in a living system is substantial, and this instrument should be properly devised.

One of the frontier projects that realized this instrument is A Toronto Symphony: Concerto for Compose and City, which was initiated by Tod Machover and the city of Toronto. In this project, the instrument is designed to integrate sound that is recorded by public and to compose it as a symphony using a digital algorithm. In terms of generating a sound system with the participation of public, this project draws significant meaning(Machover, 2013). Further developments of this type of instruments should be made to create an urban acoustic environment that can interact with social and political ideas of citizens.

Figure 3-007. Toronto Symphony: Concerto for Compose and City, Source: City of Toronto(Opposite)



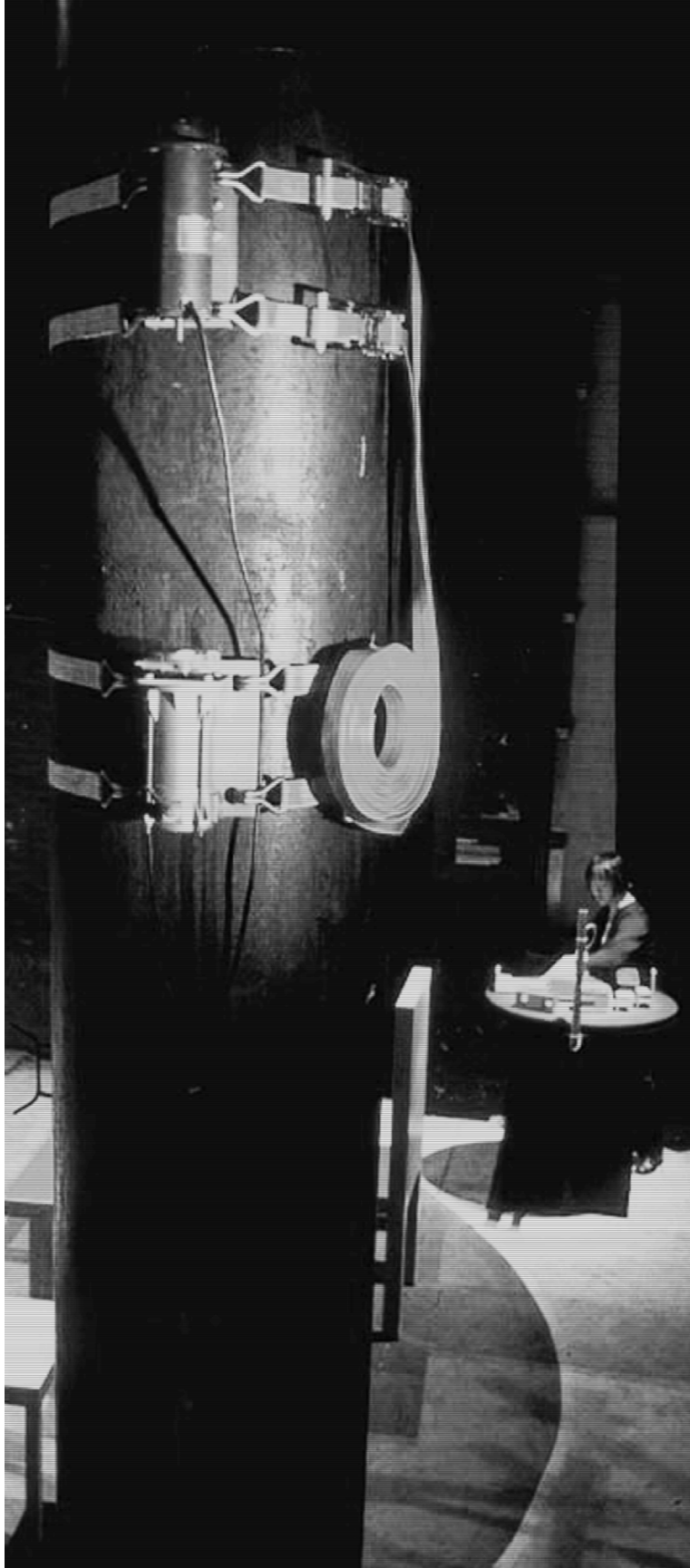


### [Idea-Visual-Architecture instrument]

The purpose of this instrument is to facilitate architecture for reflecting the ideas of public through a visual medium. A building façade is one of the major architectural components for this application. In urban areas, this element dominantly occupies surfaces which are visible from the eye level of pedestrians. The visualization of civic ideas can be proceed effectively using this advantages of position and amount.

At the project Filament Mind, which is designed by E/B Office, the instrument is devised to reflect the ideas of visitors in both visual and spatial way. The collective questions and thoughts of visitors are gathered at a database, and a digital interface creates light which is projected on a spatial structure. This system forms the interior of the library with the visual medium that is consisted of multiple illuminators(Furuto, 2013). Combining diverse visual media and a series of architectural elements can generate various effective instruments for reflecting public ideas.

Figure 3-008. Filament Mind, Source: E/B Office(Opposite)



### [Idea-Auditory-Architecture instrument]

This instrument is the integration of three disparate media: idea, audio and architecture. It aims to create an architectural space that can reflect the idea of public interactively using sound wave as a medium. The sonic waves can be assigned to the physical structure of an architecture with various methods. At the case of Resonant Architectures Project, designer Mark Bein tried to implant a digital processor that can ring or oscillate the physical structure with vibro acoustic energy. With this system, the structure of architecture can turn into an auditory instrument which can make sound interactively(Bain, 1999). Not only for creating the vibration but the architecture can also be turned into a platform for providing various forms of sound, including noise, music, and broadcasting program, in response to civic ideas.

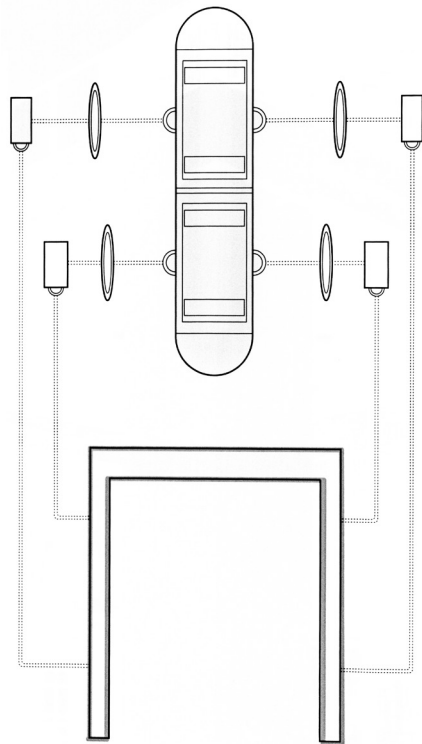
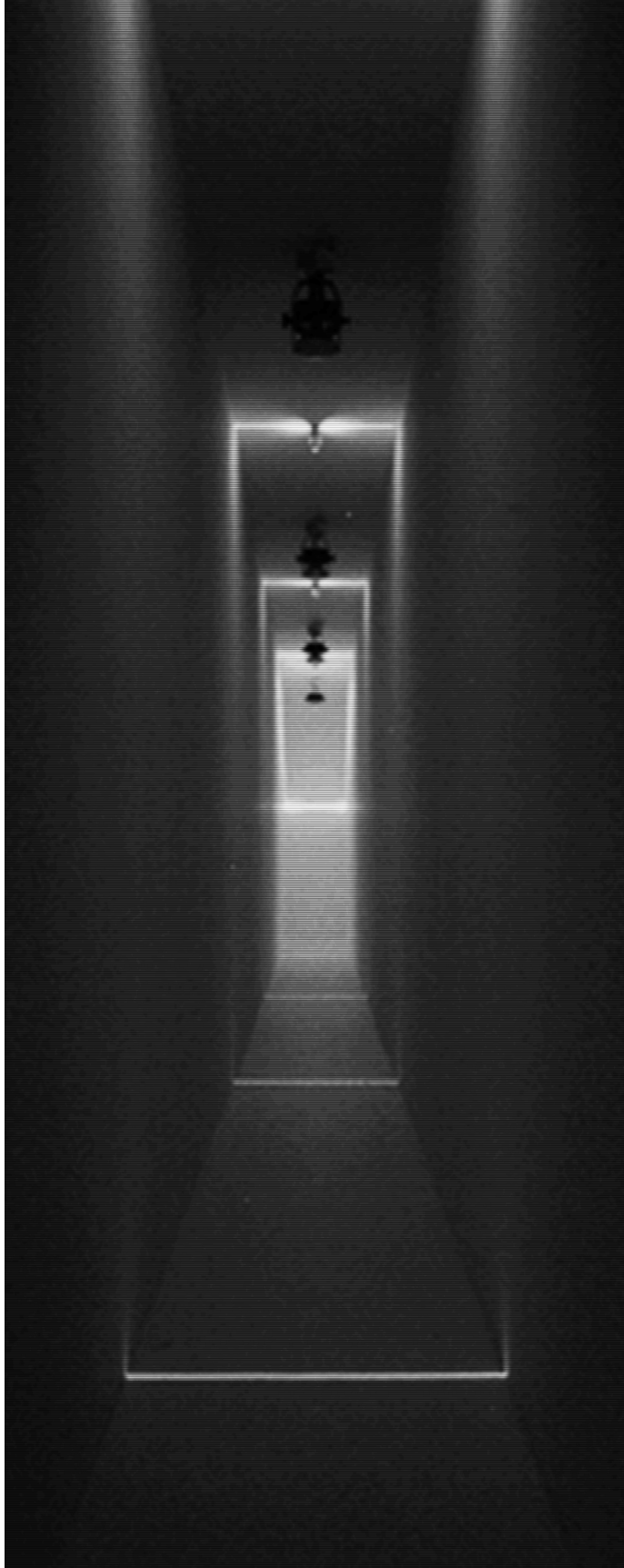


Figure 3-009. Resonant Architectures Project, Source: Mark Bein(Opposite, Above)



[Idea-Visual-Auditory-Architecture instrument]

This instrument is for devising an architecture as the integration of multiple media that can interact with civic ideas. According to the thoughts and movements of users, IVAA instrument can provide a continuously interacting spatial experience to visitors. At the project Spectra II, Ryoji Ikeda created a linear corridor which is consisted of five strobe lights and five speakers that are linked to a digital interface. If visitors enter the space, these ten devices interact to the movement of the people and create a responsive environment(Ikeda, 2001). Interiors and exteriors of buildings have been experimented for the adaptation of this type of instrument.

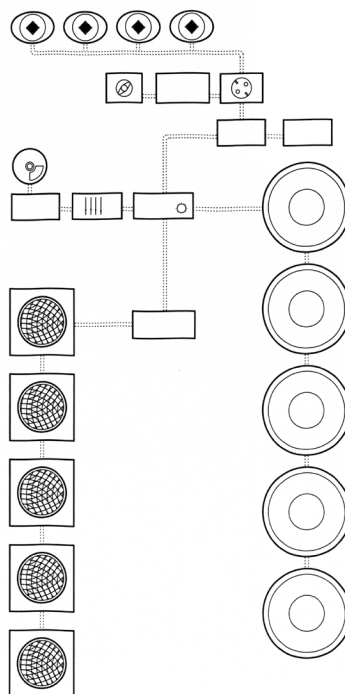


Figure 3-010. Spectra II, Source: Ryoji Ikeda (Opposite, Above)



[Idea-Infrastructure instrument]

This instrument aims to create an infrastructure which can be responsive to needs of public. It can improve a system in terms of using elements effeciently and creating urban enviroments livable. The recent adaptation of smart grid systems in electricity are exploring new possibilities of this type. In this system, people can check their usage of electricity in real-time and the infra-structure can control energy production flow reflecting individual demand and consumption. Other resources can also be managed by this instrument; if mobility, water, mobility and public ideas can be linked to this, the comprehensive progress of city systems can be made.

Project Electrical Intelligence, proposed by digitalSTROM alliance, is planned to integrate an electrical power system and an information technology. In this proposal, an electric device can be inte-grated into a smart grid network by attaching a high-voltage chip on each one. This project targets the five hundred billion existing electric devices. Even though it does not have a strong physical presence, it can generate a wide network of ingredients with substantial capacity(Hovestadt, 2010).

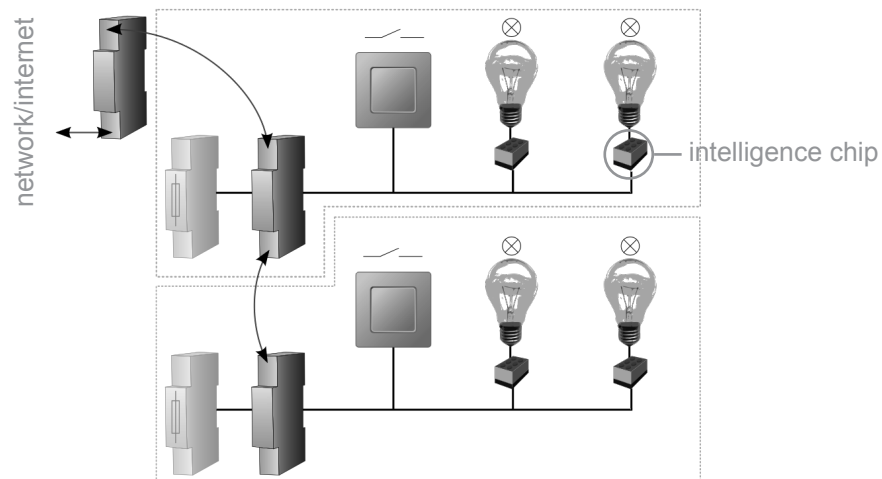


Figure 3-011. Electrical Intelligence, Source: digitalSTROM alliance (Opposite, Above)

[Idea-Visual-Auditory-Architecture-Infrastructure instrument]

This instrument aims to create an infrastructure that not only collect, save and distribute essential elements but also provide public amenity by using visual, auditory and spatial media to reflect the ideas of citizens. It can function as a basic arterial of physical resources and civic ideas. The High Line project in New York presents one aspect of an infrastructure as a spatial component that provides public space. By using an abandoned elevated railway and its newtork, and creating a greenway on itself, this infrastructure is changed to a public park which connects the major points of New York. It presents the good potential of how the network of the system can be used as an advantage for the planning of public space.

To realize IVAAIU instrument, a data archive, network, grid and such data infrastructures should be adapted. However, the current usage of data infrastructures are mostly segregated from public space, even though they have strong potentials to be used as an engine for it. Adapting multiple media into an infrastructure and interlocking with public ideas can realize a new type of a public space provider.





[Idea-Visual-Auditory-Architecture-Infrastructure-Urbanism instrument]

The goal of this instrument is to integrate all the previous media into the final component, urbanism. A substantial amount of devices with digital information technologies already started to pervade urban sectors and have proven strong potentials of themselves as public space providers. However, at the same time, an integrated plan that can embrace these various instruments is hard to be found. IVAAIU instrument can turn a group of scattered devices into a systemic living machine which is interactive to the needs of citizens, and can provide **the concept of continuous media and scale in urbanism** eventually.



Figure 3-012. High Line Project in New York, Source: City of New York(56-57)





U R B A N  
I N S T R U M E N T

### 3-005) Hyper-Complexity: Conversion of Conceptual Framework of Monument

A monument can be defined as a physical object which is designed to remind a specific subject: a person, group of people or event. However, the purpose of this plan is to reverse this notion from reflection of fixed subjects to reflection of divergent subjects. The steady rise of democratic aspirations in international cities has increased the necessity of the windows for the expressions of civic ideas. According to a liberal political philosophy, the chances of these expressions should not be limited to the majorities of the society and also not be limited only as the form of one vote (D'Hooghe, 2010). This monument plan aims to accommodate the entire population as the subject of the system and to liberate hyper-complex civic ideas. Four conversions of the concept of monument are proposed.

/Public as the object of media > /Public as the object and subject of media

In this monument, public does not only perceive messages but also advance messages.

/Rigid and solid physical presence > /Open and flexible physical presence

The new form of monument should be open and flexible to reflect the various types of ideas of civic which cannot be estimated completely and accurately.

/Reflection of a fixed number of population > /Reflection of a divergent number of population

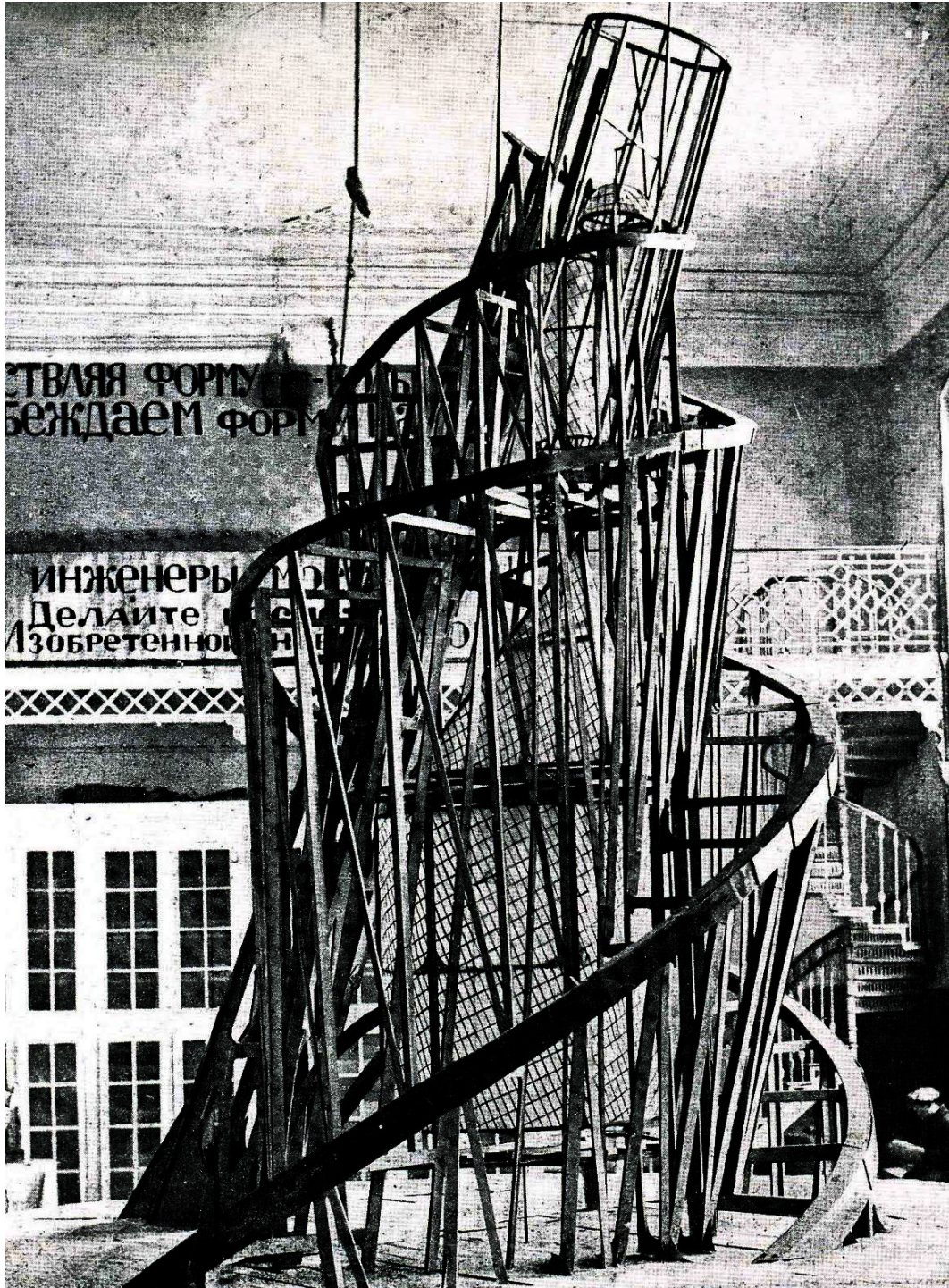
The target of this monument should not be limited by the number of users. The system underlying the monument should be designed as an open-source format; therefore, anyone is able to use it to express ideas.

/Lifespan depends on a power dynamic > /Lifespan depends on a public intention

This type of monument should be designed considering different concept of lifespan, since it does not reflect a limited target. It can be altered, dismantled and reconstructed according to public.

AS THE REFLECTOR, PROMOTER AND SOLIDIFIER OF DIGITAL DEMOCRATIC MOVEMENT, THE MONUMENT SHOULD BE PLANNED.

Figure 3-013. Vladimir Tatlin's The Monument to the Third International, Source: Art Theory(Opposite)



### 3-006) Conceptual Legitimacy of IVAAIU Instrument in Sejong Avenue

Social and political issues in Seoul can be considered as scientific problems which are consisted of big data and complex structures. To resolve these issues of the city, a systemic approach is needed. The development of a set of interdependent instruments within an algorithm is essential. Planners should strategically integrate diverse ideas, media and scales into a master plan.

The IVAAIU instrument is designed as an intermediate system for expressing social and political issues of the nation. As the second part of this thesis presented, the Sejong Avenue has been used as a place for political demonstrations of the government and public. When political tension was high, citizens gathered in this avenue to communicate with the government. With the support of advanced technologies, this communication process can be more fluent than before. The implementation of IVAAIU instrument is aimed to empower this function.

The realization of the IVAAIU instrument is practicable now, because citizens can provide their information easily with mobile devices, street level sensors and wireless networks. It is getting feasible to reflect various civic ideas into an urban environment according to this trend. An important point is that how planners can articulate this massive information systemically within urban planning.



Figure 3-014. Public Demonstration in Sejong Avenue, Source: Kimgiza

### 3-007) Implementation of IVAAIU Instrument into Existing Context

#### [Expected Population]

Considering the historic monumentality of this urban area, the project should target not only the visitors and residents in and around the space but also the entire nation. In terms of defining the users of a new plan, two categories can be created.

#### /Local Level

This level encompasses people who physically occupy the space, including visitors of public squares and cultural facilities, political demonstrators in the avenue, workers of the administrative offices and the residents of the area.

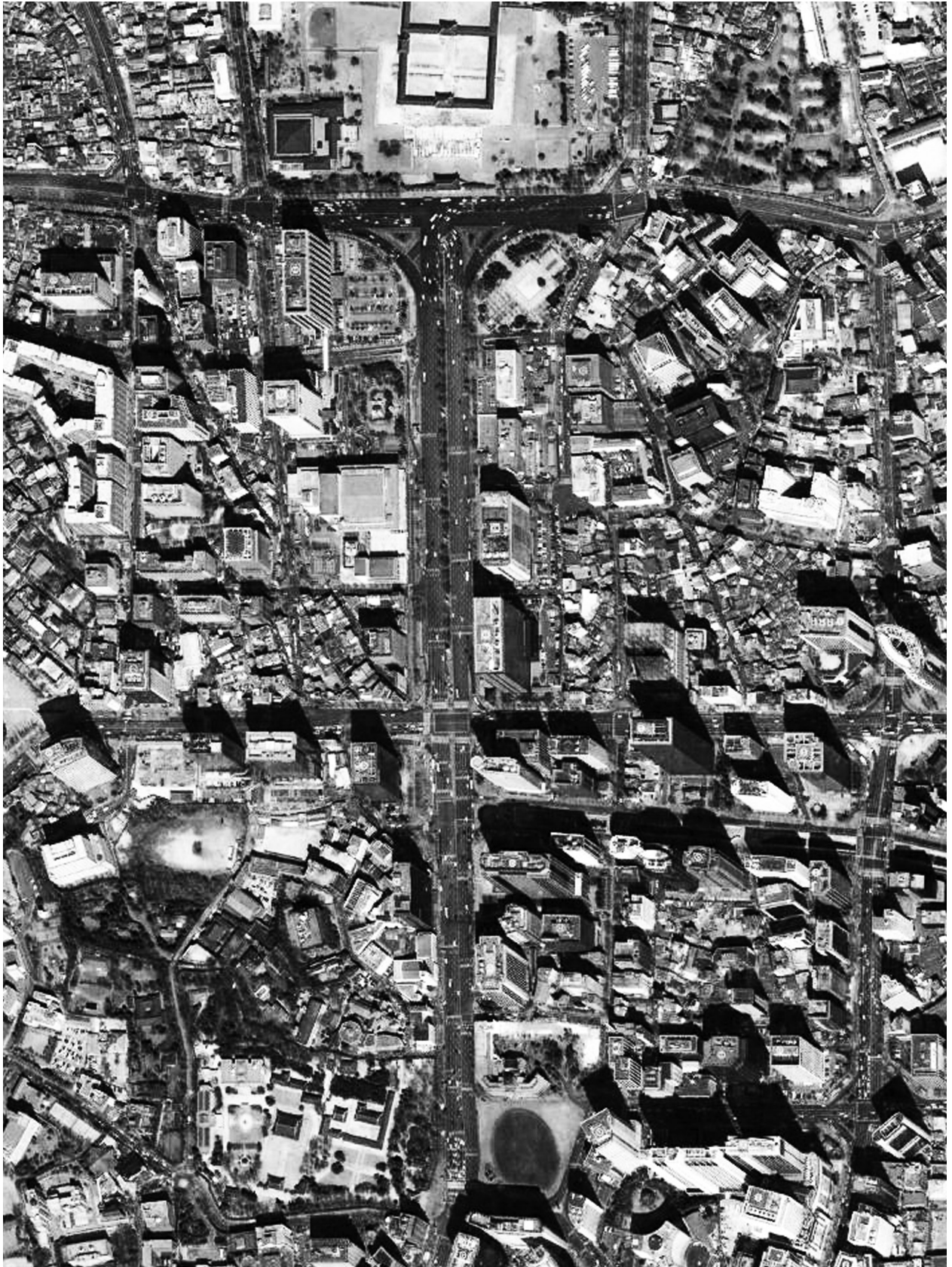
#### /National Level

This level encompasses public in the national level of Republic of Korea, including the people who are not engaged to the space physically. This level targets the remote users of the space who cannot visit the space but intend to express their ideas at the socially and politically monumental place.

Even though the major population of Sejong Avenue is divided into two groups, the actual users can be much larger than a national level due to the fact that this system can be accessed internationally through an online network.

Figure 3-015. Satellite Image of Sejong Avenue  
All Satellite Image Sources Between 65 and 79 are Captured from Google Earth





## [Existing Urban Fabric]

In terms of the physical implementation of the plan, two levels of strategical interactions with the current urban context are set up.

### /Interactions with major ongoing development projects in nearby areas

The site is located at the historic center of the city which has been existing for more than six centuries, and the government has been concentrated on the redevelopments of this aged urban district. At the moment, five mega reconstruction projects exist around the avenue. However, two of these projects have not been successful; therefore, suspended and cancelled. The new redevelopment of Sejong Avenue should support these developments in crises.

### /Interactions with independent nodes around the site

In addition to interact with mega development projects around the site, the project should also develop the network with independent developments. This connection between public and private areas can help both sides to be vitalized.

Figure 3-016. Sewoon Shopping District (67)

Figure 3-017. Dongdaemun Park (68)

Figure 3-018. Yongsan Redevelopment Site (69)

Figure 3-019. Seoul Station (70)

Figure 3-020. Restored Namdaemun (71)

[Major Development Project A: Sewoon Shopping District(Distance from the Site: 1.57Km)]

This linear district, which was originally built in 1968, was planned as the mixture of commercial and residential uses. Starting from the late 1990s, the commercial programs have decayed and the housings have turned into the state of slum. Since 2008, the government had begun the three phases of the demolition process of the area to turn it into a green corridor eventually. However, the project was cancelled during the first phase. At the moment, a part of commercial programs has deteriorated into a state of lethargy, and the city office announced that the buildings will be renovated rather than be removed(Baek, 2013). As a part of the interaction strategy with this site, a plan for Sejong Avenue includes a direct pedestrian path from Gwanghwamun square to this point; therefore, this shopping district can draw a substantial volume of pedestrians from the avenue.



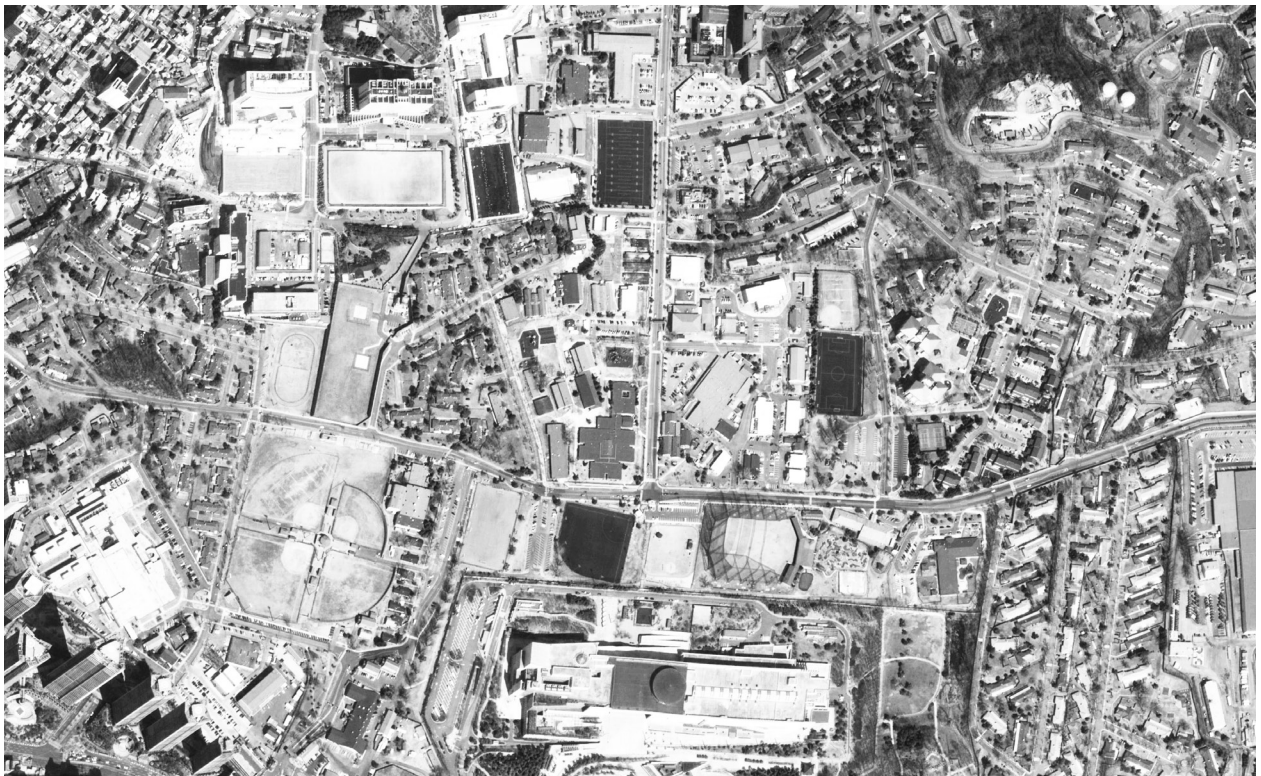
[Major Development Project B: Dongdaemun Park(Distance from the Site: 3.06Km)]

Before the new construction of Dongdaemun Park, the area had been occupied by the national stadium since 1926. Then the demolition process of the previous stadium was started in 2007 under the new development plan of a park which is scheduled to be completed in 2013 as a size of 85,320 square meters. Even though this project is entitled as a park, the new development also includes a substantial amount of offices, commercial and cultural programs along the green space(Seoul Metropolitan Government, 2013). A fluent connection between Sejong Avenue and this new park can develop a cultural network between the two major anchor points.



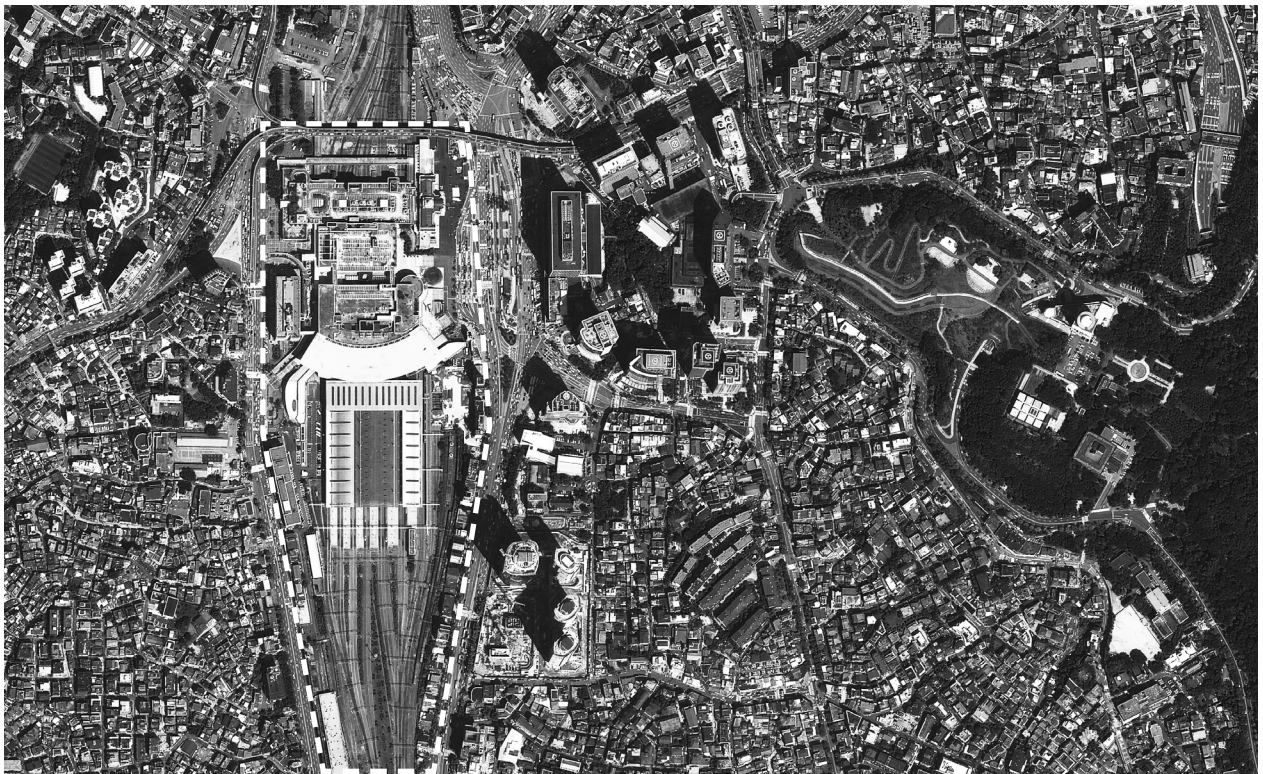
[Major Development Project C: Yongsan Redevelopment(Distance from the Site: 3.97Km)]

Throughout the history of Republic of Korea, this project is estimated as the largest redevelopment plan both in terms of a budget and scale. However, the developer of the project declared bankruptcy and cancelled it in 2013. The original community has been dissolved during the demolition and construction process. Then most of the lands in and around the site have been vacated. The entire district has been critically damaged by the cancellation of the project. As one of the approaches for the revitalization of the area, the development of pedestrian linkage between Sejong Avenue and this site can be planned.



[Major Development Project D: Seoul Station(Distance from the Site: 1.93Km)]

The major transportation hub in Seoul city is also located at a close distance from Sejong Avenue. As the largest train station of the country, it accommodates a substantial population everyday. In 2003, the station has moved to a new building located right next to the previous one to accommodate a larger number of lanes and passengers than before. Then in 2011, the old station building was converted to cultural space; therefore, in addition to robust passengers movement, the station also achieved commercial and cultural visitors movement. Direct linkage between Sejong Avenue and Seoul station can form interaction between two robust anchors.



[Major Development Project E: Restored Namdaemun(Distance from the Site: 1.73Km)]

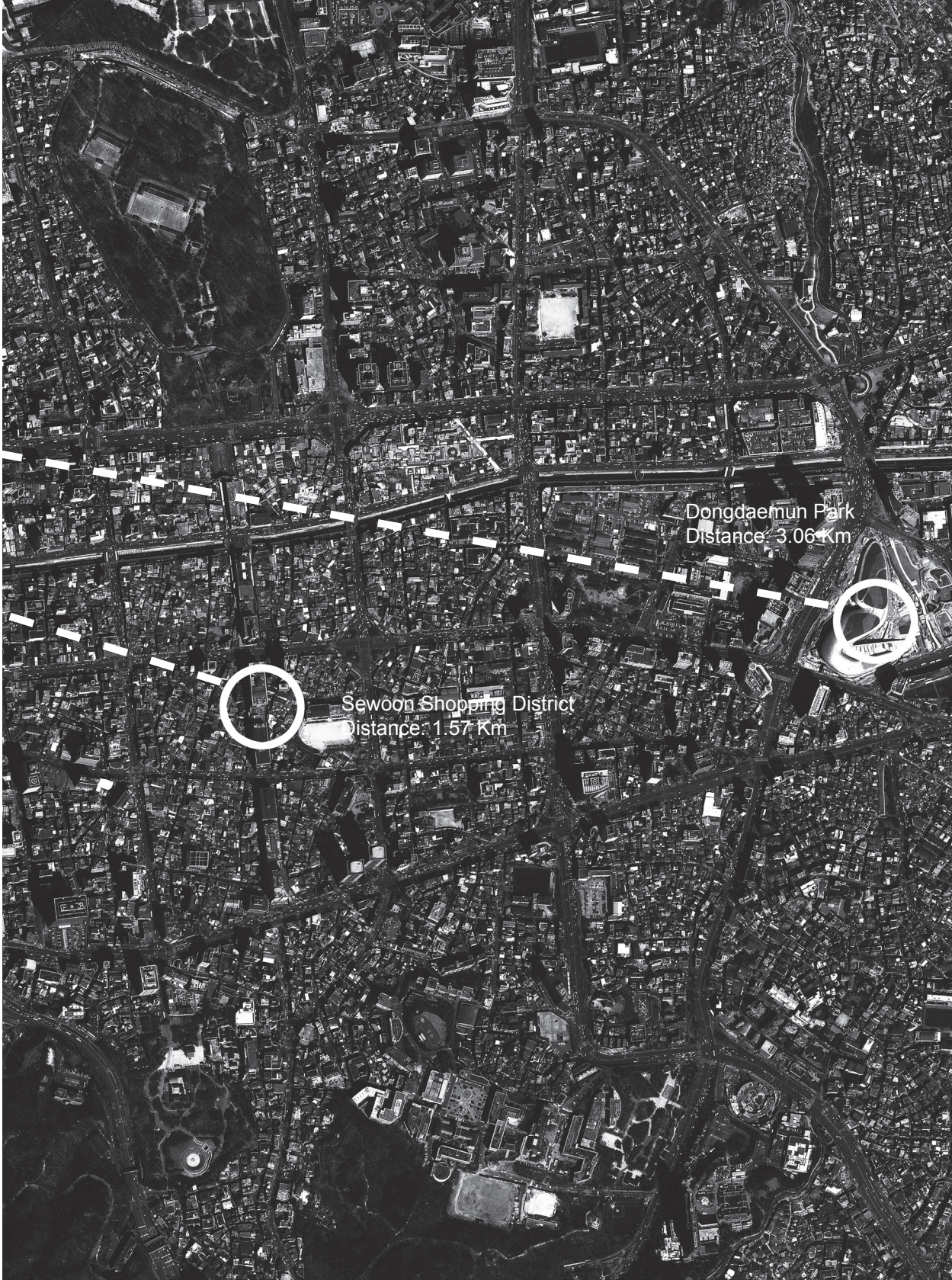
Last but not least, Namdaemun, which is one of the most important cultural anchor points in Seoul, is planned to be reopened in 2013. This historic building is designated as the first national treasure, however the building was mostly burnt in 2008 by an incident. Since then, the site has been closed for a restoration process. The completion of this national heritage is expected to gather massive tourism population. This place should be well integrated into the network with the other major developments around Sejong Avenue for the renaissance of central Seoul.



Figure 3-021. Locations of Anchor Points(72-73)







## **4. Physical Structure of New Implementation: Sejong Avenue Master Plan**

### 4-001) Physical Structure of Existing Site

According to scale, interactivity and characteristic of each area, the current site can be articulated into five different sectors.

#### /Central Node

- a singular building
- located at the center of the site
- isolated from surroundings due to security issues
- the current occupant is planned by the government to move to an alternative site

#### /Internal Cluster

- a public square
- isolated from the surroundings by ten car lanes
- ten car lanes are planned by the government to be disabled periodically for pedestrian uses

#### /Network

- a pedestrian and automobile traffic system
- located between the internal and external cluster

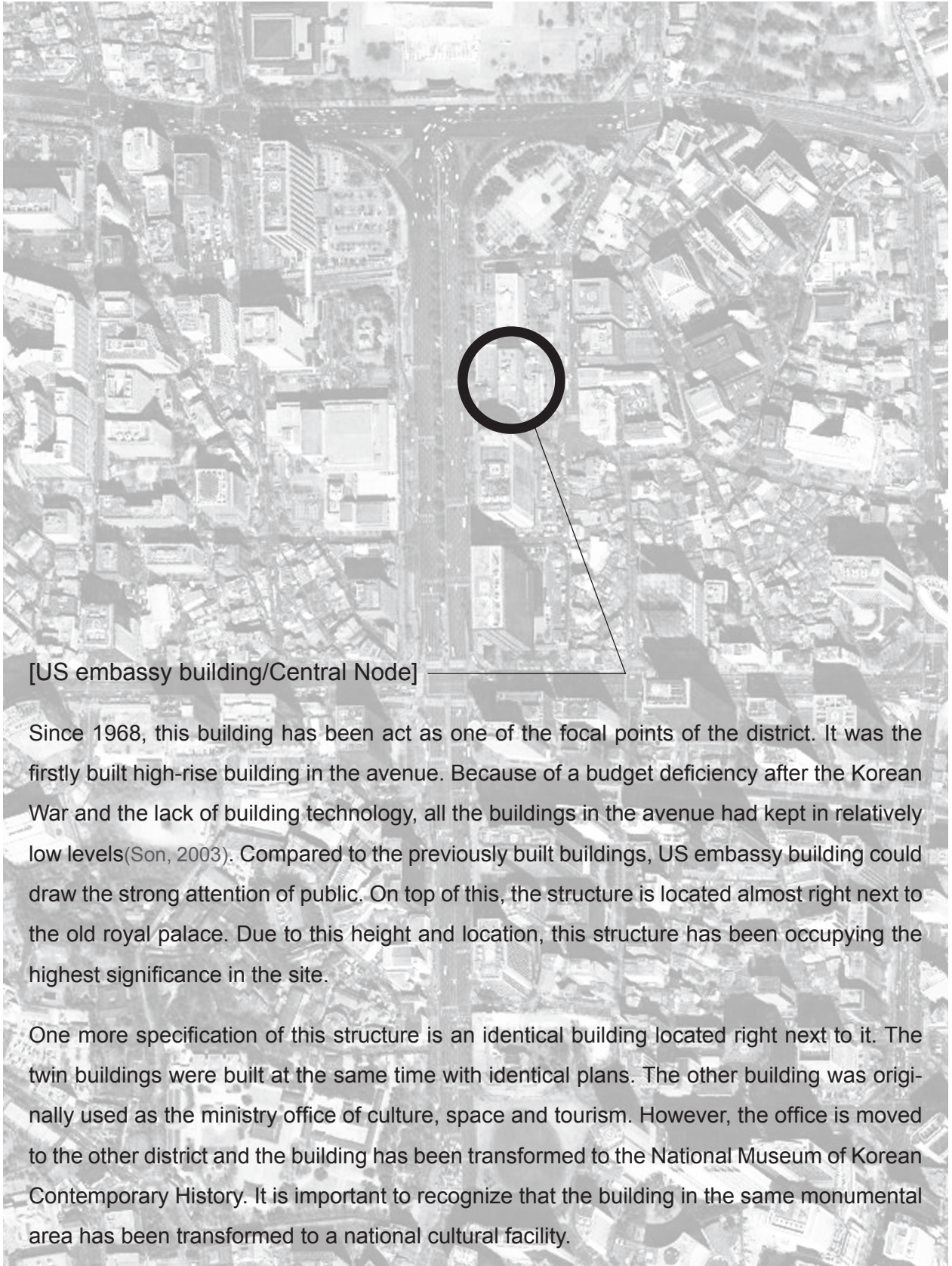
#### /External Cluster

- a public square
- opened widely to an external region

#### /Distributed Nodes

- scattered micro-scale spaces
- located irregularly around Sejong Avenue

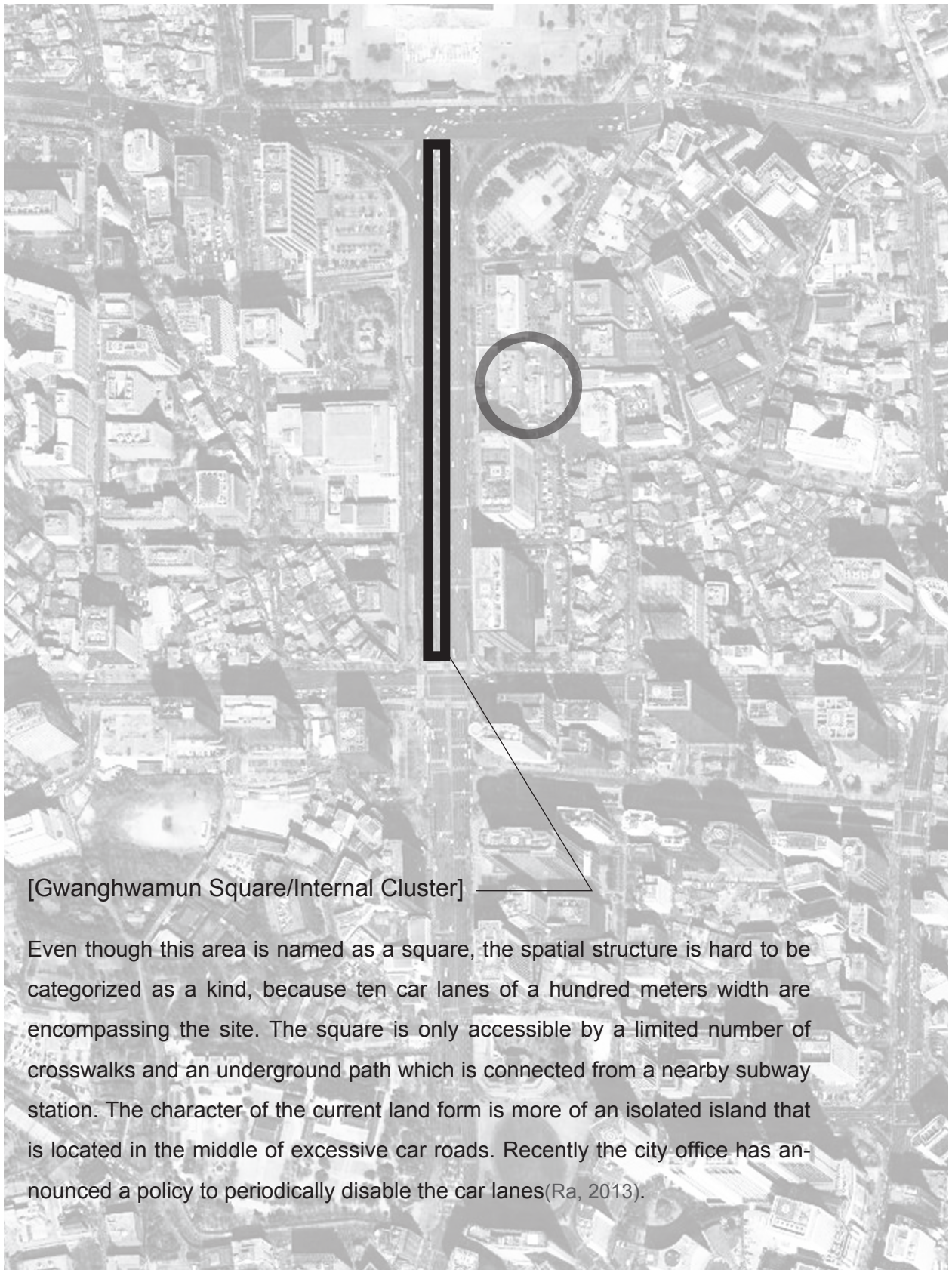
Figure 4-001. Illustration of Each Sector(75-79)



[US embassy building/Central Node]

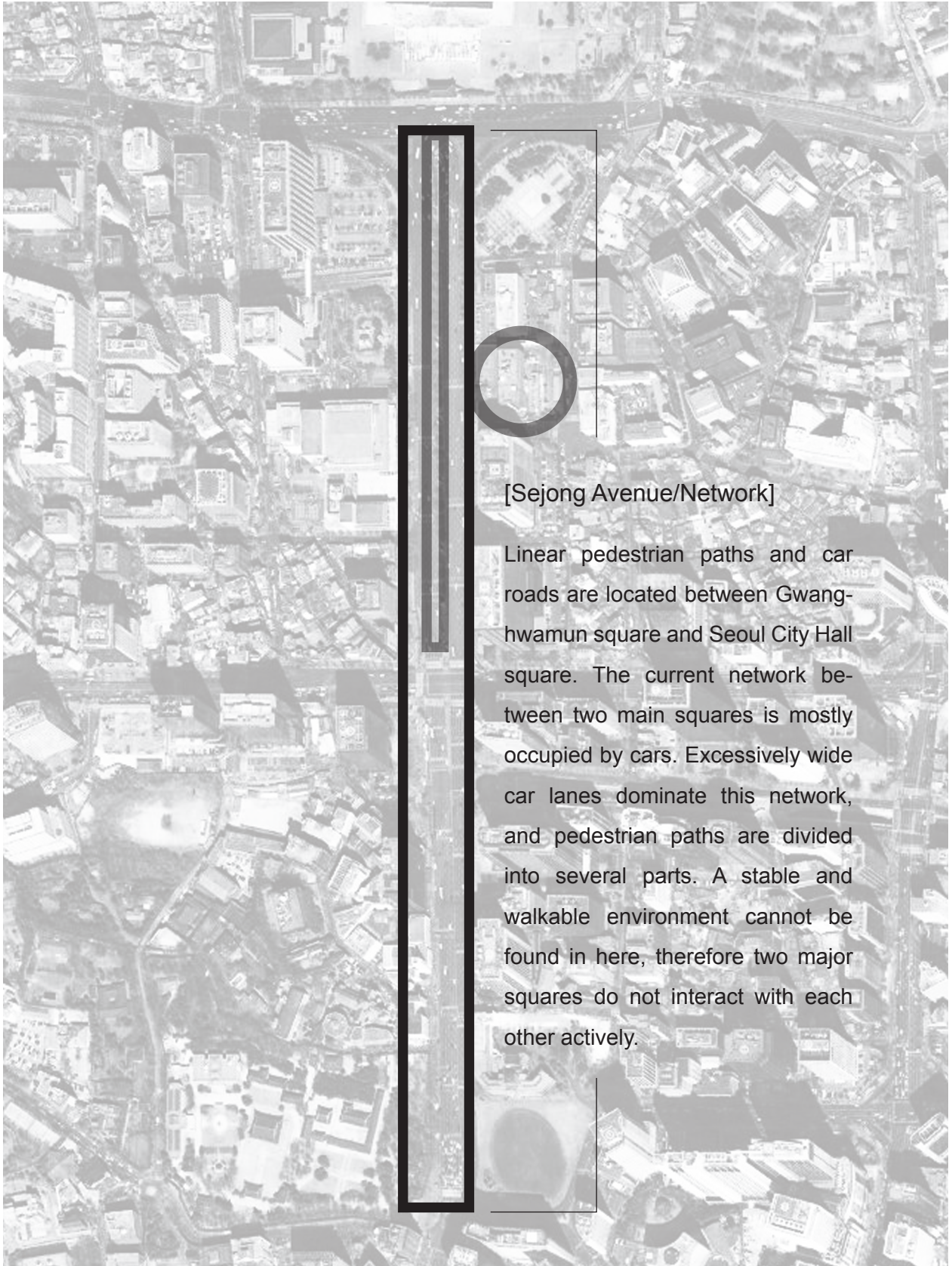
Since 1968, this building has been act as one of the focal points of the district. It was the firstly built high-rise building in the avenue. Because of a budget deficiency after the Korean War and the lack of building technology, all the buildings in the avenue had kept in relatively low levels(Son, 2003). Compared to the previously built buildings, US embassy building could draw the strong attention of public. On top of this, the structure is located almost right next to the old royal palace. Due to this height and location, this structure has been occupying the highest significance in the site.

One more specification of this structure is an identical building located right next to it. The twin buildings were built at the same time with identical plans. The other building was originally used as the ministry office of culture, space and tourism. However, the office is moved to the other district and the building has been transformed to the National Museum of Korean Contemporary History. It is important to recognize that the building in the same monumental area has been transformed to a national cultural facility.



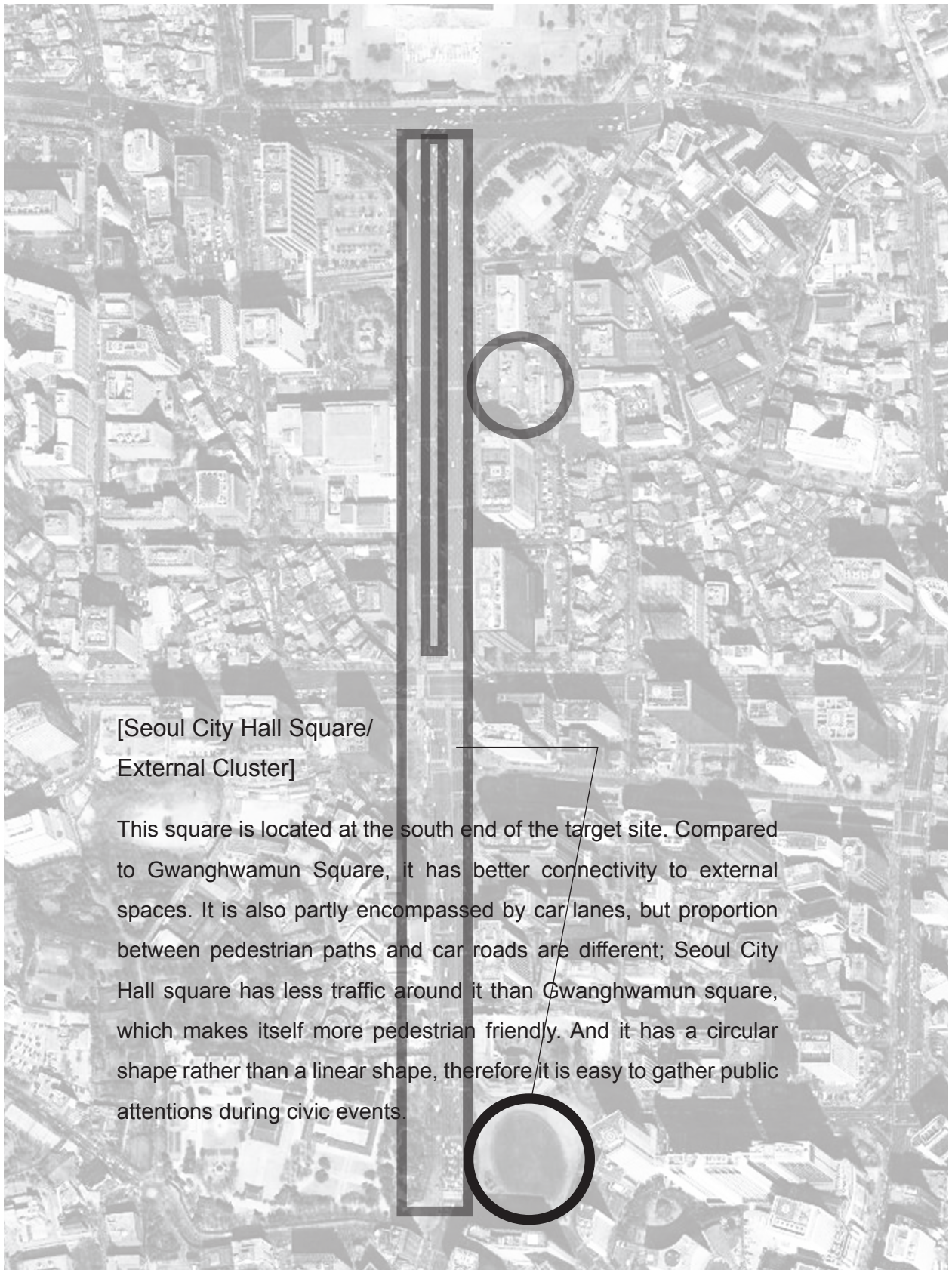
[Gwanghwamun Square/Internal Cluster]

Even though this area is named as a square, the spatial structure is hard to be categorized as a kind, because ten car lanes of a hundred meters width are encompassing the site. The square is only accessible by a limited number of crosswalks and an underground path which is connected from a nearby subway station. The character of the current land form is more of an isolated island that is located in the middle of excessive car roads. Recently the city office has announced a policy to periodically disable the car lanes(Ra, 2013).



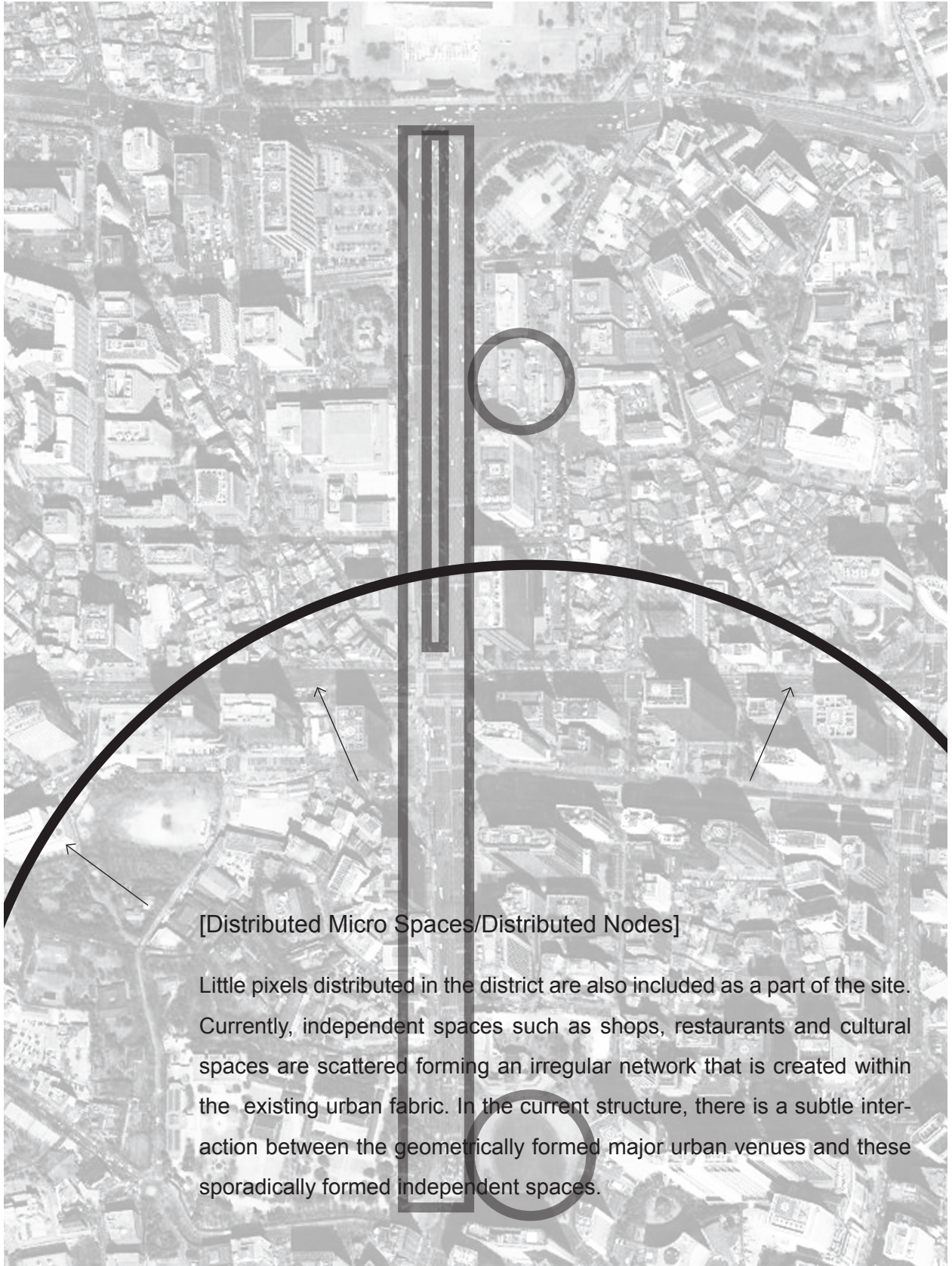
[Sejong Avenue/Network]

Linear pedestrian paths and car roads are located between Gwanghwamun square and Seoul City Hall square. The current network between two main squares is mostly occupied by cars. Excessively wide car lanes dominate this network, and pedestrian paths are divided into several parts. A stable and walkable environment cannot be found in here, therefore two major squares do not interact with each other actively.



[Seoul City Hall Square/  
External Cluster]

This square is located at the south end of the target site. Compared to Gwanghwamun Square, it has better connectivity to external spaces. It is also partly encompassed by car lanes, but proportion between pedestrian paths and car roads are different; Seoul City Hall square has less traffic around it than Gwanghwamun square, which makes itself more pedestrian friendly. And it has a circular shape rather than a linear shape, therefore it is easy to gather public attentions during civic events.



[Distributed Micro Spaces/Distributed Nodes]

Little pixels distributed in the district are also included as a part of the site. Currently, independent spaces such as shops, restaurants and cultural spaces are scattered forming an irregular network that is created within the existing urban fabric. In the current structure, there is a subtle interaction between the geometrically formed major urban venues and these sporadically formed independent spaces.

#### 4-002) Planning Strategy for Each Division of Site

In this master plan, strategies for both physical and virtual space are set up at the same time. Therefore, it can accommodate the local and national users of an urban instrument directly at physical space and remotely at virtual space. To minimize the physical demolition, alteration and construction process of the area, functions are assigned reflecting the existing physical structure of the site.

##### /Central Node

- function of physical space: pedestrian hub
- function of virtual space: database / archive

##### /Internal Cluster

- function of physical space: public park
- function of virtual space: real-time interactive interface

##### /Network

- function of physical space: pedestrian avenue
- function of virtual space: data conductor

##### /External Cluster

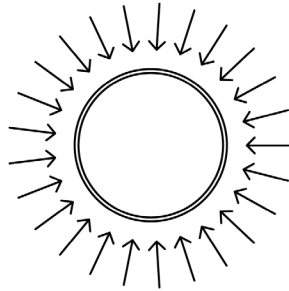
- function of physical space: public square
- function of virtual space: distribution center

##### /Distributed Nodes

- function of physical space: independent commercial programs
- function of virtual space: distributed nodes

Figure 4-002. Illustration of Strategy for Each Site(81-85)





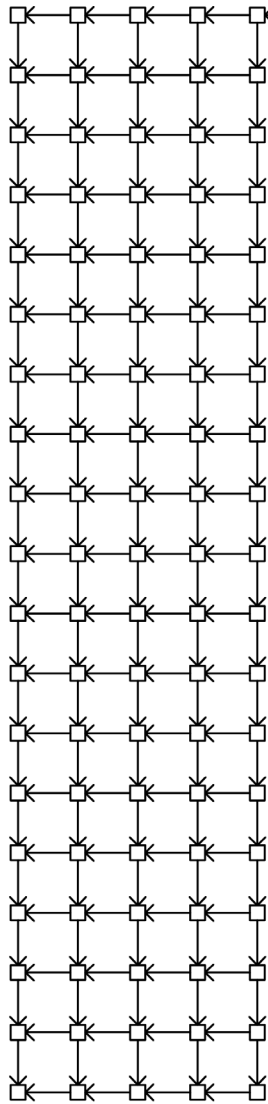
(P) = Physical Space  
(V) = Virtual Space

(P) Pedestrian Hub  
(V) Database

#### [US embassy building/Central Node]

In this plan, as the central node of the site, this building is renovated as the hub of entire pedestrian movement in central Seoul. It creates several platforms which direct the pedestrian movements from the building to the major cultural anchor points within a walking distance. Around each platform, cultural and commercial programs are disposed for providing both amenity and profit. On top of this function, it also acts as a new focal point of the district. In the perspective of a digital system, this area set up as a site for databases, main processors and controllers.

(P) Public Park  
(V) Interactive Interfaces

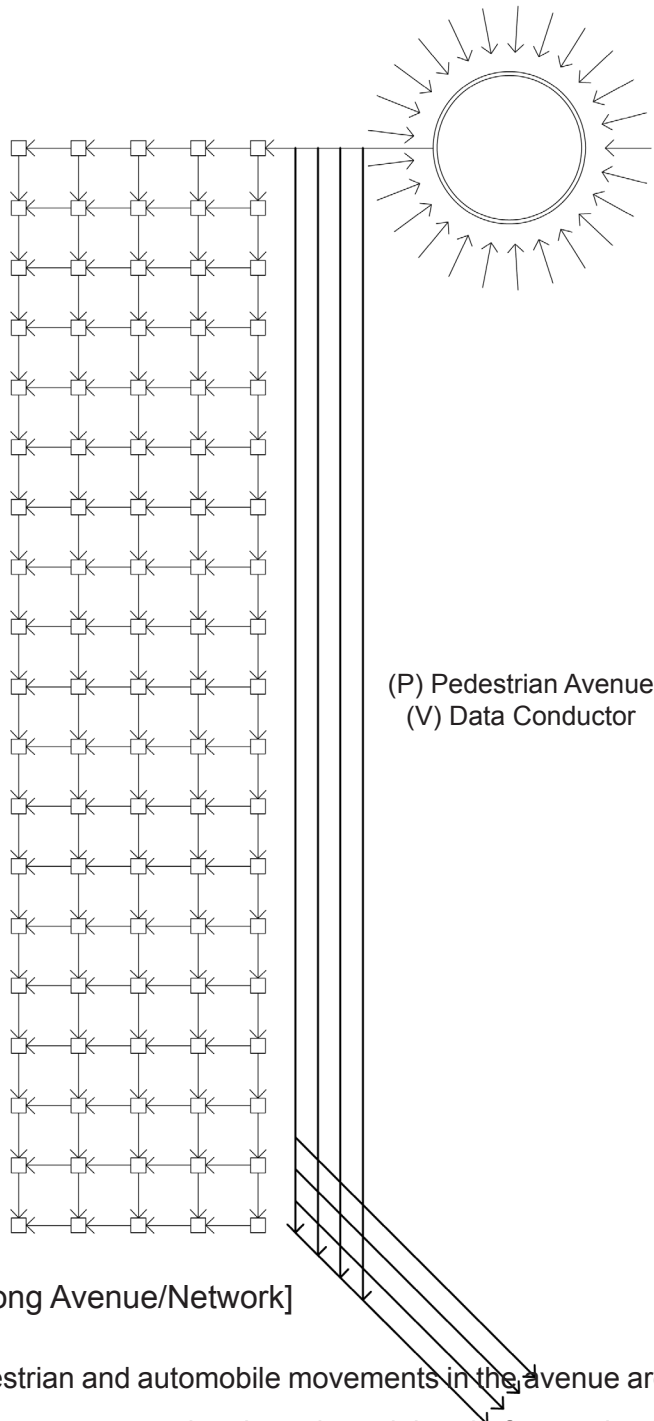


(P) = Physical Space  
(V) = Virtual Space

### [Gwanghwamun Square(Internal Cluster)]

The current island-type of Gwanghwamun square is redesigned to be extended and to be connected to the existing buildings in the Avenue. The reclaim of public space from ten car lanes can integrate divided places into one main cluster. This square functions for the collection and demonstration of citizens. User input data can be resulted as physical environments in here.

(P) = Physical Space  
(V) = Virtual Space



(P) Pedestrian Avenue  
(V) Data Conductor

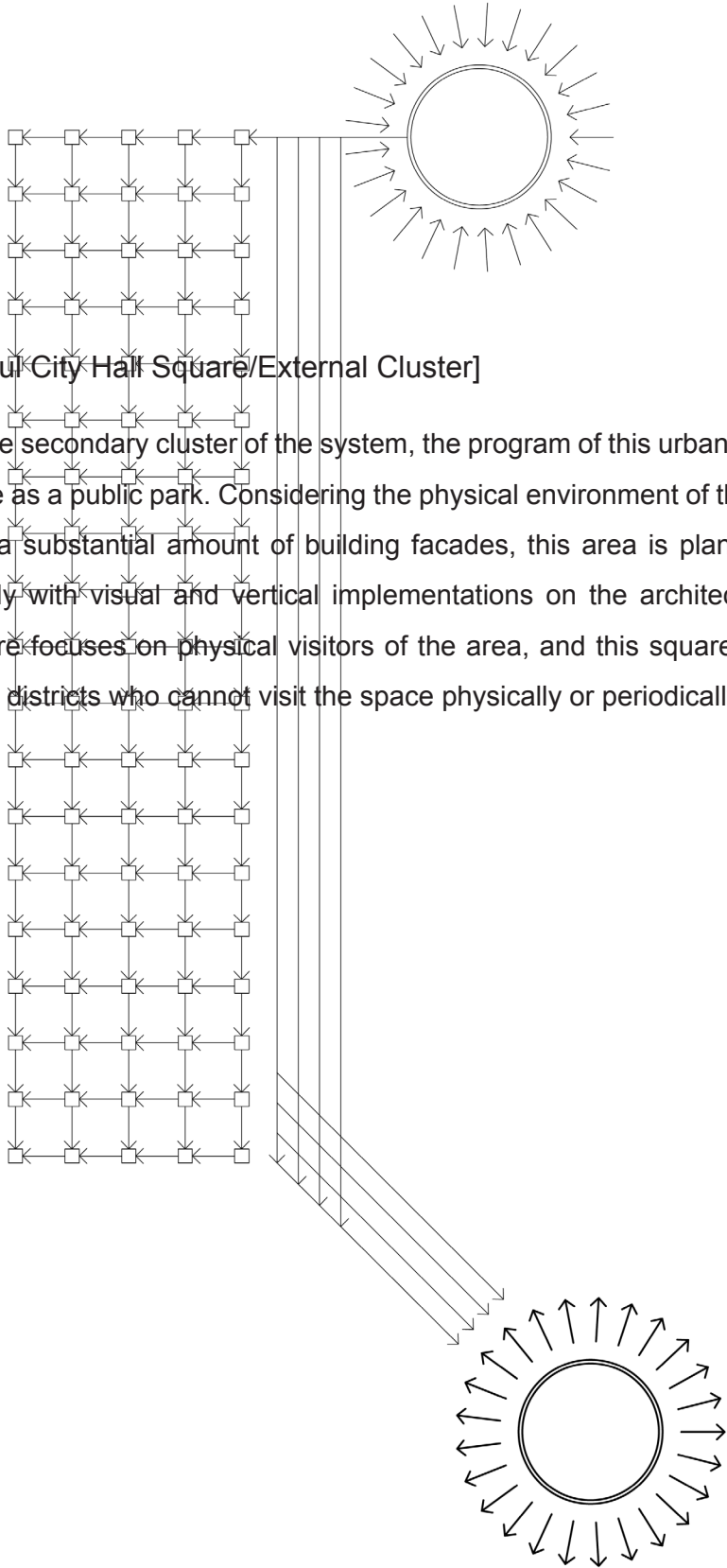
### [Sejong Avenue/Network]

Pedestrian and automobile movements in the avenue are planned to be partially adjusted to make the space more pedestrian oriented than before and to help congregation of population. The current car flow is planned to be relocated to the secondary and tertiary roads which are located at one and two blocks back from the avenue. This adjustment can create a robust pedestrian connection between the Gwanghwamun and Seoul City Hall square which can help each other for the revitalization of both spaces.

(P) = Physical Space  
(V) = Virtual Space

[Seoul City Hall Square/External Cluster]

As the secondary cluster of the system, the program of this urban square is planned to remain the same as a public park. Considering the physical environment of the space which is encompassed with a substantial amount of building facades, this area is planned to promote ideas of public mostly with visual and vertical implementations on the architectural surfaces. Gwanghwamun square focuses on physical visitors of the area, and this square focuses on remote users from other districts who cannot visit the space physically or periodically.



(P) Public Square  
(V) Distribution Center

(P) = Physical Space  
(V) = Virtual Space

[Distributed Micro Spaces/Distributed Nodes]

Micro-scale IVAAIU instruments are planned to be disposed at independent buildings around the Sejong Avenue. These little pixels will act as distribution points which help the ideas of public pervades into existing urban fabrics and as collection points which gather civic ideas from spaces around.

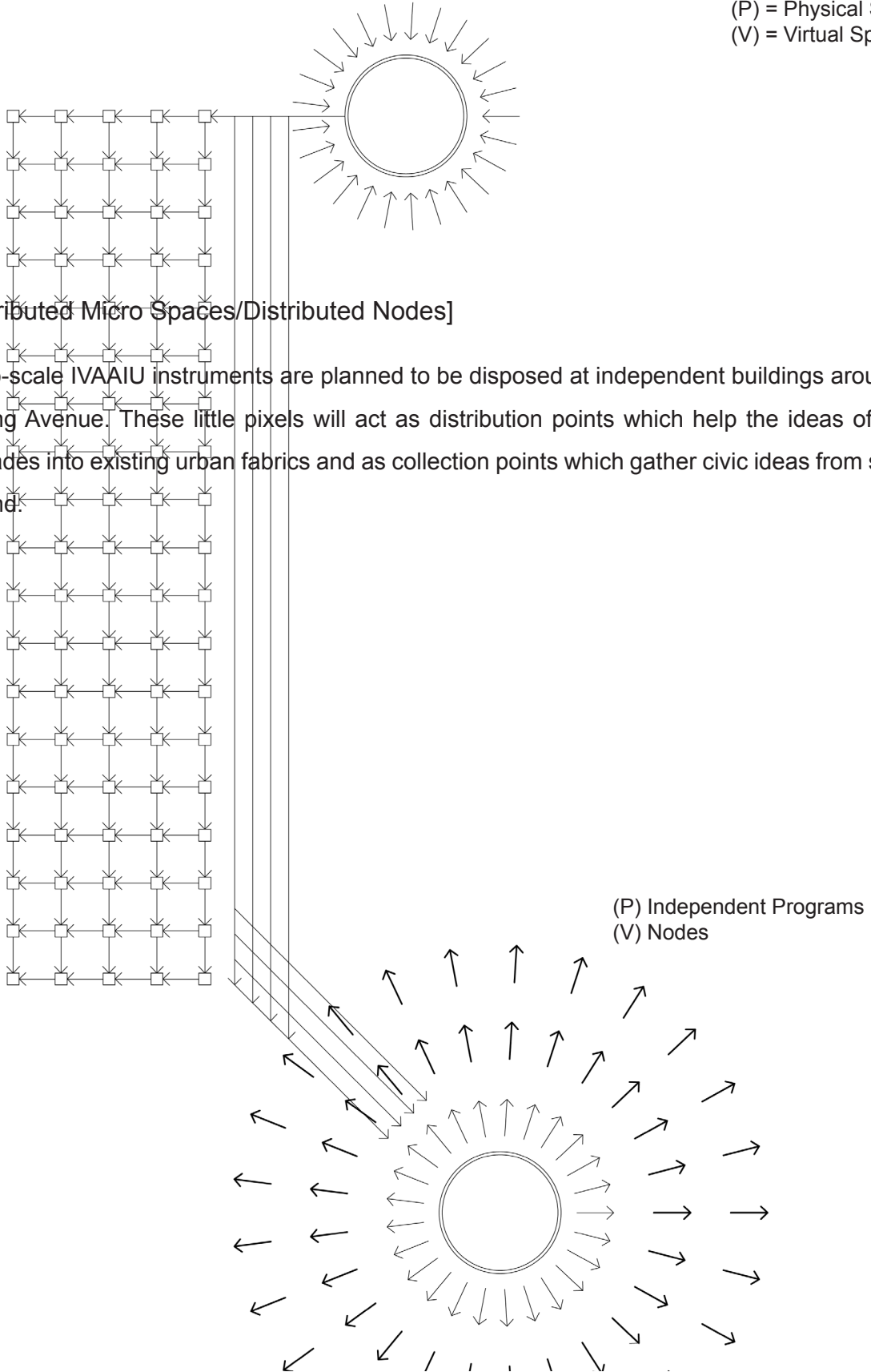
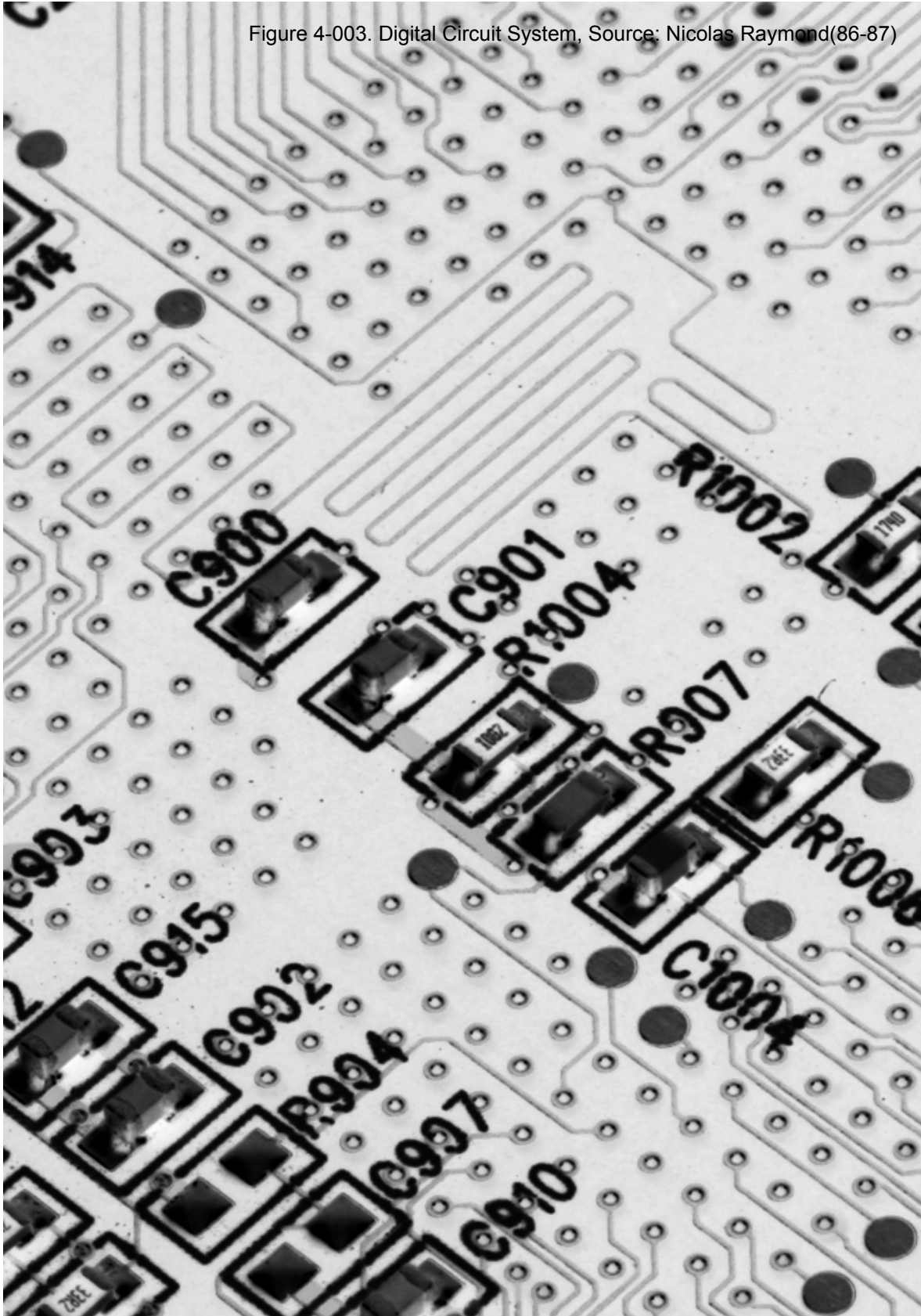




Figure 4-003. Digital Circuit System, Source: Nicolas Raymond(86-87)

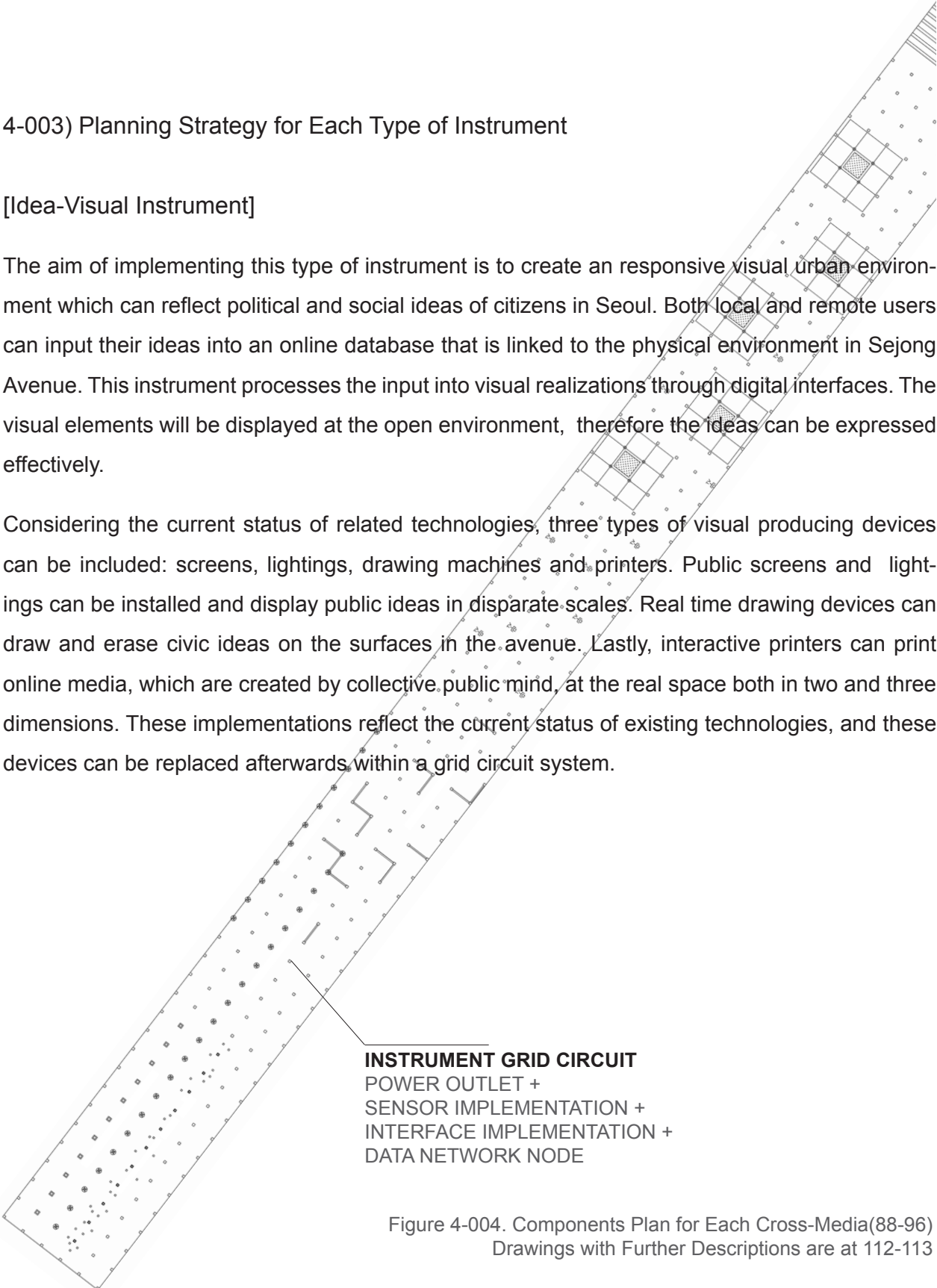


### 4-003) Planning Strategy for Each Type of Instrument

#### [Idea-Visual Instrument]

The aim of implementing this type of instrument is to create an responsive visual urban environment which can reflect political and social ideas of citizens in Seoul. Both local and remote users can input their ideas into an online database that is linked to the physical environment in Sejong Avenue. This instrument processes the input into visual realizations through digital interfaces. The visual elements will be displayed at the open environment, therefore the ideas can be expressed effectively.

Considering the current status of related technologies, three types of visual producing devices can be included: screens, lightings, drawing machines and printers. Public screens and lightings can be installed and display public ideas in disparate scales. Real time drawing devices can draw and erase civic ideas on the surfaces in the avenue. Lastly, interactive printers can print online media, which are created by collective public mind, at the real space both in two and three dimensions. These implementations reflect the current status of existing technologies, and these devices can be replaced afterwards within a grid circuit system.



**INSTRUMENT GRID CIRCUIT**  
POWER OUTLET +  
SENSOR IMPLEMENTATION +  
INTERFACE IMPLEMENTATION +  
DATA NETWORK NODE

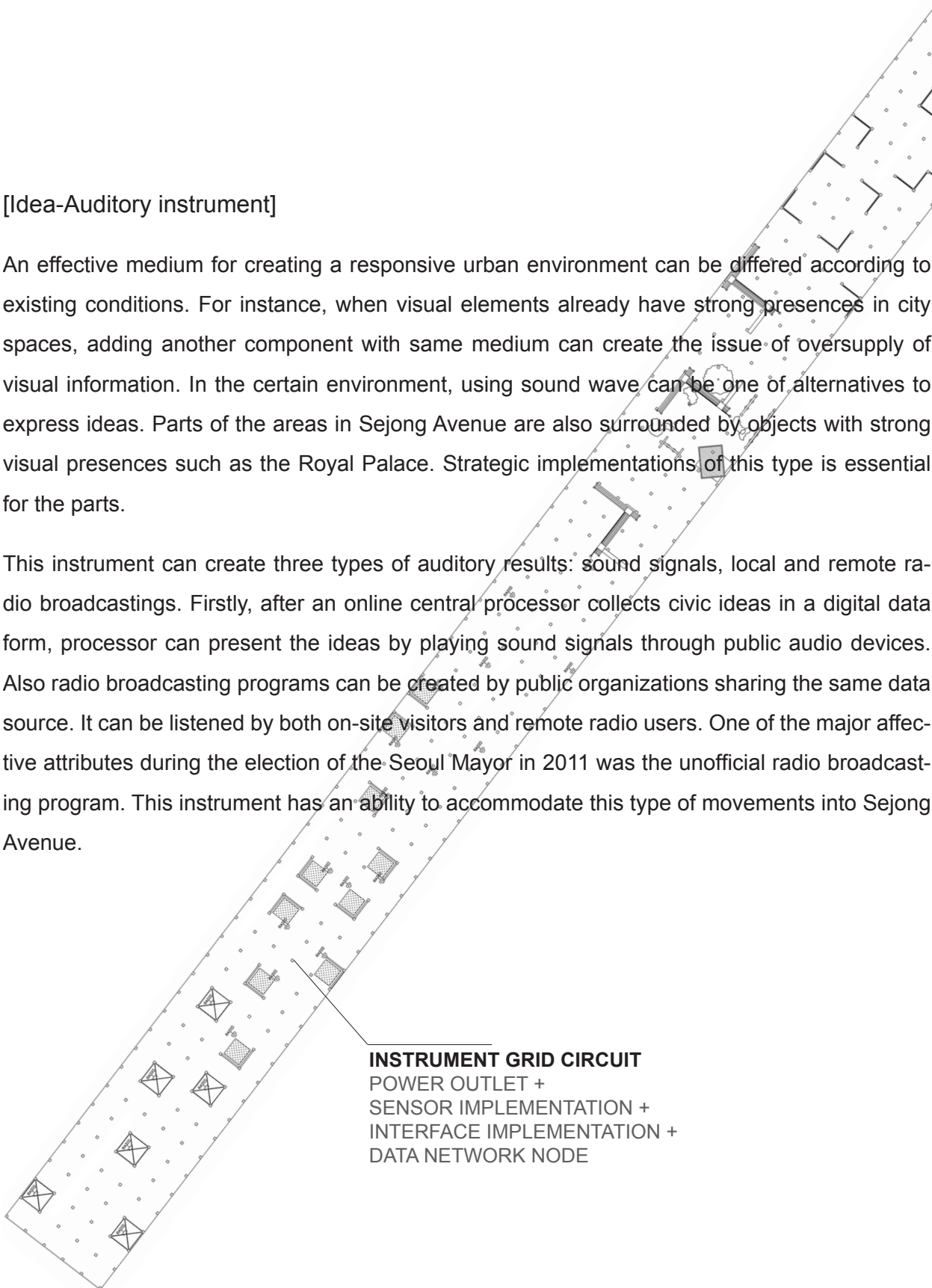
Figure 4-004. Components Plan for Each Cross-Media(88-96)  
Drawings with Further Descriptions are at 112-113



[Idea-Auditory instrument]

An effective medium for creating a responsive urban environment can be differed according to existing conditions. For instance, when visual elements already have strong presences in city spaces, adding another component with same medium can create the issue of oversupply of visual information. In the certain environment, using sound wave can be one of alternatives to express ideas. Parts of the areas in Sejong Avenue are also surrounded by objects with strong visual presences such as the Royal Palace. Strategic implementations of this type is essential for the parts.

This instrument can create three types of auditory results: sound signals, local and remote radio broadcastings. Firstly, after an online central processor collects civic ideas in a digital data form, processor can present the ideas by playing sound signals through public audio devices. Also radio broadcasting programs can be created by public organizations sharing the same data source. It can be listened by both on-site visitors and remote radio users. One of the major affective attributes during the election of the Seoul Mayor in 2011 was the unofficial radio broadcasting program. This instrument has an ability to accommodate this type of movements into Sejong Avenue.

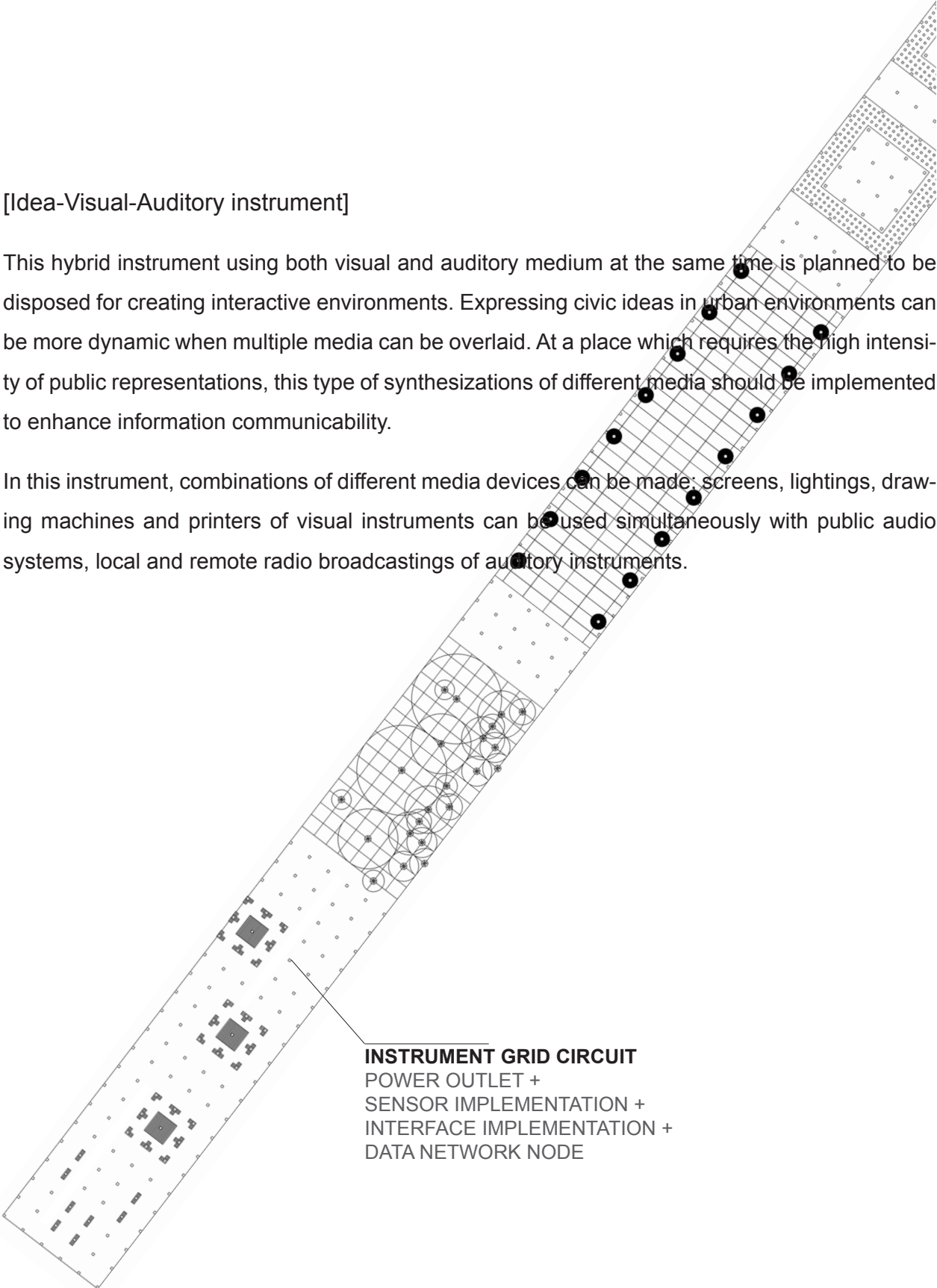


**INSTRUMENT GRID CIRCUIT**  
POWER OUTLET +  
SENSOR IMPLEMENTATION +  
INTERFACE IMPLEMENTATION +  
DATA NETWORK NODE

[Idea-Visual-Auditory instrument]

This hybrid instrument using both visual and auditory medium at the same time is planned to be disposed for creating interactive environments. Expressing civic ideas in urban environments can be more dynamic when multiple media can be overlaid. At a place which requires the high intensity of public representations, this type of synthesizations of different media should be implemented to enhance information communicability.

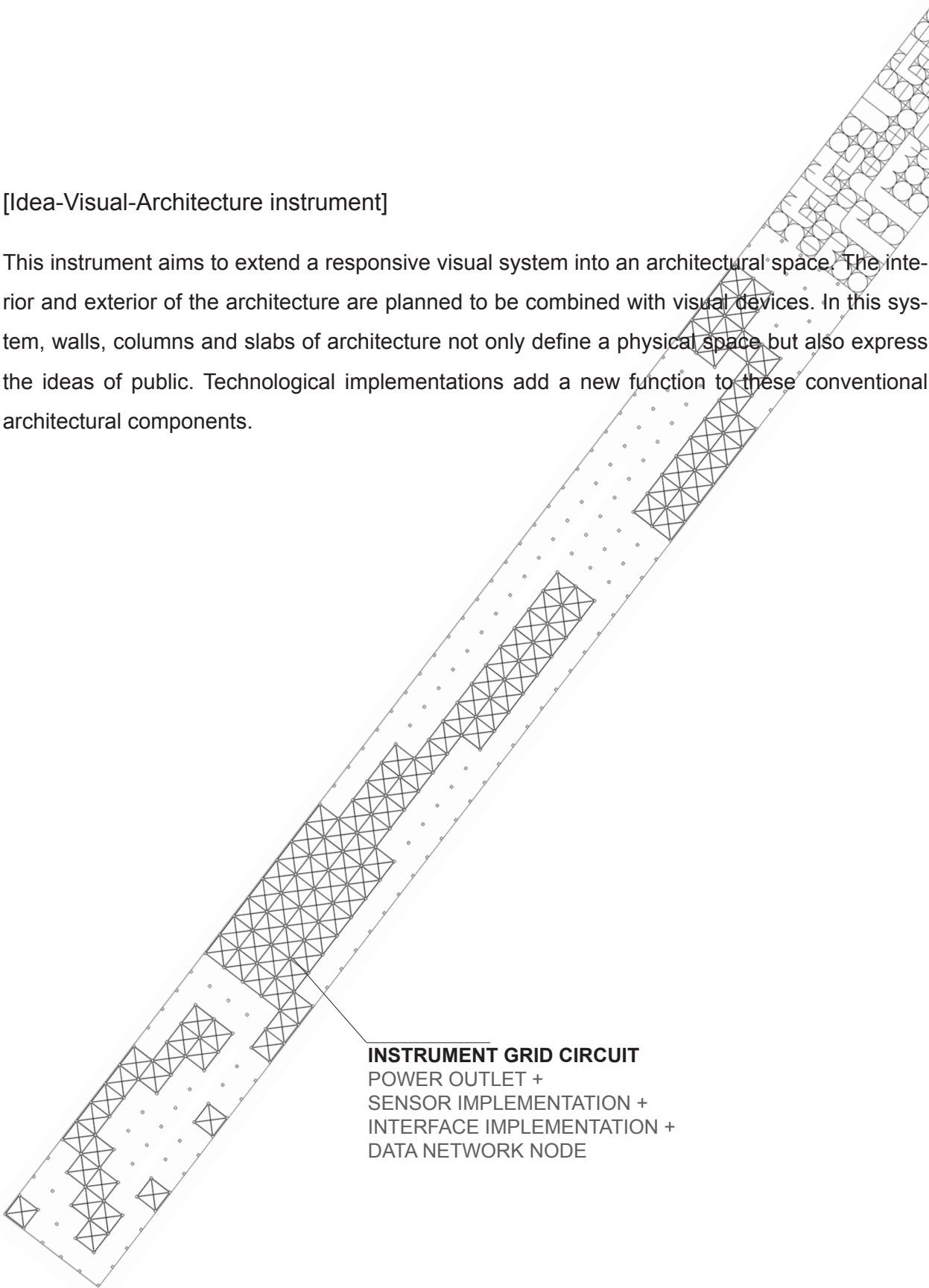
In this instrument, combinations of different media devices can be made: screens, lightings, drawing machines and printers of visual instruments can be used simultaneously with public audio systems, local and remote radio broadcastings of auditory instruments.



**INSTRUMENT GRID CIRCUIT**  
POWER OUTLET +  
SENSOR IMPLEMENTATION +  
INTERFACE IMPLEMENTATION +  
DATA NETWORK NODE

[Idea-Visual-Architecture instrument]

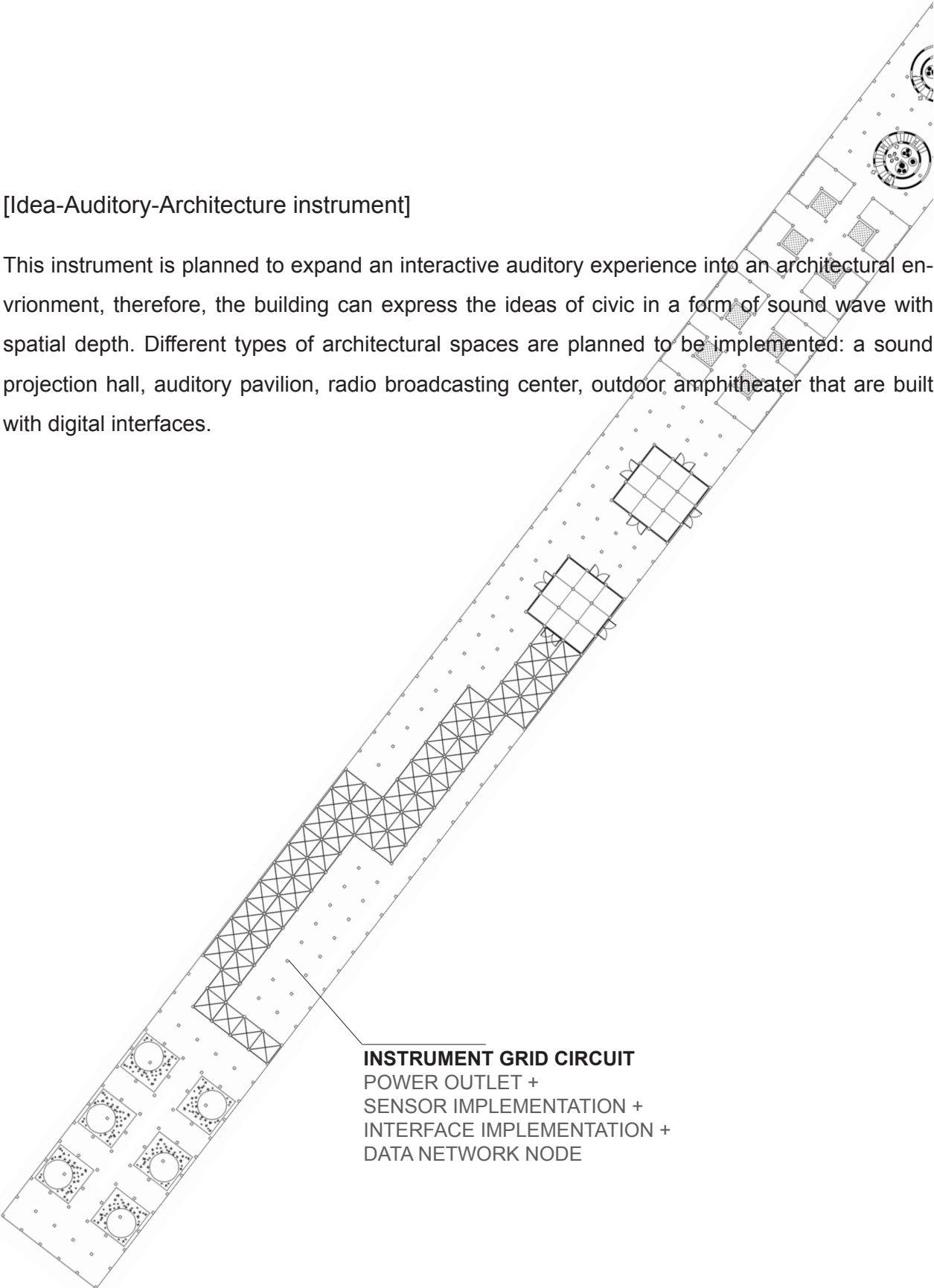
This instrument aims to extend a responsive visual system into an architectural space. The interior and exterior of the architecture are planned to be combined with visual devices. In this system, walls, columns and slabs of architecture not only define a physical space but also express the ideas of public. Technological implementations add a new function to these conventional architectural components.



**INSTRUMENT GRID CIRCUIT**  
POWER OUTLET +  
SENSOR IMPLEMENTATION +  
INTERFACE IMPLEMENTATION +  
DATA NETWORK NODE

[Idea-Auditory-Architecture instrument]

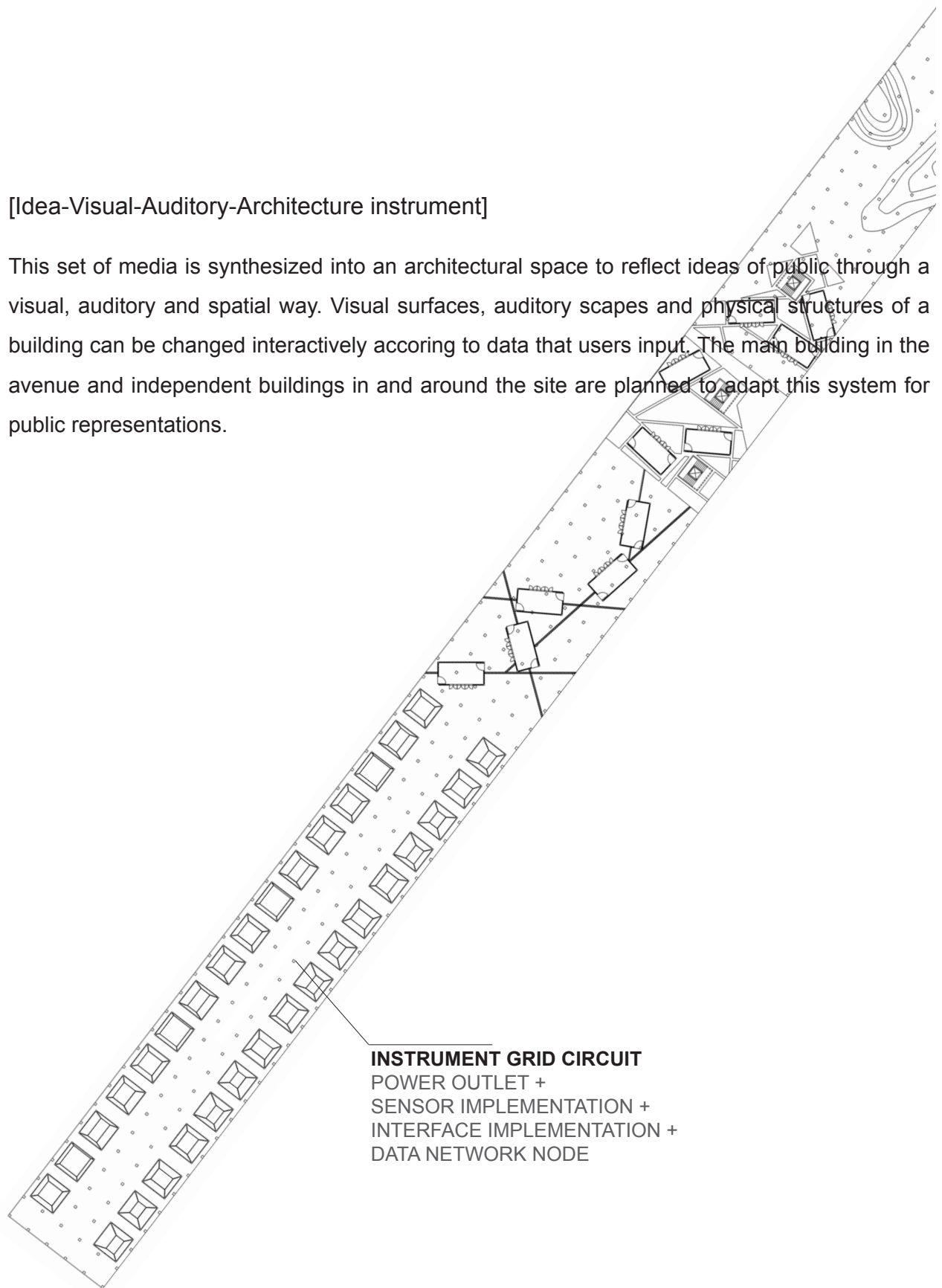
This instrument is planned to expand an interactive auditory experience into an architectural environment, therefore, the building can express the ideas of civic in a form of sound wave with spatial depth. Different types of architectural spaces are planned to be implemented: a sound projection hall, auditory pavilion, radio broadcasting center, outdoor amphitheater that are built with digital interfaces.



**INSTRUMENT GRID CIRCUIT**  
POWER OUTLET +  
SENSOR IMPLEMENTATION +  
INTERFACE IMPLEMENTATION +  
DATA NETWORK NODE

[Idea-Visual-Auditory-Architecture instrument]

This set of media is synthesized into an architectural space to reflect ideas of public through a visual, auditory and spatial way. Visual surfaces, auditory scapes and physical structures of a building can be changed interactively according to data that users input. The main building in the avenue and independent buildings in and around the site are planned to adapt this system for public representations.



**INSTRUMENT GRID CIRCUIT**  
POWER OUTLET +  
SENSOR IMPLEMENTATION +  
INTERFACE IMPLEMENTATION +  
DATA NETWORK NODE

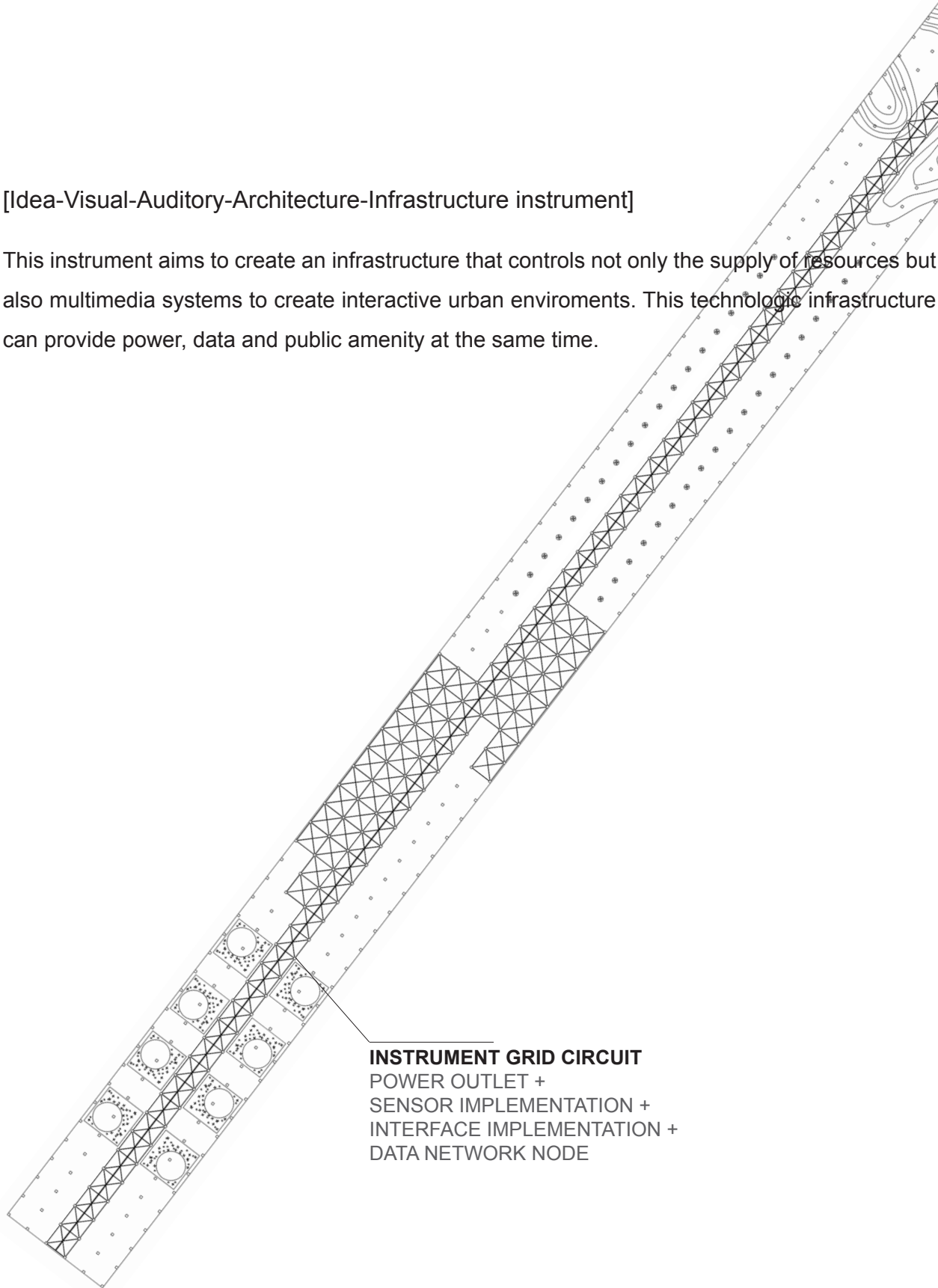
[Idea-Infrastructure instrument]

The infrastructural systems of Sejong Avenue can be interactive to public needs by adapting a digital information technology. Urban resources, including energy, data and natural amenities, can be controlled by the digital interface system which is responsive to civic needs. When people need more chances of activities, the infrastructure provide more electricity, information and natural elements, and in the opposite situation, it cuts out the supply responsively.



[Idea-Visual-Auditory-Architecture-Infrastructure instrument]

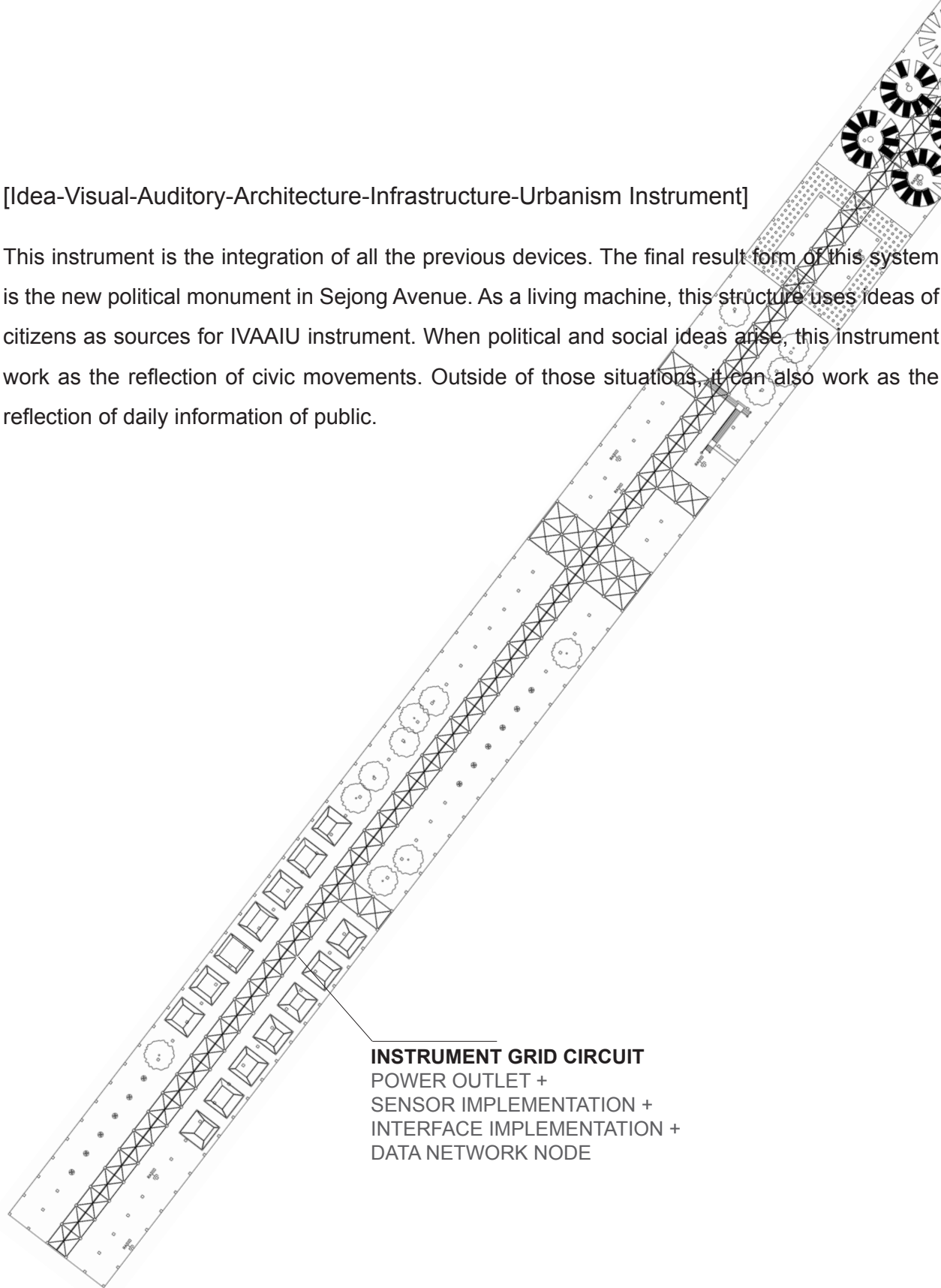
This instrument aims to create an infrastructure that controls not only the supply of resources but also multimedia systems to create interactive urban environments. This technologic infrastructure can provide power, data and public amenity at the same time.



**INSTRUMENT GRID CIRCUIT**  
POWER OUTLET +  
SENSOR IMPLEMENTATION +  
INTERFACE IMPLEMENTATION +  
DATA NETWORK NODE

[Idea-Visual-Auditory-Architecture-Infrastructure-Urbanism Instrument]

This instrument is the integration of all the previous devices. The final result form of this system is the new political monument in Sejong Avenue. As a living machine, this structure uses ideas of citizens as sources for IVAAIU instrument. When political and social ideas arise, this instrument work as the reflection of civic movements. Outside of those situations, it can also work as the reflection of daily information of public.



**INSTRUMENT GRID CIRCUIT**  
POWER OUTLET +  
SENSOR IMPLEMENTATION +  
INTERFACE IMPLEMENTATION +  
DATA NETWORK NODE



## [Instrument Grid Circuit]

The grid system underlying all instruments is designed to accommodate various digital implementations by sharing an identical systematic platform. Different instruments can be easily plugged-in and plugged-out on this circuit. Also this circuit system with open programmability allows the access to civic programmers to plug in their own developed devices. Tactical media, which are the bottom-up devices against the power center(Galloway, 2004), can be implanted on this circuit.

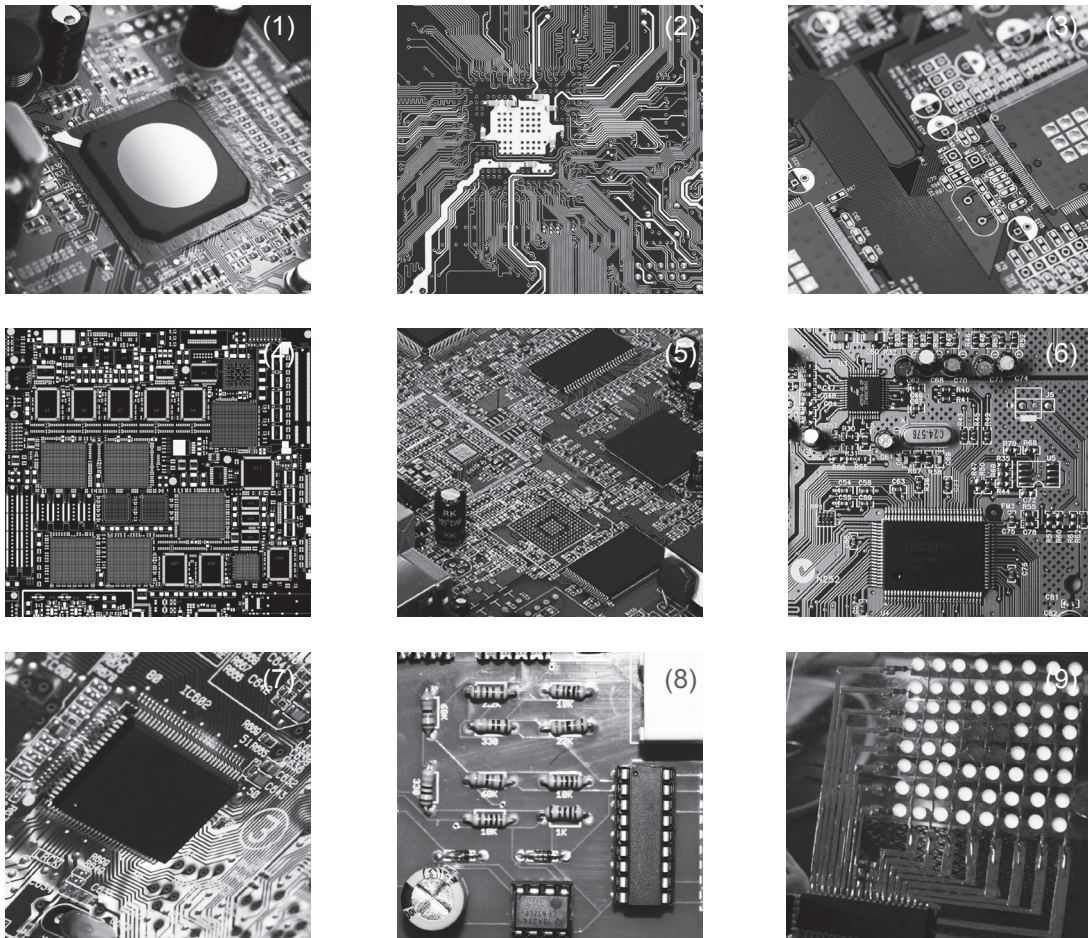


Figure 4-005. Digital and Analog Circuit Systems

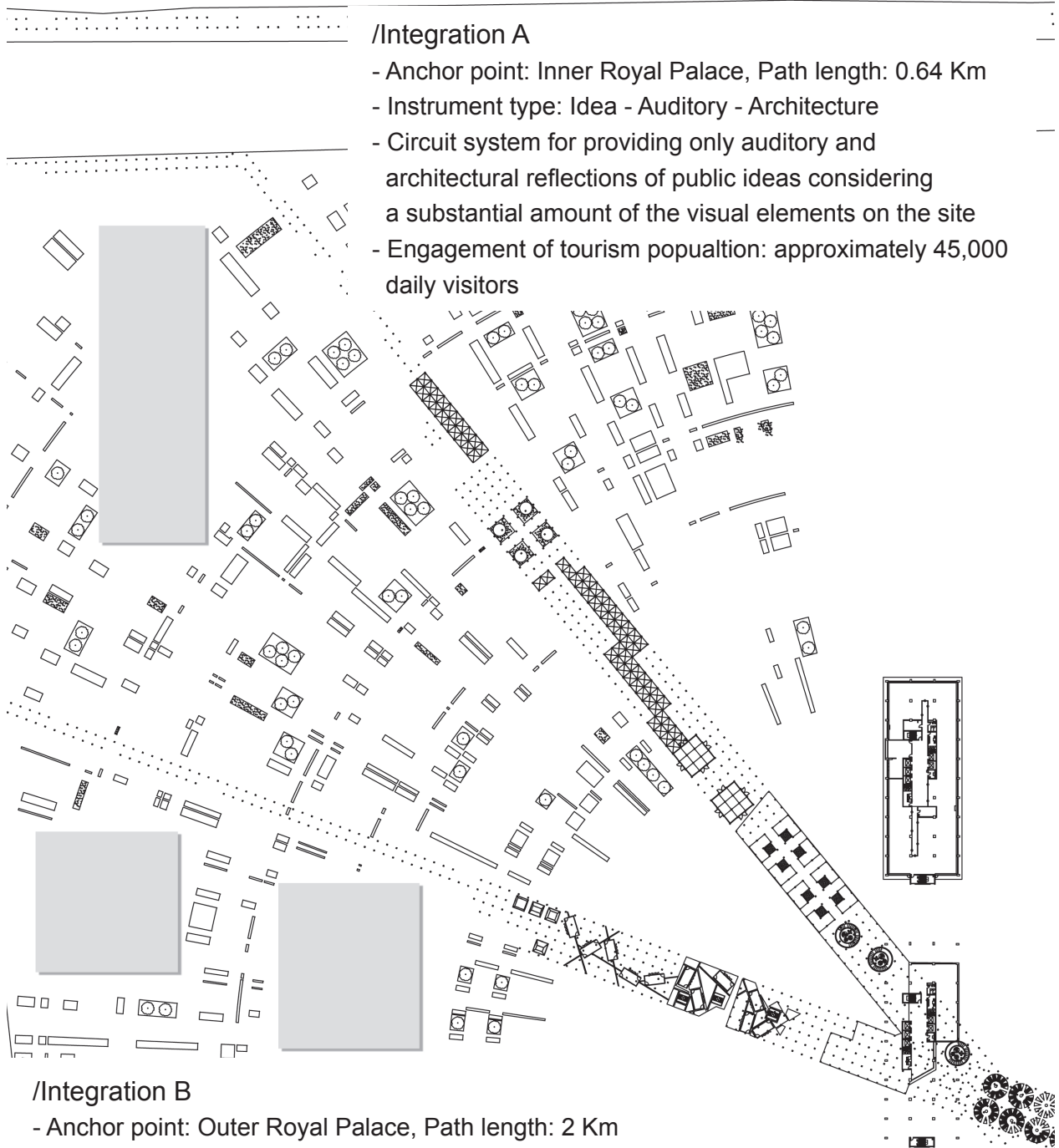
Sources: (1) Koh Electronic, (2) Manufacturing Days, (3) Pcb Universe, (4) Design a Circuit, (5) Rsp Inc, (6) Rea Technologies, (7) 24/7 Media, (8) Analog Machine, (9) Adafruit

#### 4-004) Plan Set

The logic of integration plan is combining multiple instruments into the existing structure of in and around of Sejong Avenue which is the result of complex development histories. Rather than de-structing any of the current buidlings, this plan aims to embed the fluent body of a structure keep- ing the physical existence. This multi cell built environment can be resulted as an unique spatial system that can interact with the surrounding functions(Alyward, 1974).

To achieve a pedestrian oriented development, the central poinf of design is set up as a pedestri- an infrastructure. Starting from the center of the site, instruments are planned to be implemented along with seven walking routes. US Embassy building is planned to be act as the hub of these routes after the embassy office is moved.

Figure 4-006. Integration A & B Plan(Opposite)



/Integration A

- Anchor point: Inner Royal Palace, Path length: 0.64 Km
- Instrument type: Idea - Auditory - Architecture
- Circuit system for providing only auditory and architectural reflections of public ideas considering a substantial amount of the visual elements on the site
- Engagement of tourism population: approximately 45,000 daily visitors

/Integration B

- Anchor point: Outer Royal Palace, Path length: 2 Km
- Instrument type: Idea - Visual - Auditory - Architecture
- Circuit system for providing visual, auditory and architectural reflections of public ideas
- Revitalizing existing art + culture pedestrian paths with new media: Samcheongdong and Hyojadong roads
- Multi media interaction of political, social and cultural ideas

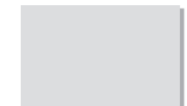
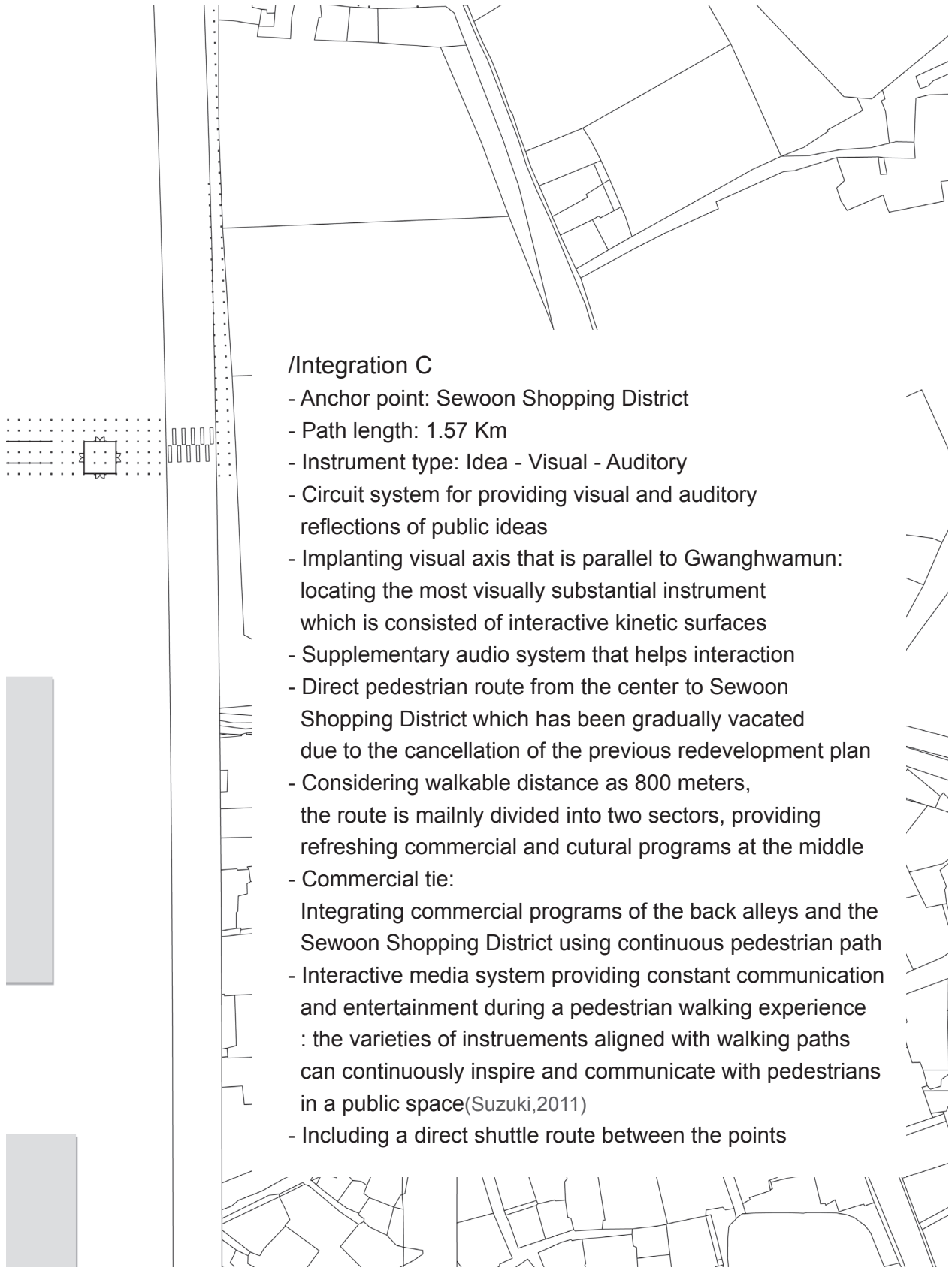




Figure 4-007. Integration C Plan(100-101)



/Integration C

- Anchor point: Sewoon Shopping District
- Path length: 1.57 Km
- Instrument type: Idea - Visual - Auditory
- Circuit system for providing visual and auditory reflections of public ideas
- Implanting visual axis that is parallel to Gwanghwamun: locating the most visually substantial instrument which is consisted of interactive kinetic surfaces
- Supplementary audio system that helps interaction
- Direct pedestrian route from the center to Sewoon Shopping District which has been gradually vacated due to the cancellation of the previous redevelopment plan
- Considering walkable distance as 800 meters, the route is mailny divided into two sectors, providing refreshing commercial and cuturel programs at the middle
- Commercial tie:  
Integrating commercial programs of the back alleys and the Sewoon Shopping District using continuous pedestrian path
- Interactive media system providing constant communication and entertainment during a pedestrian walking experience : the varieties of instruemnts aligned with walking paths can continuously inspire and communicate with pedestrians in a public space(Suzuki,2011)
- Including a direct shuttle route between the points

### /Integration E

- Anchor point: Seoul Station, Path length: 1.73Km
- Instrument type: Idea - Auditory
- Circuit system for providing idea and auditory reflections of civic ideas with public audio systems
- Engagement of train station users: approximately 75,400 daily visitors
- Providing an accessible path from the major transportation node to the center and playing interactive sound programs for pedestrians on the street

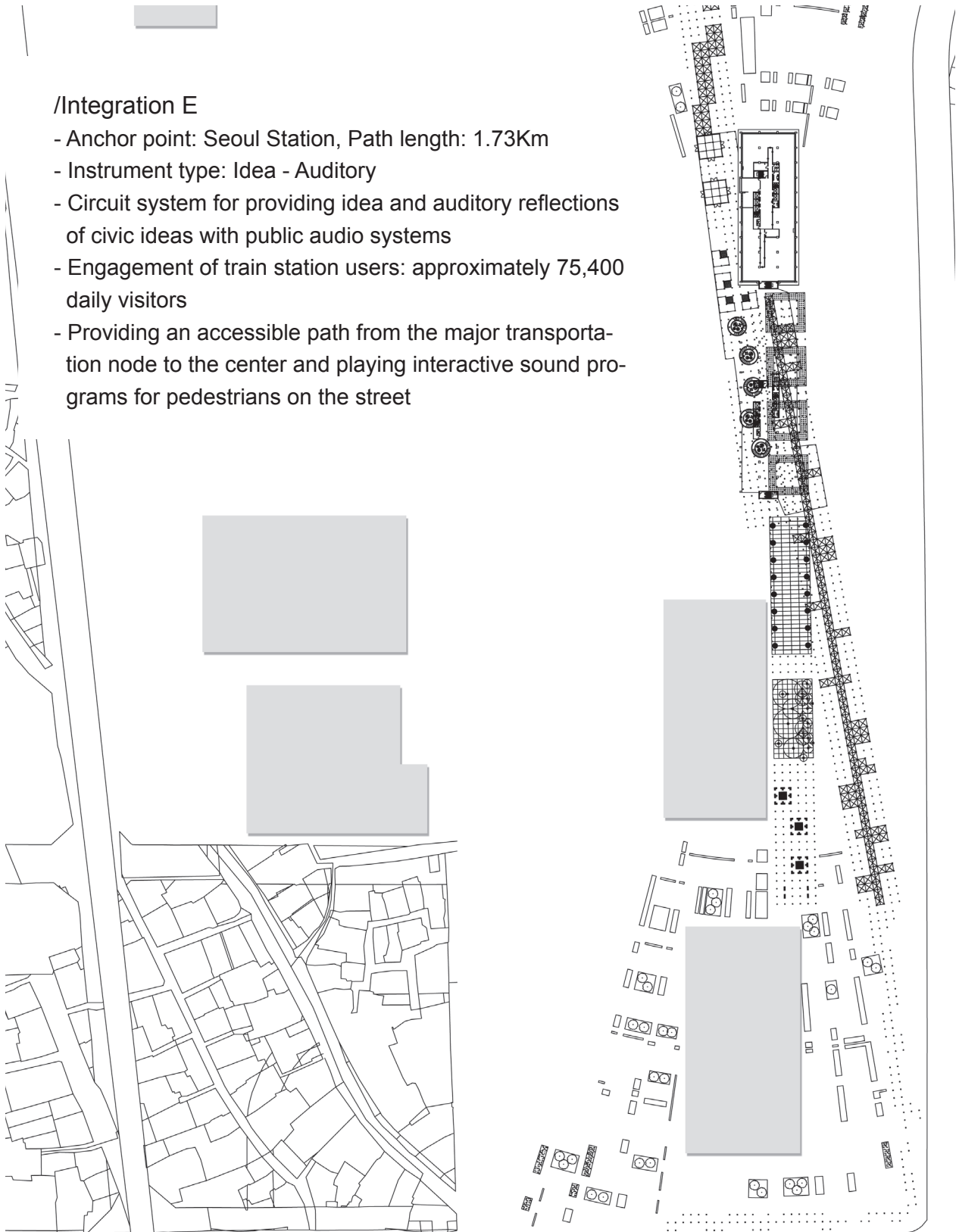
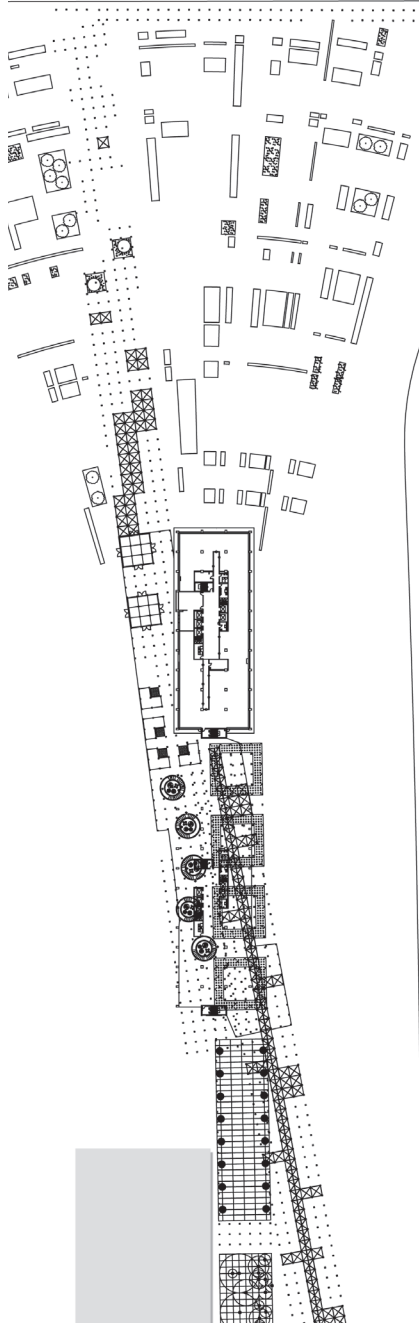
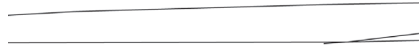


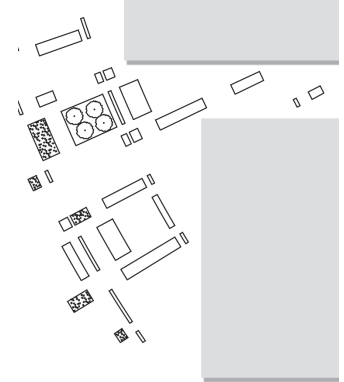
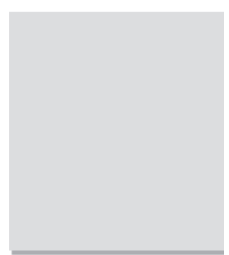
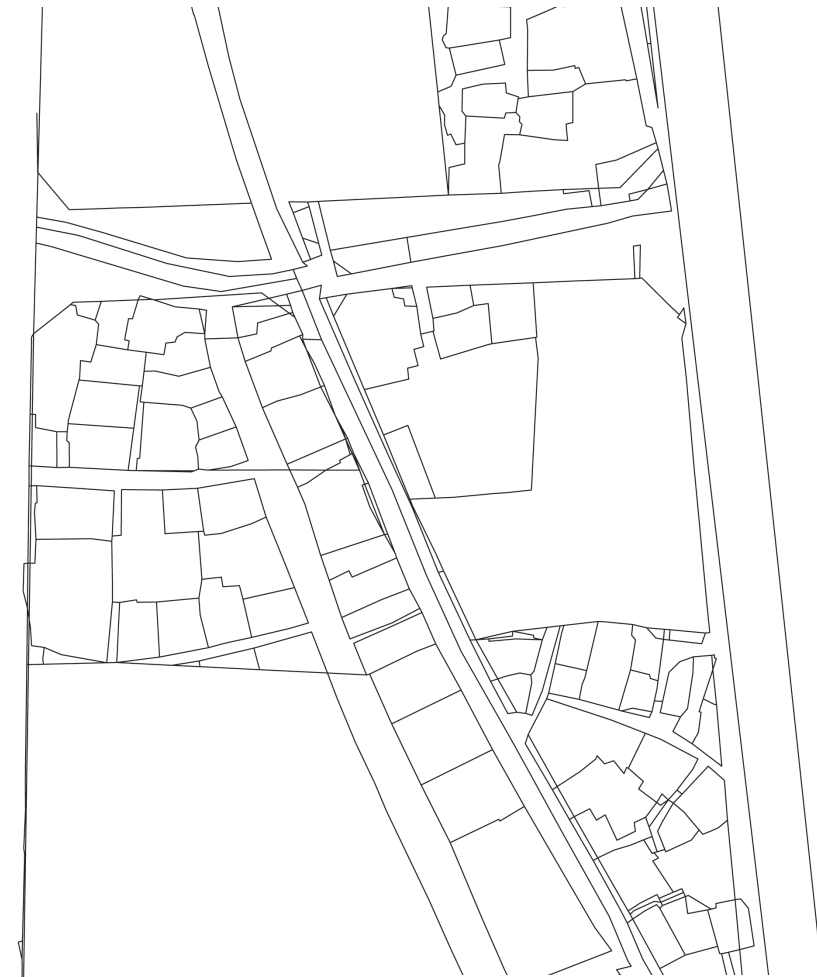
Figure 4-008. Integration D & E Plan(102-103)



### /Integration D

- Anchor point: Sungnyemun, Path length: 1.93Km
- Instrument type: Idea - Auditory - Architecture
- Circuit system for providing auditory and architectural reflections of public ideas considering the strong visual presences of Gwanghwamun and Sungnyemun
- Historic heritage axis: linking two national heritages and providing multi media amenities during a path





**/Integration G**

- Anchor point: Yongsan District
- Path length: 3.97 Km
- Instrument type: Idea - Visual - Auditory - Architecture - Infrastructure
- Circuit system for providing visual, auditory, architectural and infrastructural reflections of public ideas
- Providing substantial pedestrian populations for the revitalization of the Yongsan district, which is in a vacancy crisis due to the cancellation of former development plan
- including an electric generation and transmission system for entire site which can react to the real-time electric needs of users
- Implementing a direct shuttle route between the points

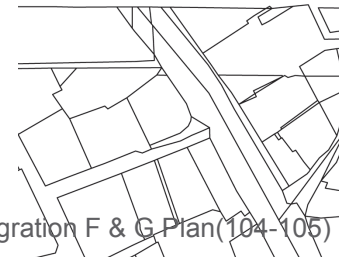


Figure 4-009. Integration F & G Plan (104-105)



## /Integration F

- Anchor point: Dongdaemun History and Culture Park
- Path length: 3.06 Km
- Instrument type: Idea - Visual - Architecture
- Circuit system for providing visual and architectural reflections of public ideas
- Low density responsive visual and spatial implementations along a pedestrian path
- Connecting newly built public squares
- Implementing a direct shuttle route between the points

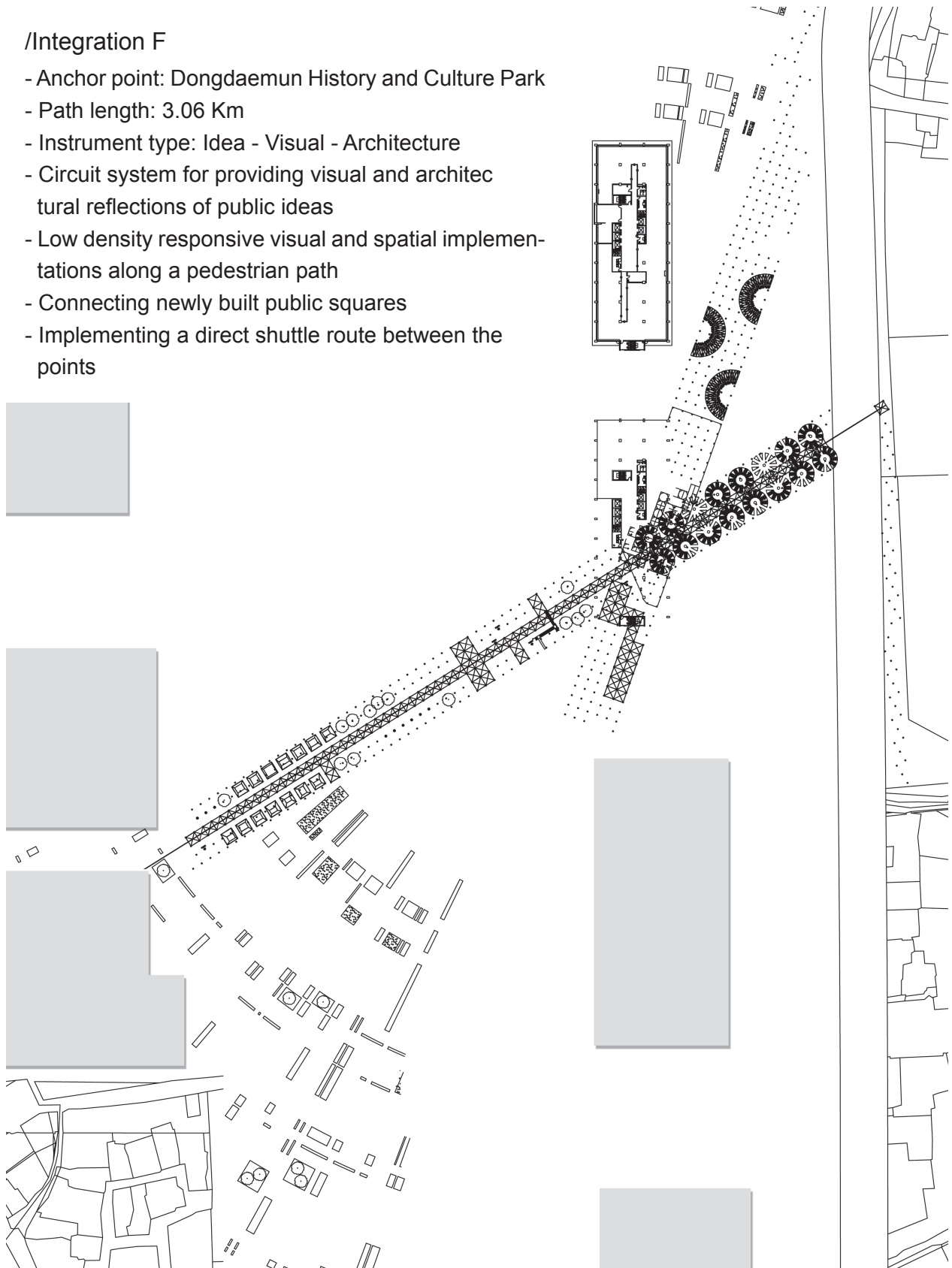




Figure 4-040, Master Plan, A (106-107)



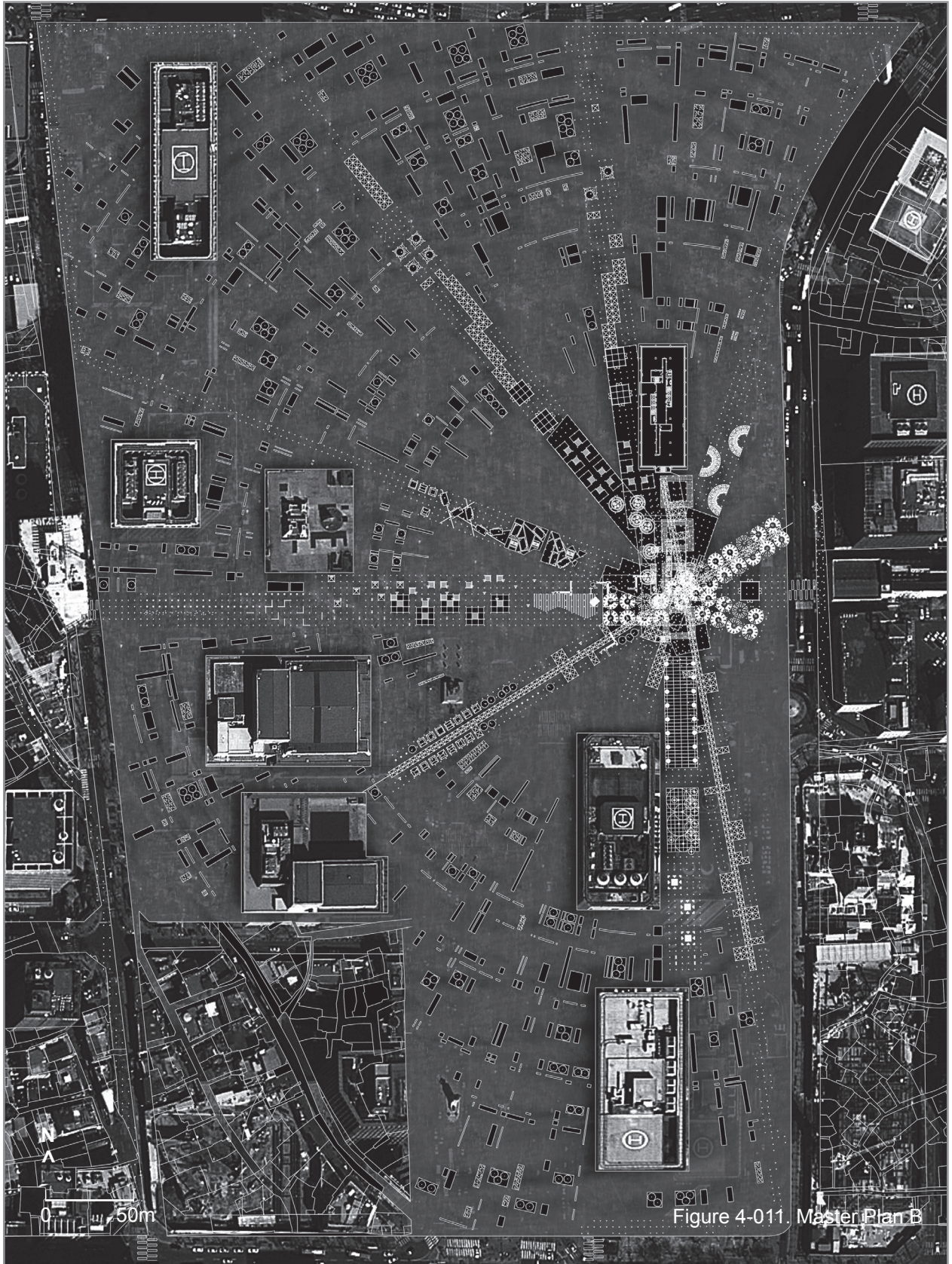
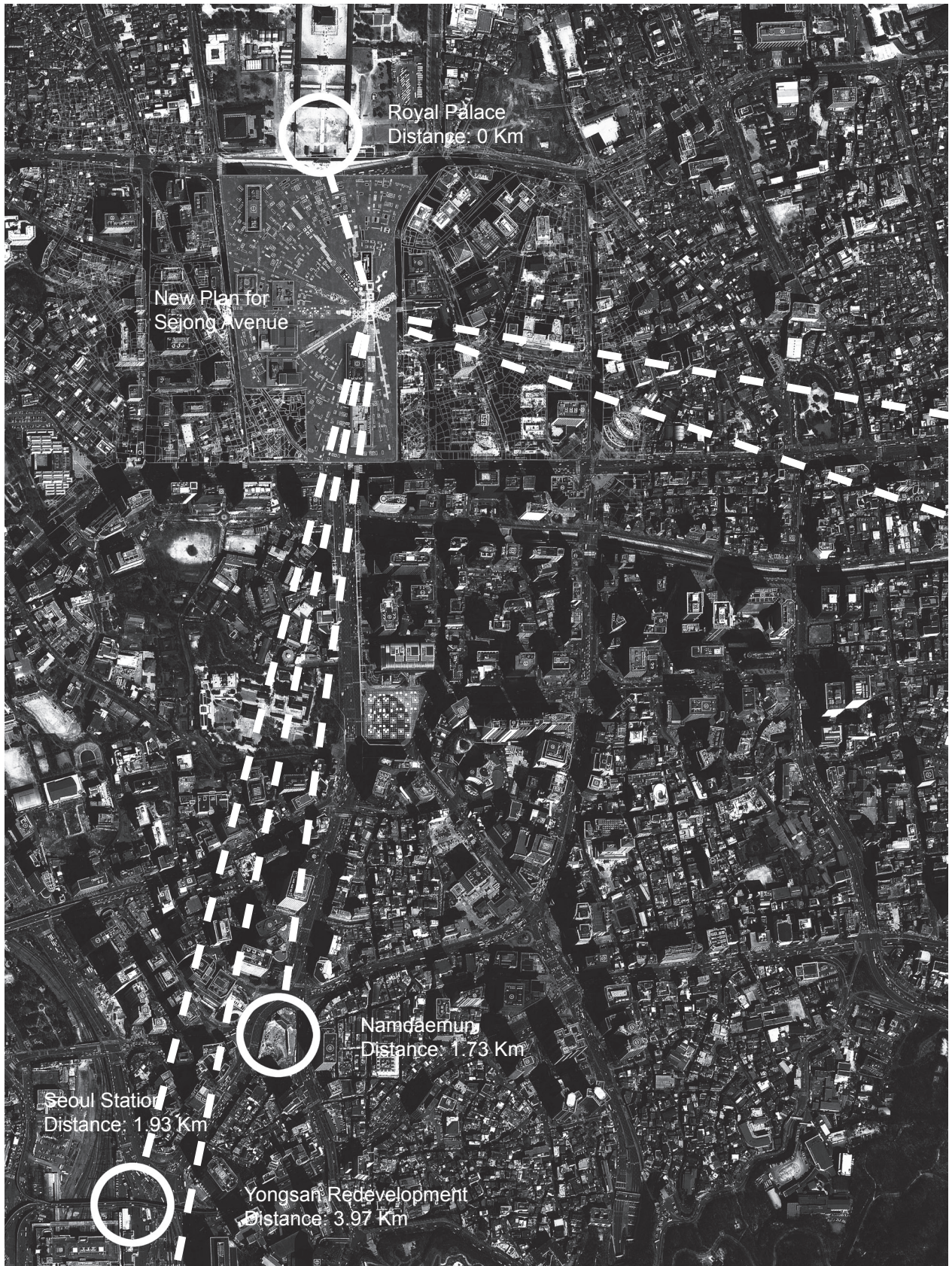


Figure 4-011. Master Plan B





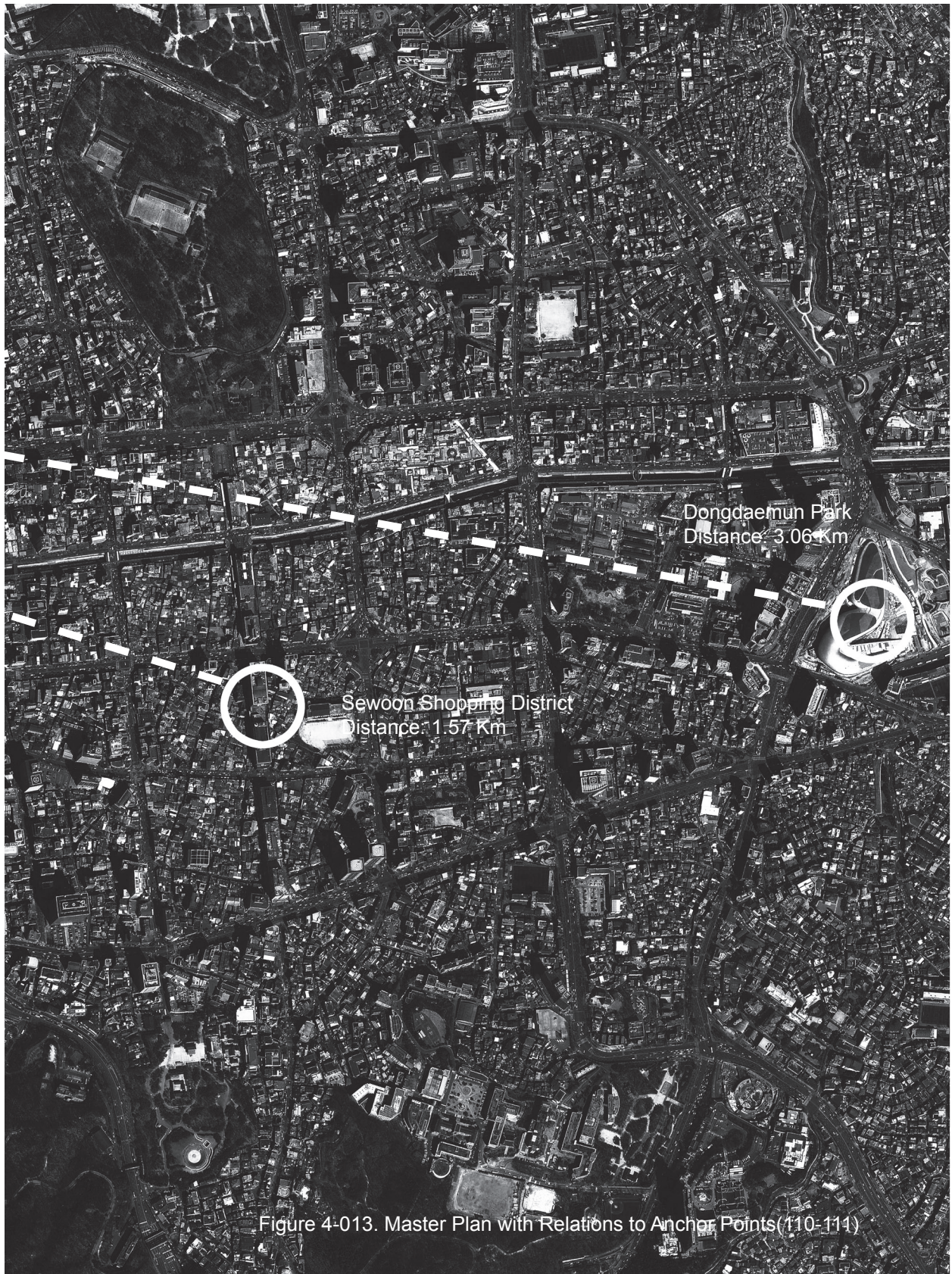


Figure 4-013. Master Plan with Relations to Anchor Points (110-111)

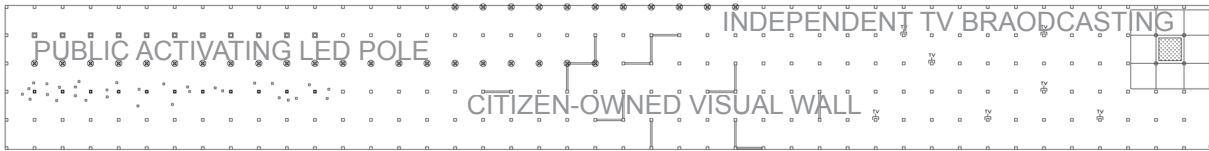
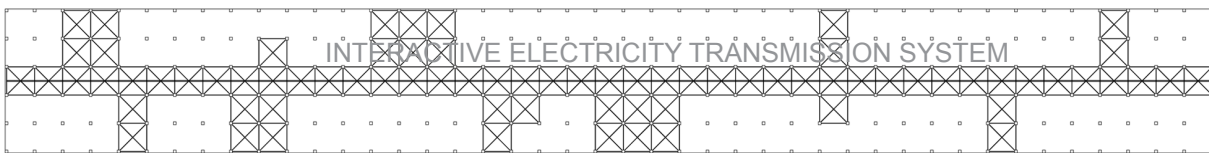
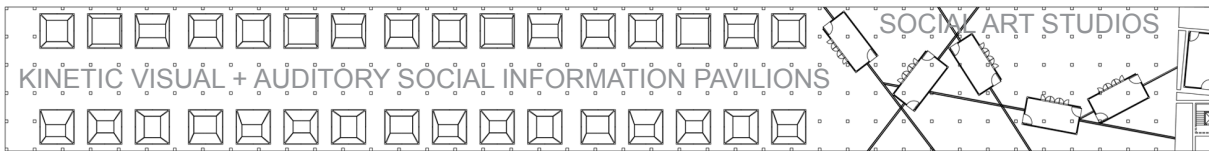
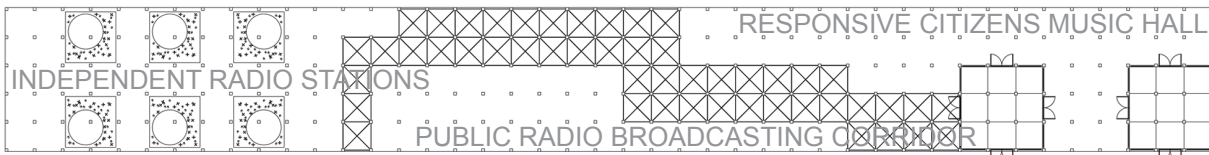
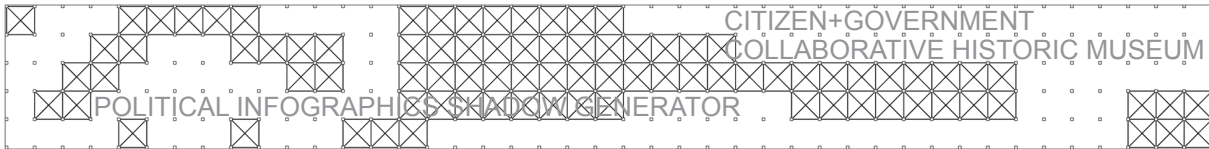
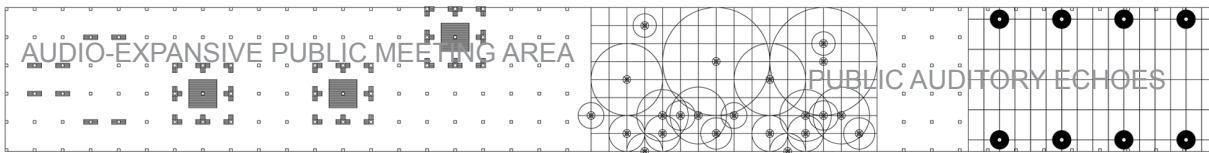
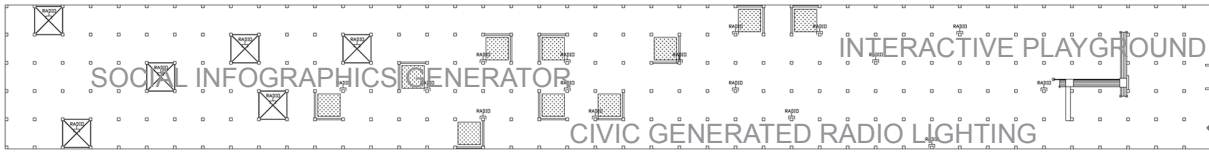
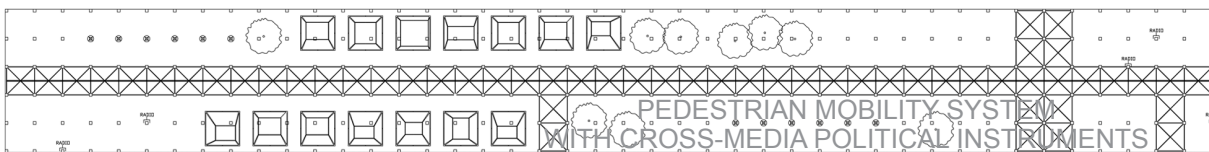
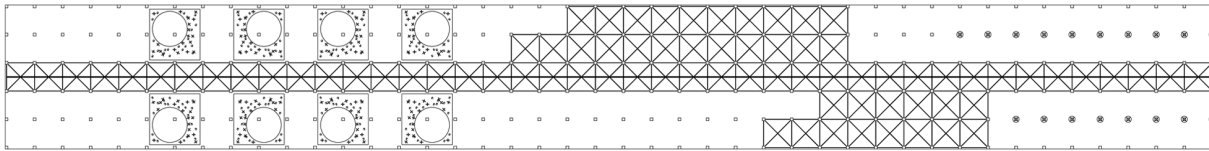


Figure 4-014. Components Plan(112-113)

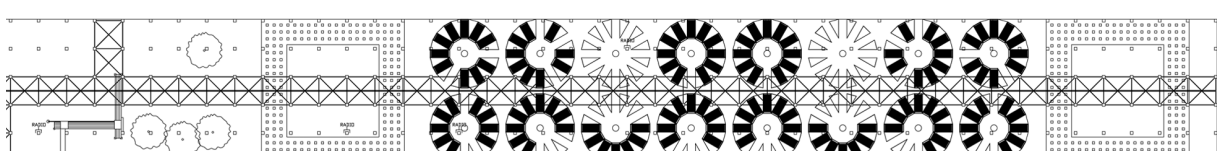
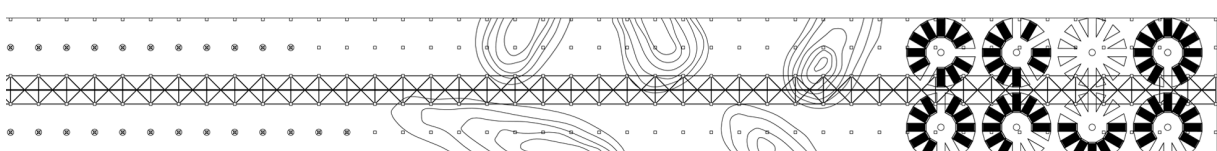
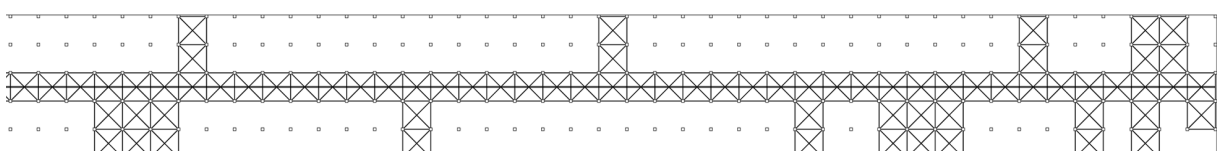
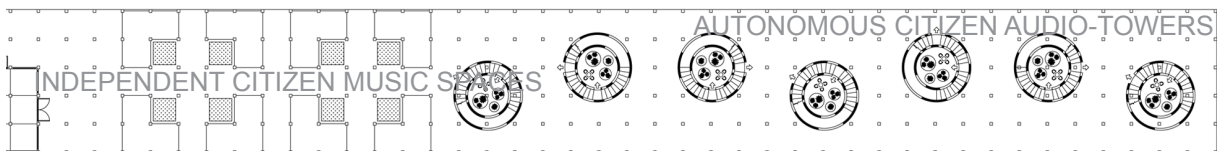
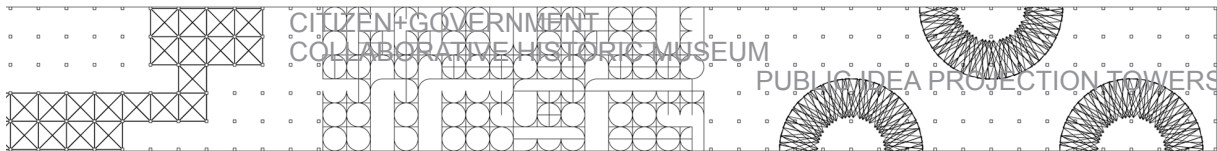
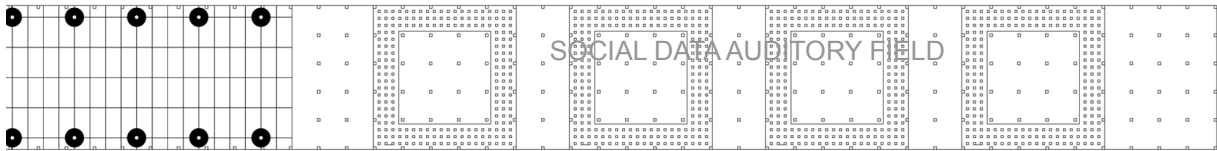
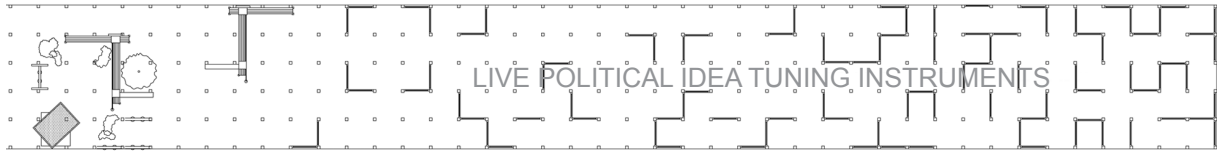


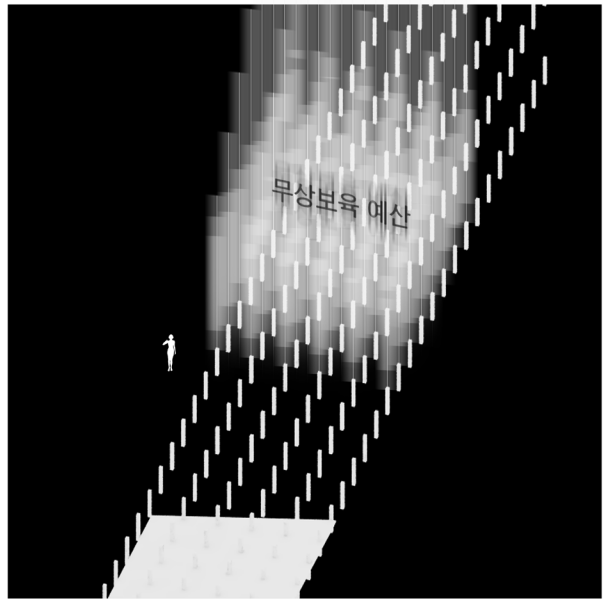
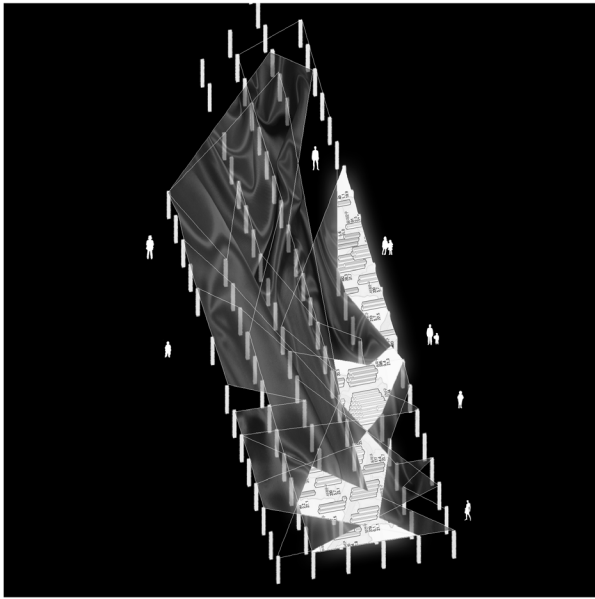
ELECTRIC TRANSMISSION SYSTEM CONNECTED TO CROSS-MEDIA POLITICAL INSTRUMENTS





PUBLIC GENERATIVE VISUAL PROJECTORS





[Default]: Soft fabric  
 [Activated]: Generic grid solidifies the form of the fabric and creates flexible screens  
 - People can express their ideas with screens which can be formed in various degrees.

[Default]: Night light  
 [Activated]: Responsive light poles  
 - When citizens want to initiate a certain policy, they can turn on light poles. The intensity of light increases according to size of advocates.

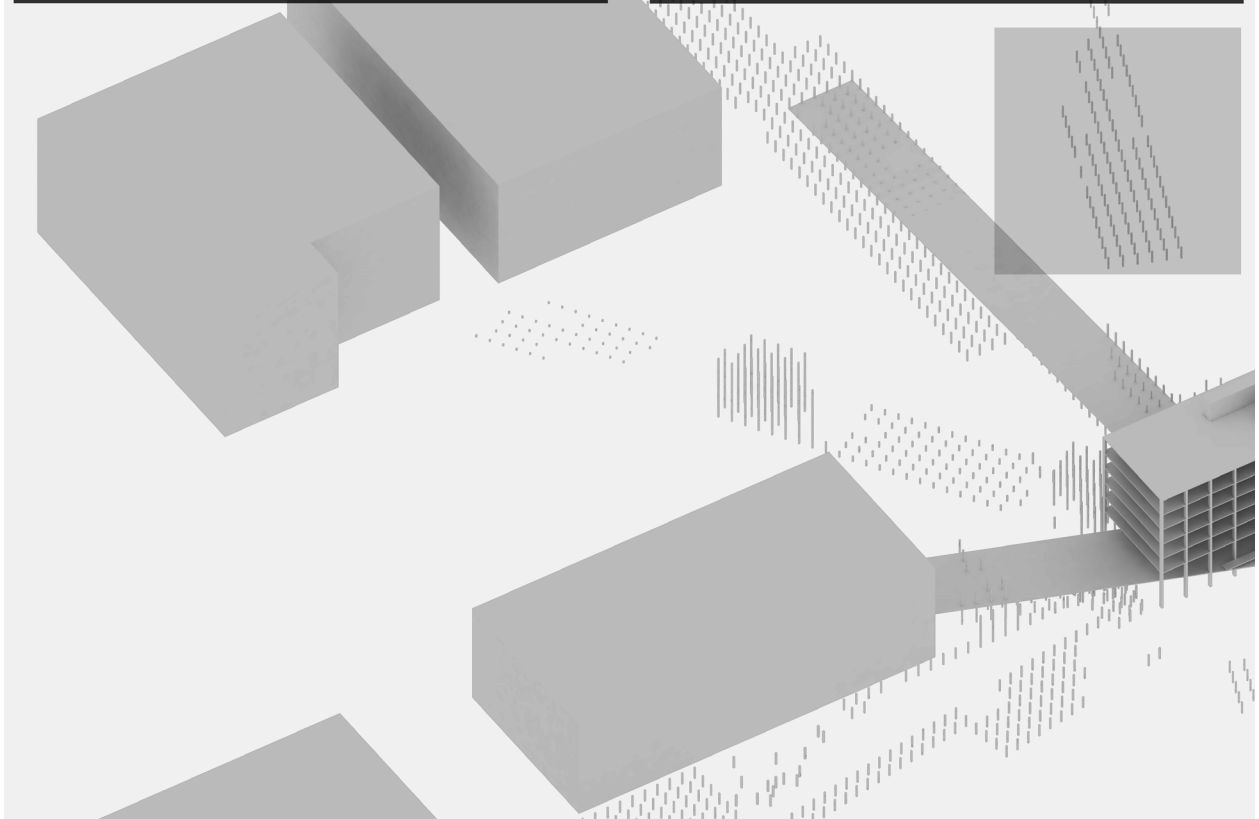
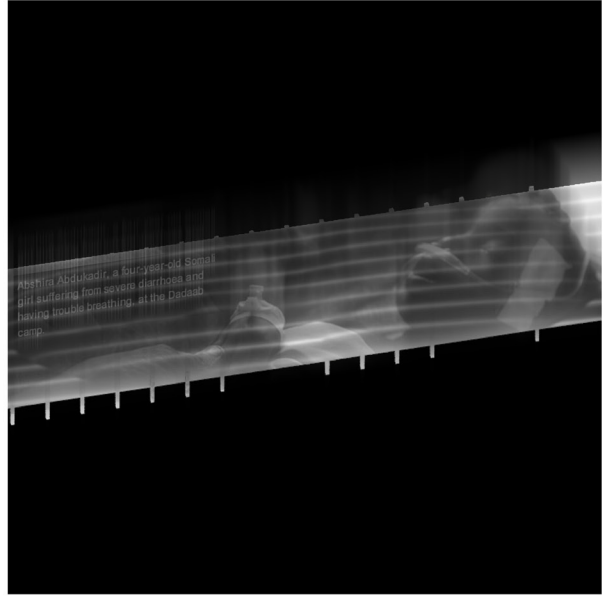
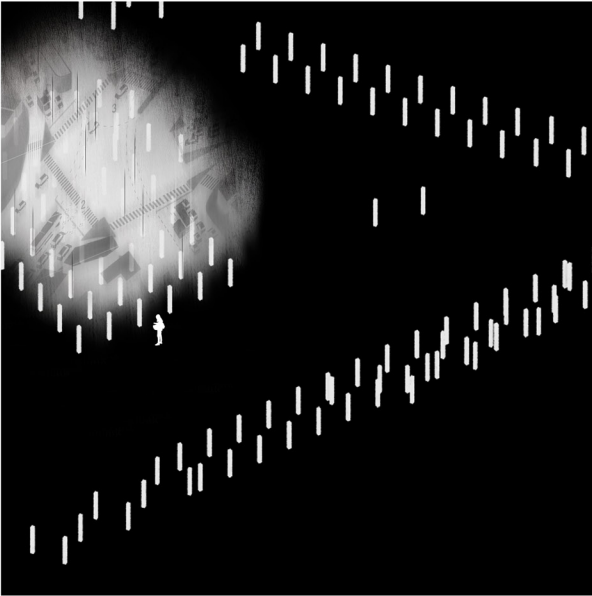
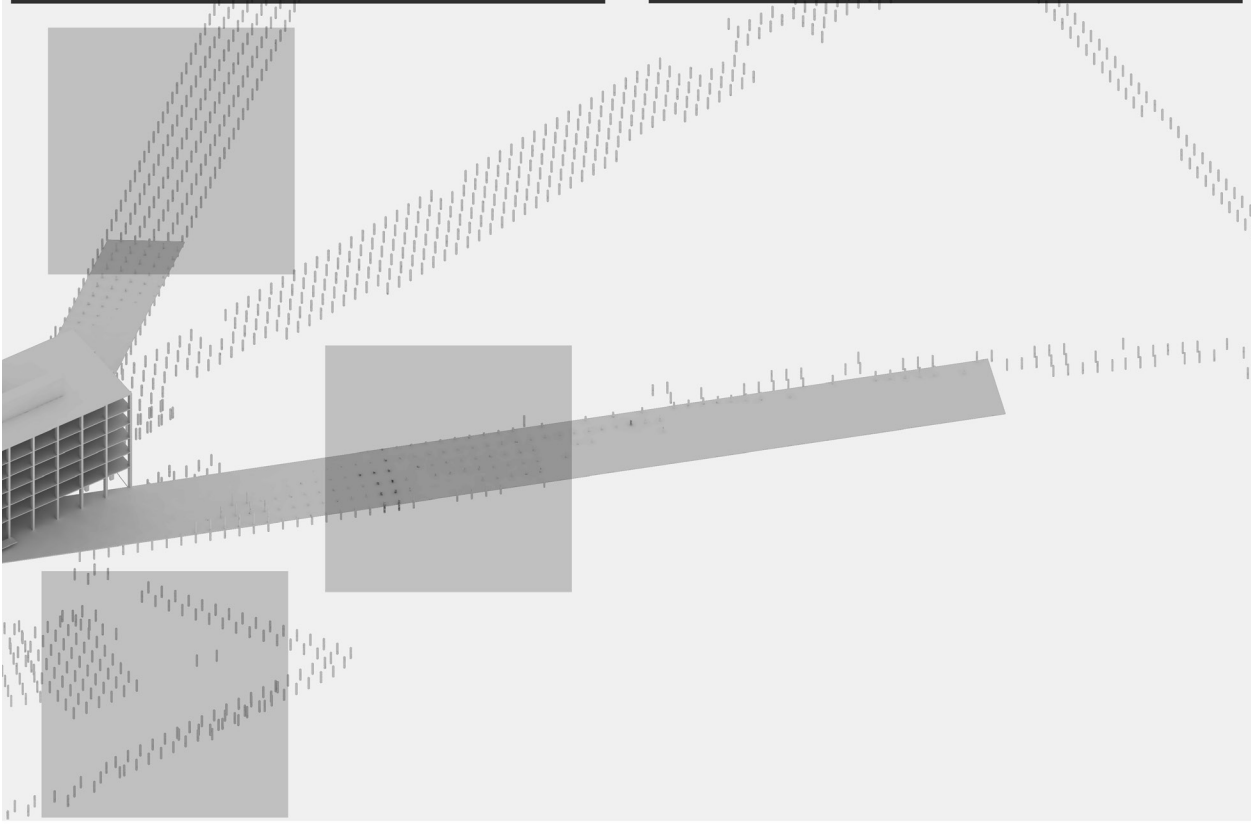


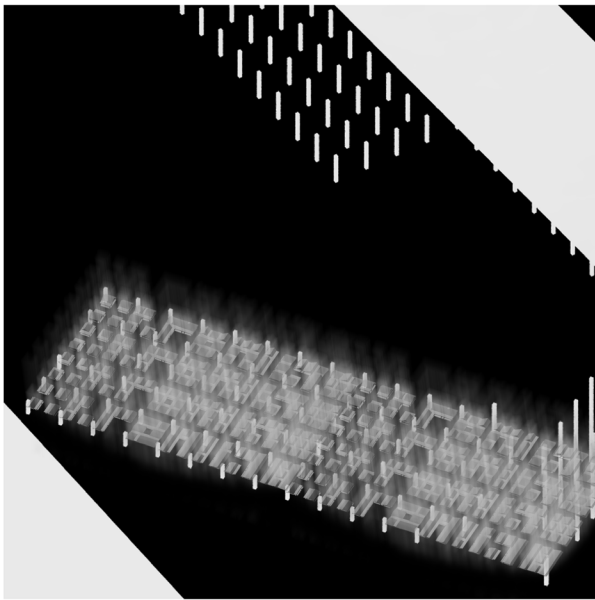
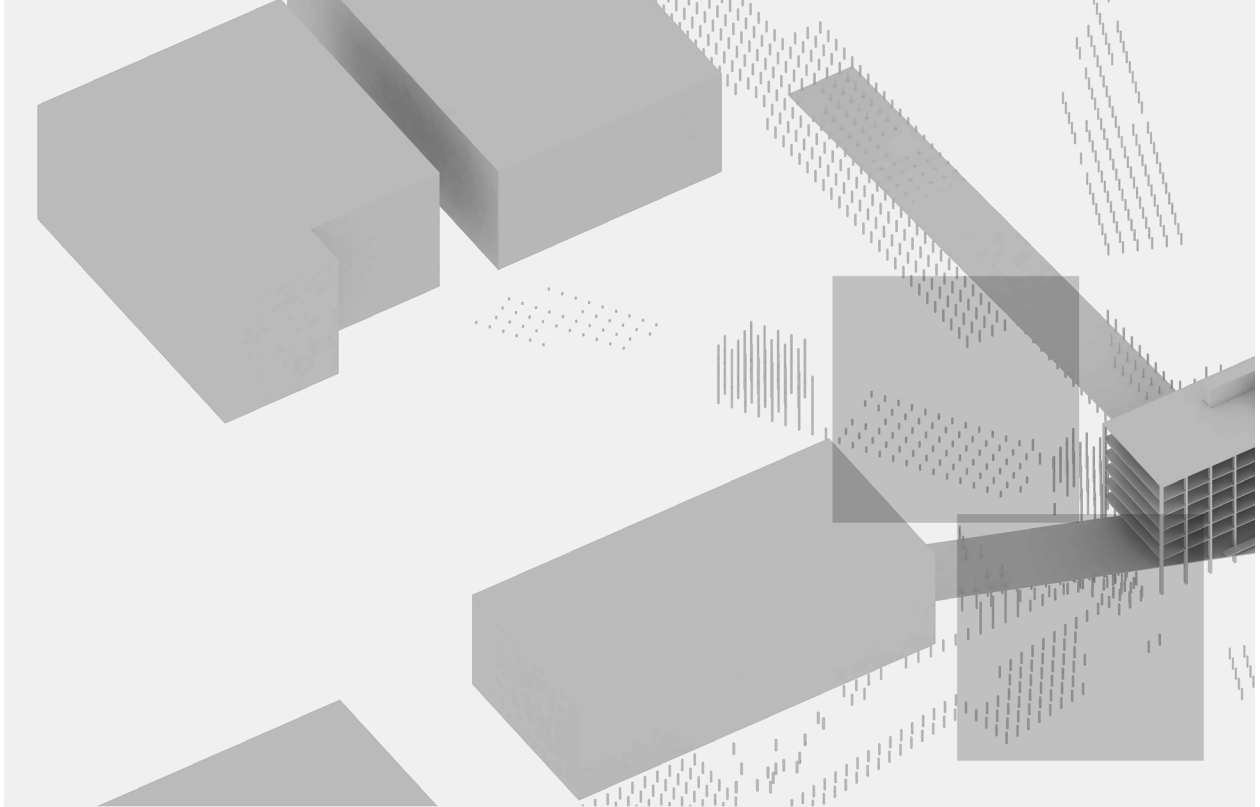
Figure 4-015. Components Perspective Drawings(114 -117)



[Default]: Humidity regulator  
 [Activated]: Spatial public survey  
 - The government can do a public survey about spatial projects using modular sensors and graphic projections on fog.

[Default]: Pedestrian path  
 [Activated]: Informative landscape  
 - People can raise social issues by projecting information on an interactive landscape, which reacts to pedestrian movement.

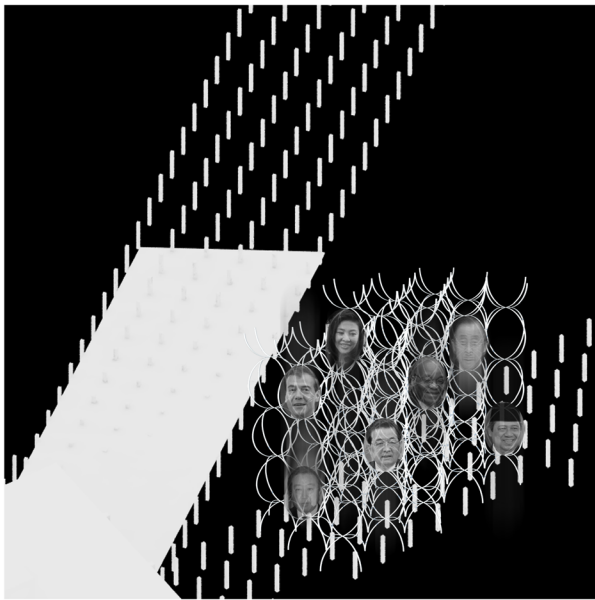
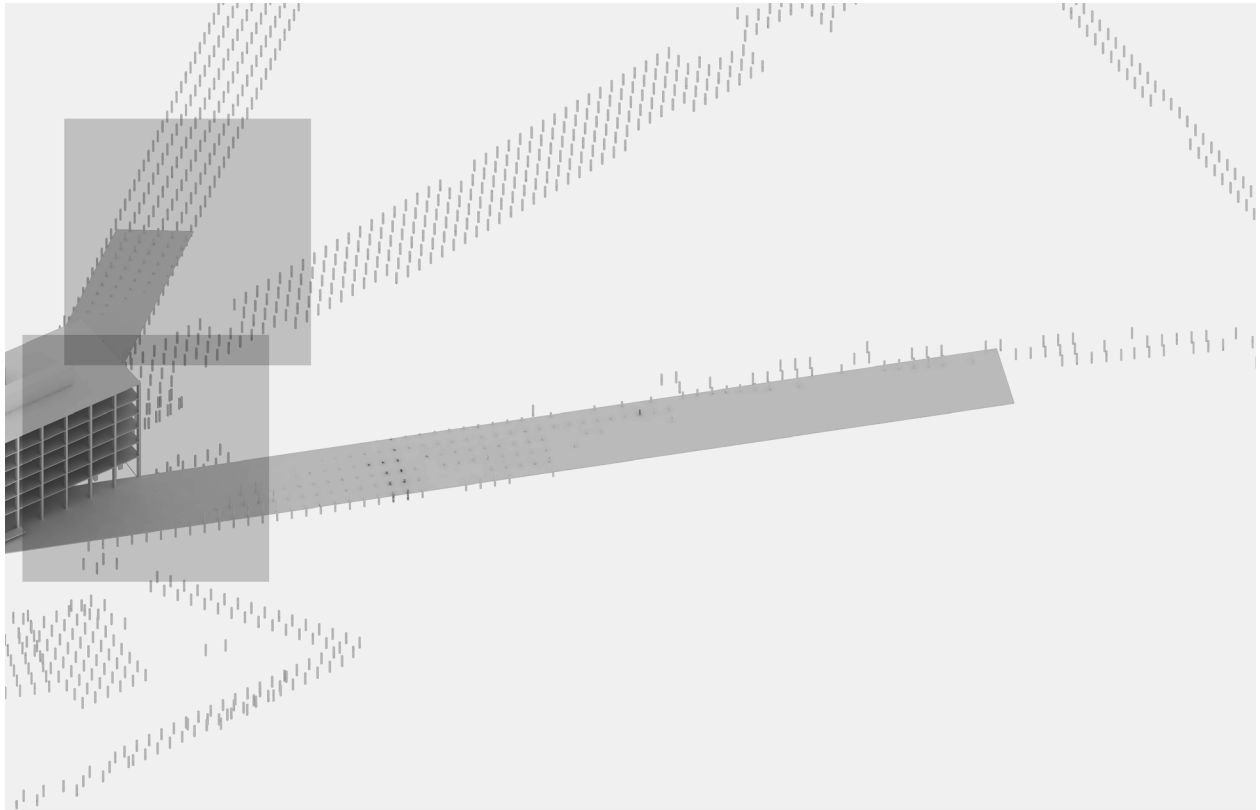




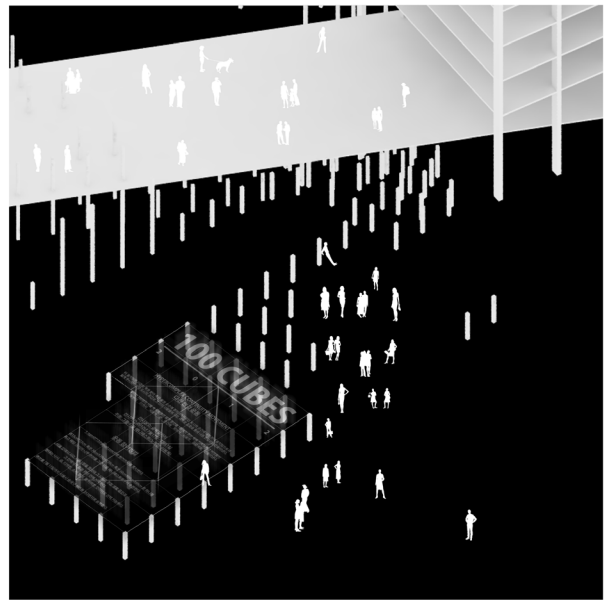
[Default] = [Activated]: Citizen + Government collaborated historic museum  
 - Citizens and the government can develop the history of the nation together using an interactive system.



[Default]: Glass facade  
 [Activated]: Interactive facade  
 - Public can project their ideas on the large scale facade of the building.



[Default]: Real-time popularity rating for public figures  
 [Activated]: Real-time broadcasting for elections



[Default]: Shade generator  
 [Activated]: Infographics shade generator  
 - This instrument creates both graphics for civic demonstrations and shades for public accommodations at the same time.

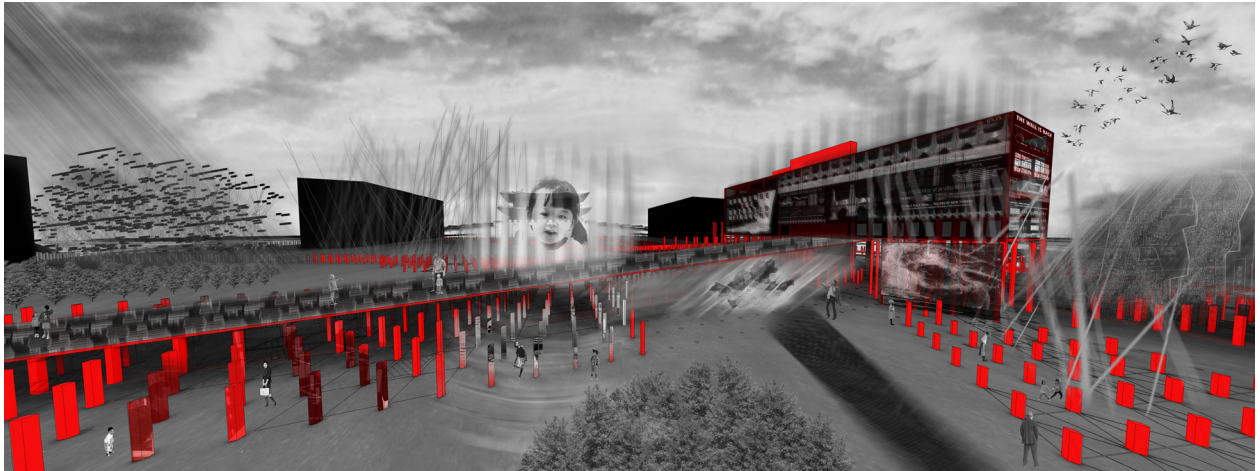
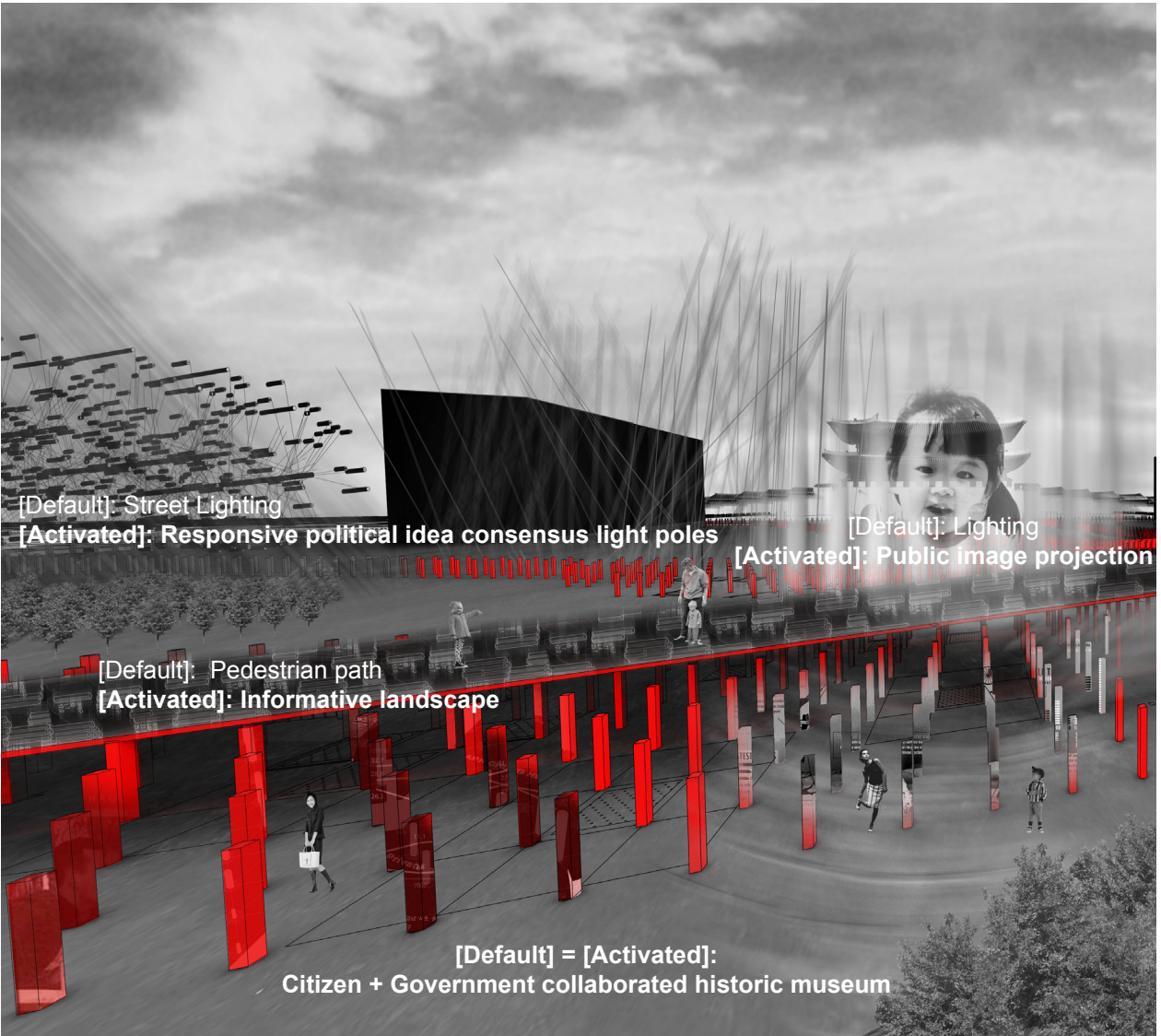
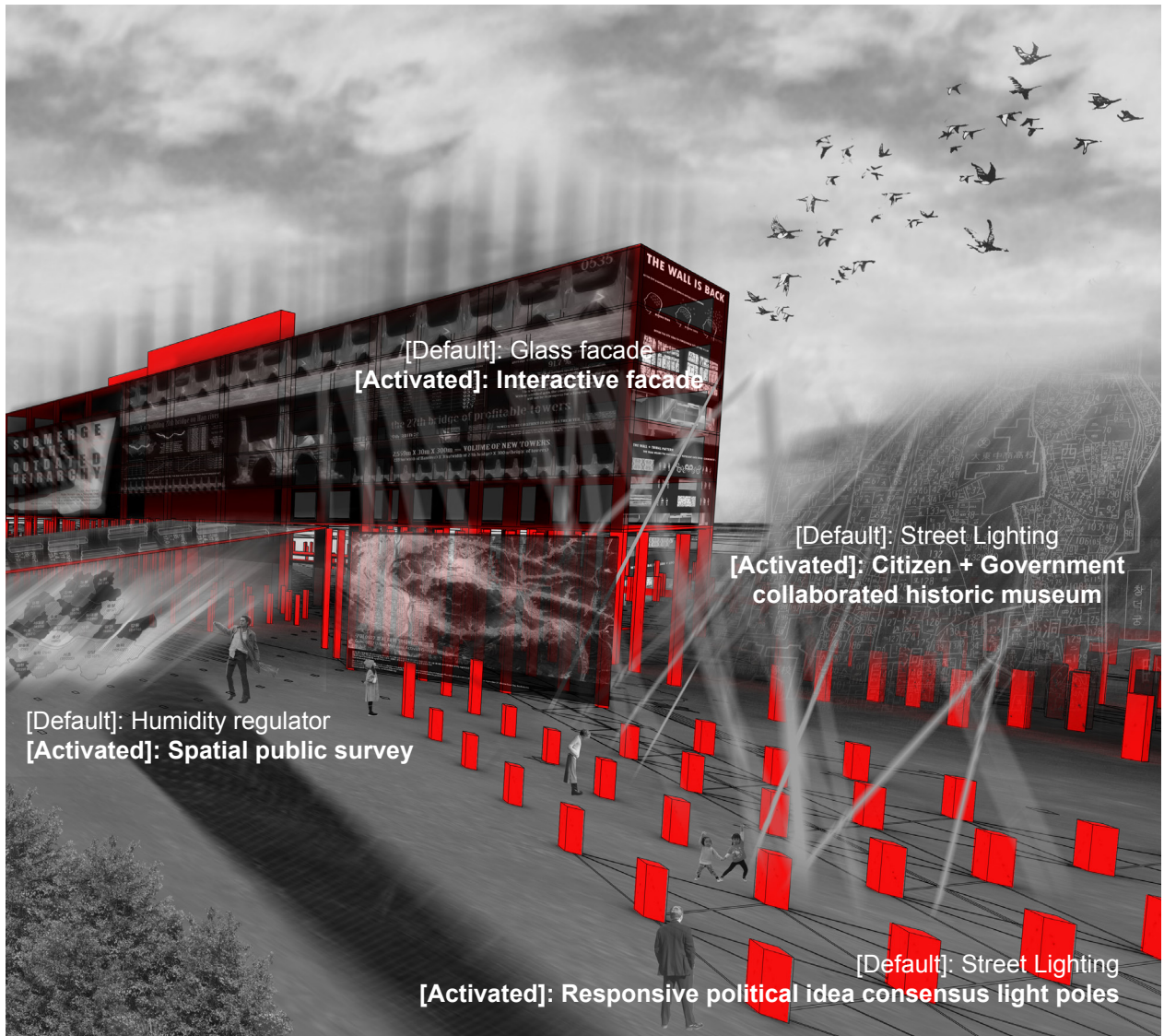


Figure 4-016. Perspective Drawings of Activated System(118-119)





[Default]: Glass facade  
[Activated]: Interactive facade

[Default]: Street Lighting  
[Activated]: Citizen + Government  
collaborated historic museum

[Default]: Humidity regulator  
[Activated]: Spatial public survey

[Default]: Street Lighting  
[Activated]: Responsive political idea consensus light poles

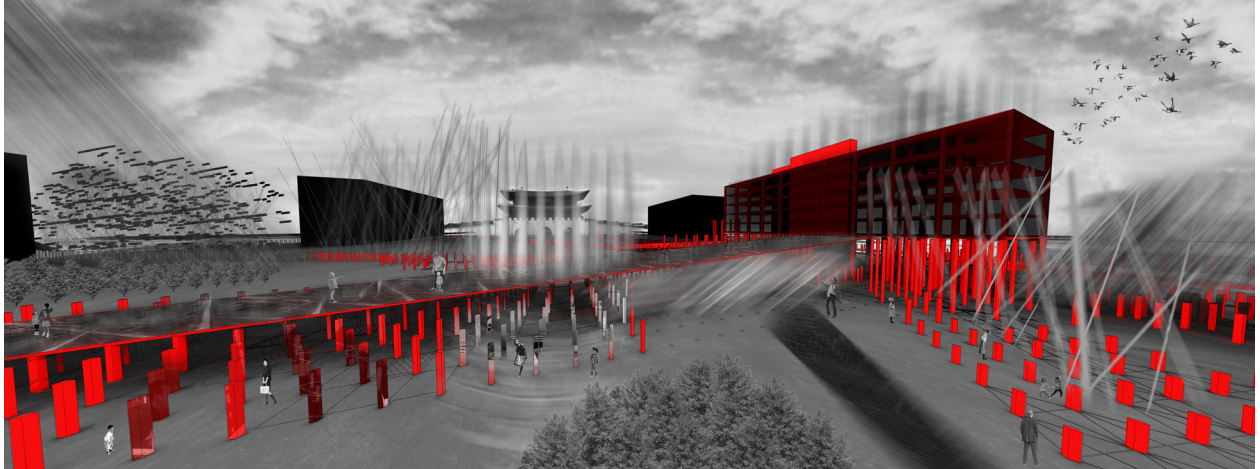
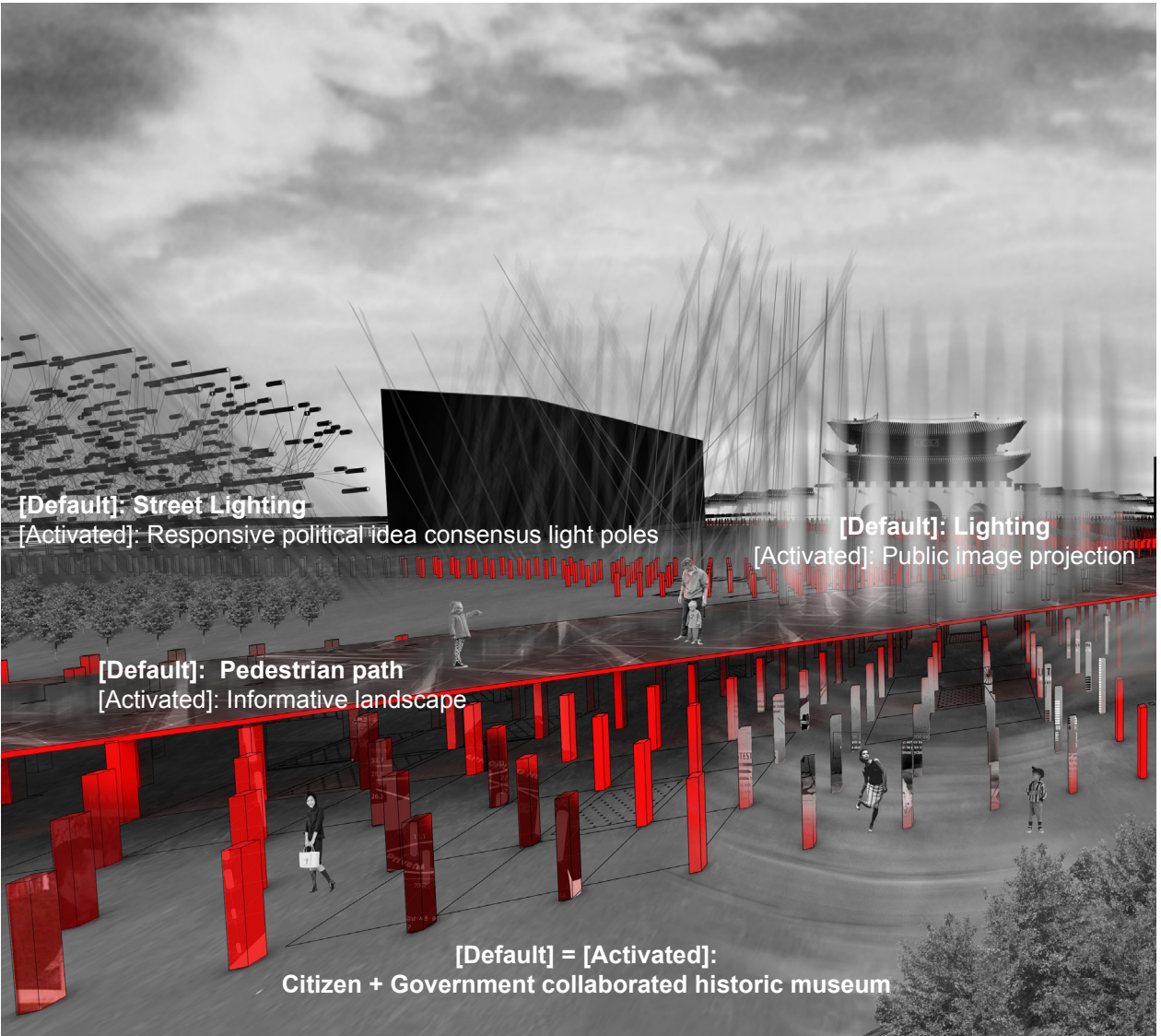
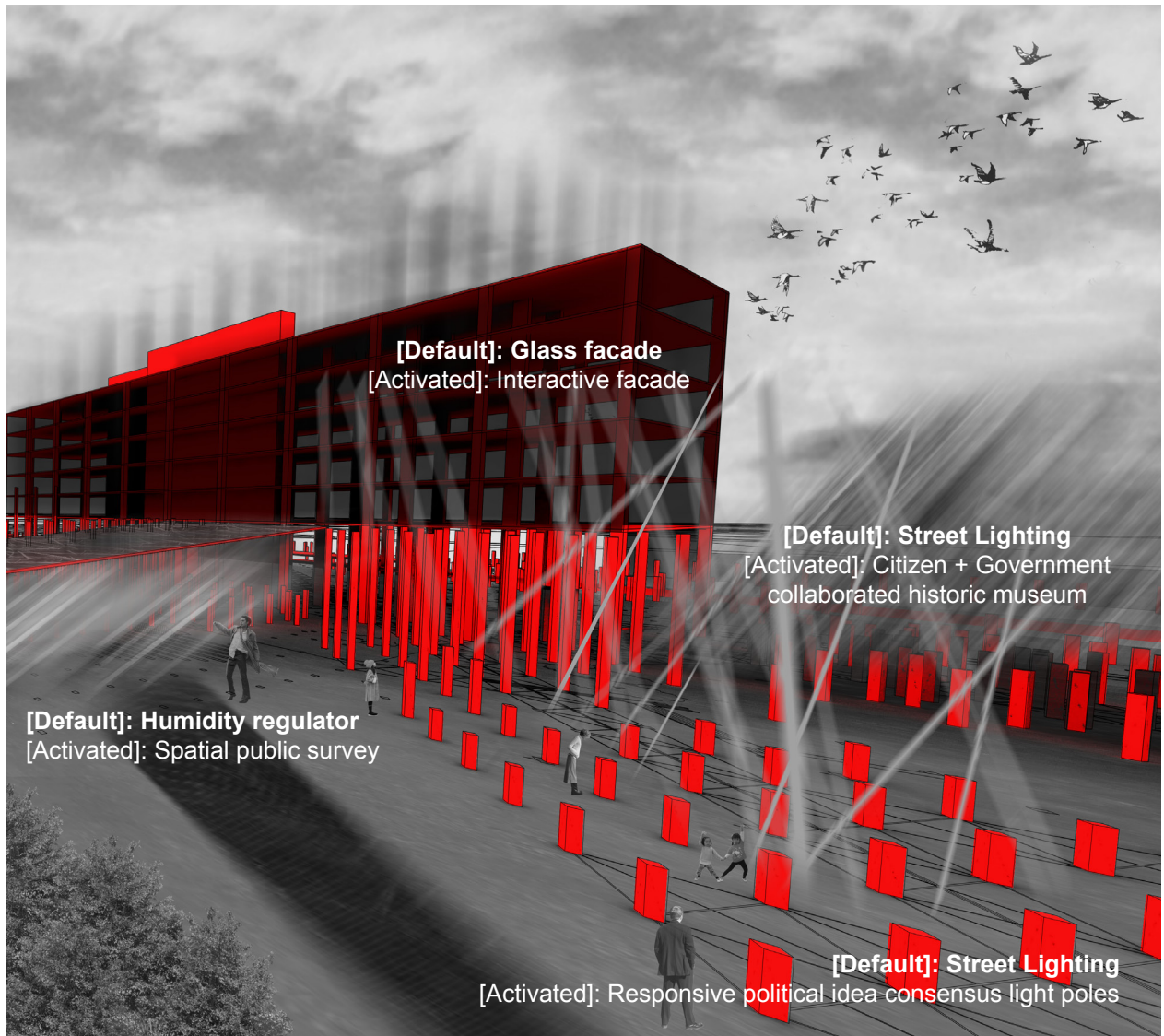


Figure 4-017. Perspective Drawings of Default System(120-121)







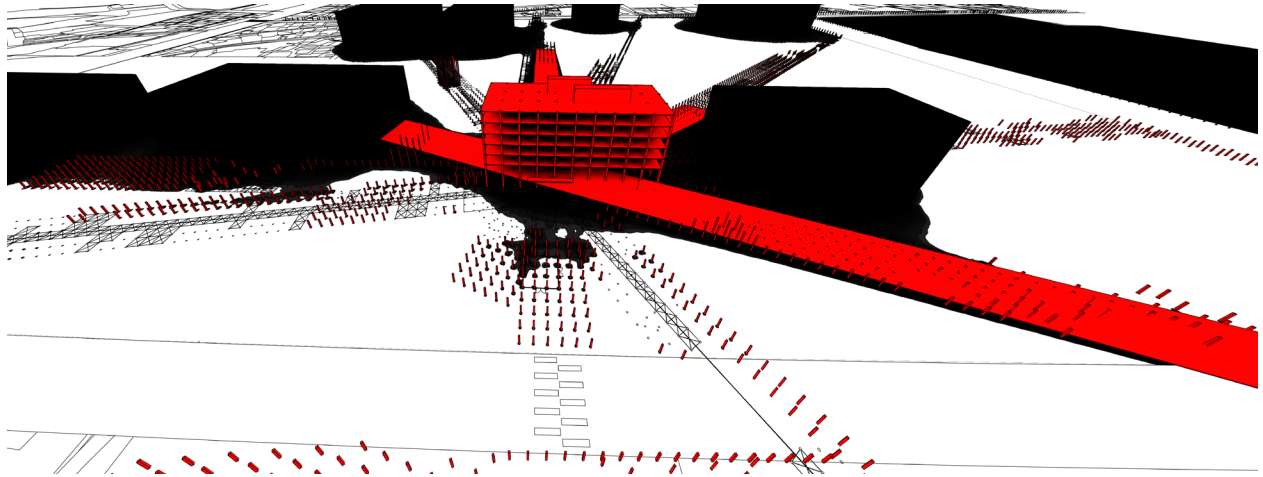
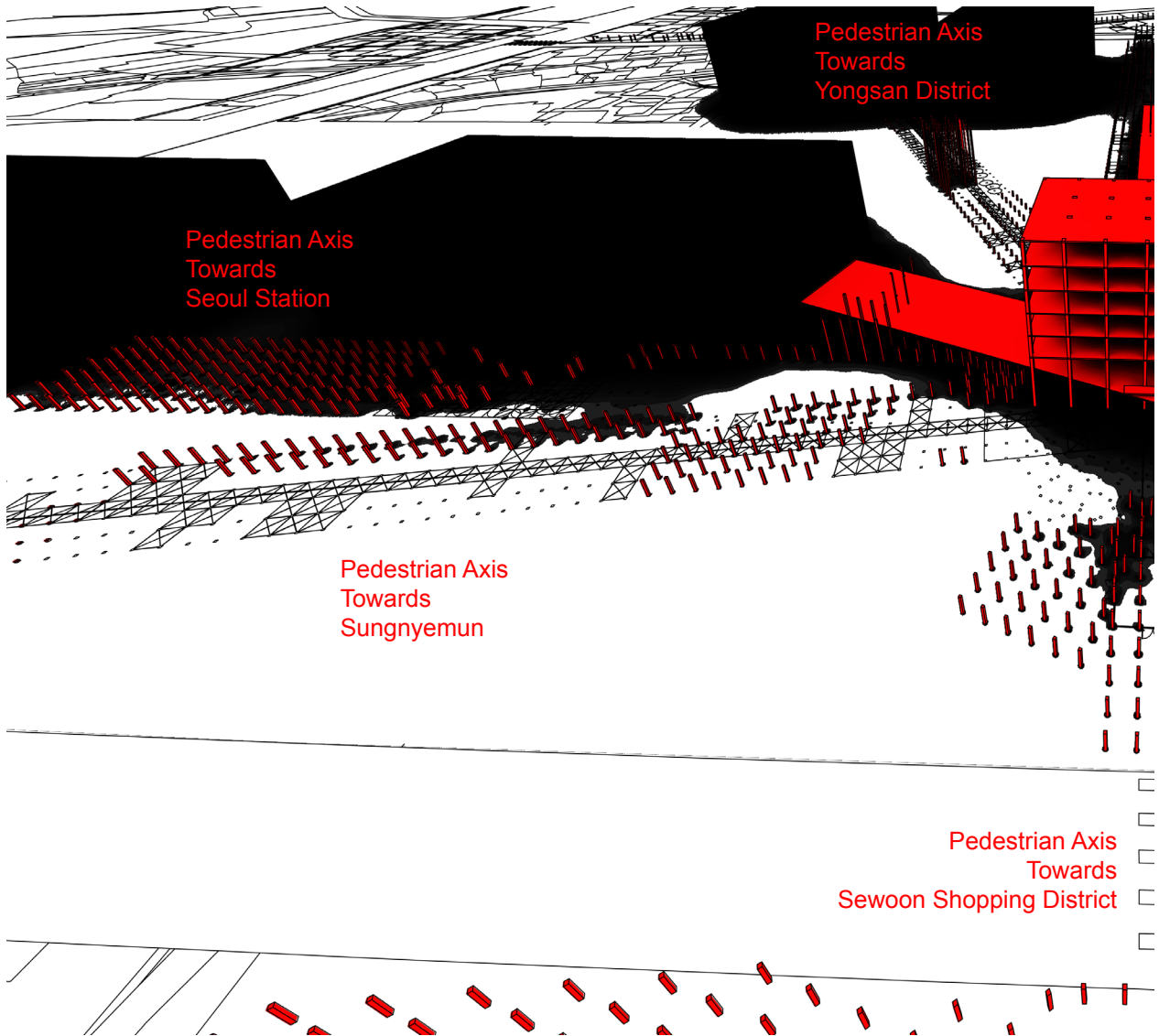


Figure 4-018. Perspective Drawings of Default System(122-123)



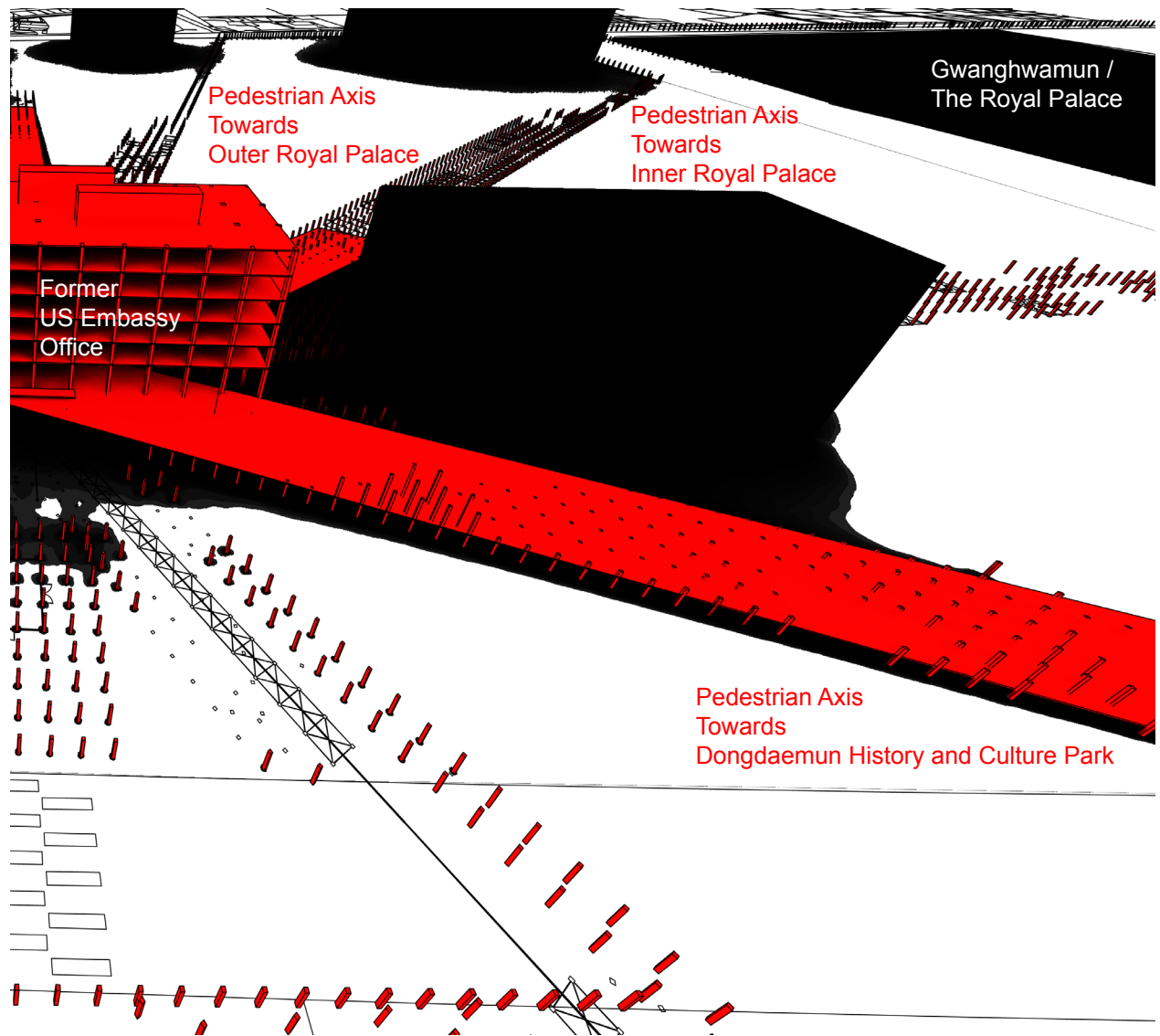


Figure 4-019. Existing Applicable Examples

The Disobedience Archive, Source: MIT SA+P  
The Crystal Quilt, Source: Tate Modern  
Open Source Architecture Manifesto,  
Source:Dezeen  
Murmur Study, Source: Journalist & Optimist.  
(124-125)



#### The Disobedience Archive

- A group of artists have been developed the atlas of social and political activist movements.
- Tactical media, which are relatively cheap and accessible devices such as low-cost video, have been provided to proliferate the movements(Garutti, 2012).



#### The Crystal Quilt: Suzanne Lacy

- This project was the public performance part of the Whisper Minnesota Project which aimed to empower older women in a society
- 430 women over the age of 60 were gathered at the programmed public space to share their perspectives(Tate Modern, 2013).



Open Source Architecture Manifesto: Carlo Ratti  
- By setting up a page on Wikipedia and making a plotter to take the text from the page and writing it onto a wall, various personnel contribute to the manifesto process.  
- The plotter brings the digital collective idea to a wall, in an architectural scale(Dezeen, 2012).



Murmur Study: Christopher Baker  
- This project brings micro-messaging technologies such as Twitter and Facebook to physical spaces using thermal printers.  
- Through this system, digital ideas are made publicly accessible in a printed form(Baker, 2013).

## **5. Realization**

### 5-001) Projecting Political impact of IVAAIU Instrument

Throughout the history of Seoul, Sejong Avenue has been used for civic demonstrations when there were political and social conflicts. This plan pursues this spatial function continuously but with different tools for better efficiencies. If IVAAIU instrument can be successfully implanted into the urban area, following political impacts are expected.

/Legal promotion of public ideas

Public demonstrations can achieve legality with this implementation. Rather than lets the space be illegally dominated by anonymous groups without control, the government can properly provide the platform for public to express their ideas through an effective and safe medium. It can convert the characteristic of political events in the avenue from an illegal civic demonstration to an organized public representation.

/Proper communication with public in equal hierarchy

The instrument allows both audiences and participants share information in the same hierarchy. Everyone can input data into a system and everyone can see the result in a physical environment.

/Increased validity of online movement

One of the limitations of online movements is the validity in a physical environment. The realization of this instrument helps the online social and political movement can be realized in actual space.

/Linking virtual and physical space

Even though an online space can provide a good platform for public gathering, the function of itself as public space is still questionable(Offenhuber & Schechtner, 2012). This planning process brings planners, architects, coders and users at the same table and develops a shared base structure that every system can use. A linkage between virtual and physical plan can be created with this cooperation.

Figure 5-001. Coders and Architects Do Not Communicate, Source: Volume(Opposite)

# CODERS & ARCHITECTS

DO NOT  
COMMUNICATE

Coding/interactive design specialists lack specific spatial expertise

Architects and coder, though using similar words, speak

There is no pure overlaying the virtual over the physical realm different languages

Architects must learn to code the physical environment The merging of two realities creates a new condition, not an elimination of one

A lack of understanding is causing architects to 'lose ground'

The confrontation, exchange and merging of these two earlier mentioned fields of operation will result in a new 'discipline': environment design

Now there is a need to create soft solutions to hard problems

Architects are of the physical world while coders are of the virtual The ideas of profession and knowledge are conflated

## 5-002) Implementation of IVAAIU Instrument

The current political status of the nation is at the critical point of a transition phase from mass media to hypercomplex independent media society. To reflect this change into the political system of Seoul effectively, it is important to implant the IVAAIU instrument according to an appropriate timeline that interlocks with the upcoming political events, including the nineteenth presidential election of Republic of Korea in 2017. Rather than the implementation of the entire system at once, a gradual realization process is planned.

### /Phase 1: Implementation of new circulation

The first step is the alteration of major car flow. One of the critical issues in the current site is the segregation of public spaces by ten car lanes with a hundred meters width. This plan converts all the existing car roads to pedestrian zones. Minor roads that are located at one and two blocks back from the major avenue can control the current automobiles effectively by diverting heavy traffic. At the same time, it can create a safe and vital pedestrian environment within the square. The first phase creates a proper platform for the entire realization process.

### /Phase 2: Formation of Cluster 1

The second phase creates a public park using multiple instruments. The alteration of road systems can naturally create the basic form of the square, integrate currently scattered public spaces and draw a substantial amount of citizens to the cluster. The installation of crossover media public system interacts with the drawn pedestrians in the square.

### /Phase 3: Formation of Cluster 2

The second cluster, Seoul City Hall Square, is formed as the next step. In contrast to the first square, the form of this cluster has been already stabilized. Therefore, rather than alters the form of the space, this plan adds new implementations following the existing structures of the site.



#### /Phase 4: Internal Network

A network between two clusters is subsequently formed: a short and direct walkway is provided to connect two squares with interactive instruments along a path.

#### /Phase 5: External Network

Then networks to other cultural nodes around the district are created. When each network is forged step by step, the clusters are getting reinforced by engaging large pedestrian populations.

#### /Phase 6: Renovation of Former U.S. Embassy Building

As the completion of the project, the hub of all pedestrian networks is planned at the center of the site. The current US embassy office is planned to be moved in the following years. Then the building subsequently renovated to bind all internal and external networks at one point.

#### /Afterwards: Gradual distribution of singular nodes

After the completion of a built structure, the digital interfaces of the system are gradually distributed to independent micro spaces around, therefore virtual and physical networks can be expanded.

## 5-003) Engagement of Personnel and Organization

One of the critical issues in implementation is how innovation can be fit into an existing social and economic structure. Incumbent corporations tend to keep the current technologies and business models and limit a new influx(Weiss & Bonvillian, 2011). Defining advantages and setting up roles of potential participants can help active engagement of various sectors.

### /Government

The government in Korea is facing the strong needs of opening up the window for clear communication with public. The prevention of illegal demonstrations and the promotion of healthier communications can be achieved through this implementation. Also by forging the new pedestrian hub and developing the walkable networks to the current underusing public spaces, the revitalization of the areas can be made. Thereby the city office and the national administration can be the major investors and developers of this plan.

### /Private(Major Corporations)

The construction of a digital infrastructure in Sejong Avenue can be beneficial for major corporations. Telecommunication companies in Korea have been investing in digital information technologies substantially. The new development of a digital infrastructure in central Seoul can be well fit to companies' strategies. Besides, the major corporations have been gradually increasing a social responsibility which can also work coincidentally with this development.

### /Private(Independent Nodes)

The revitalized pedestrian paths can increase the profit of individual commercial programs that distributed around the walkways. These independent nodes can contribute to the project for the expansion of the virtual and physical functions of the structure.

### /Public

Individual ideas can be expressed in urban environments by the participation of public. Not only as the user but also as the designer, programmer and inspector of the system, this group can act a critical role in this system.

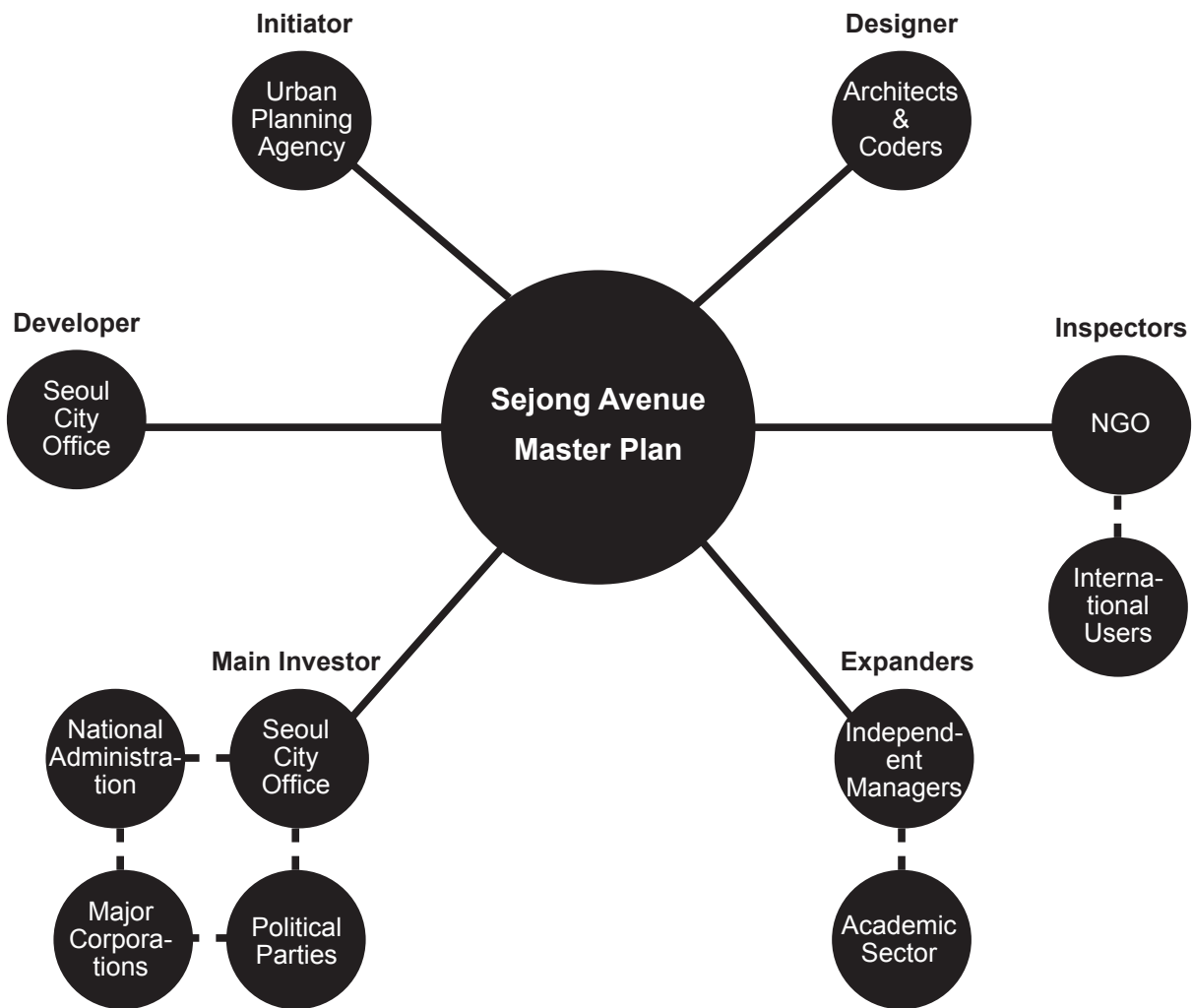


Figure 5-002. Sejong Avenue Project Organization Structure

**/Academic**

The continuous feedback from an academic field is needed to keep advanced technological interventions. Since this project substantially depends on the advancement of technologies, research departments should be engaged into the project.

**/International Participants**

A remote inspection is essential to keep the political movement properly. The worldwide network system enables international countries can inspect this system.

## **6. Prototype Building**

Prototyping a new project is not only about testing and assessing utility but also about understanding overall experience that can be generated with a new system(Pullin, 2009). Following two types are planned to test IVAAIU system in an urban context. Before the implementation in macro scale, feasibility and user experiences can be assessed in micro scale. Each prototype uses different combinations of media for interacting with social issues that each site has. Both projects do not exactly located in Sejong Avenue but in close distance. Therefore, the interactivity between citizens in Seoul and the system can be checked with these prototypes.

### 6-001) Prototype A: Idea-Visual-Architecture Instrument in Songpa, Seoul

Location: Songpa, Seoul

Target: Transmigrants

Media: Idea, Visual, Architecture(Façade)

Square Footage: 800 Sqm

The building for implementation is located right next to the apartments that is scheduled to be redeveloped in 2013. Seoul has been notorious for violent eviction patterns during development processes. The facade system, which uses visual medium to reflect this social issue, is planned to track the current residents through online social network pages and project the images of their daily lives on the building facade in real time. By sharing their moving processes visually in a public space, pedestrians and remote viewers can perform inspection whether or not inappropriate pressure has been put into transmigrants by developers or the government.

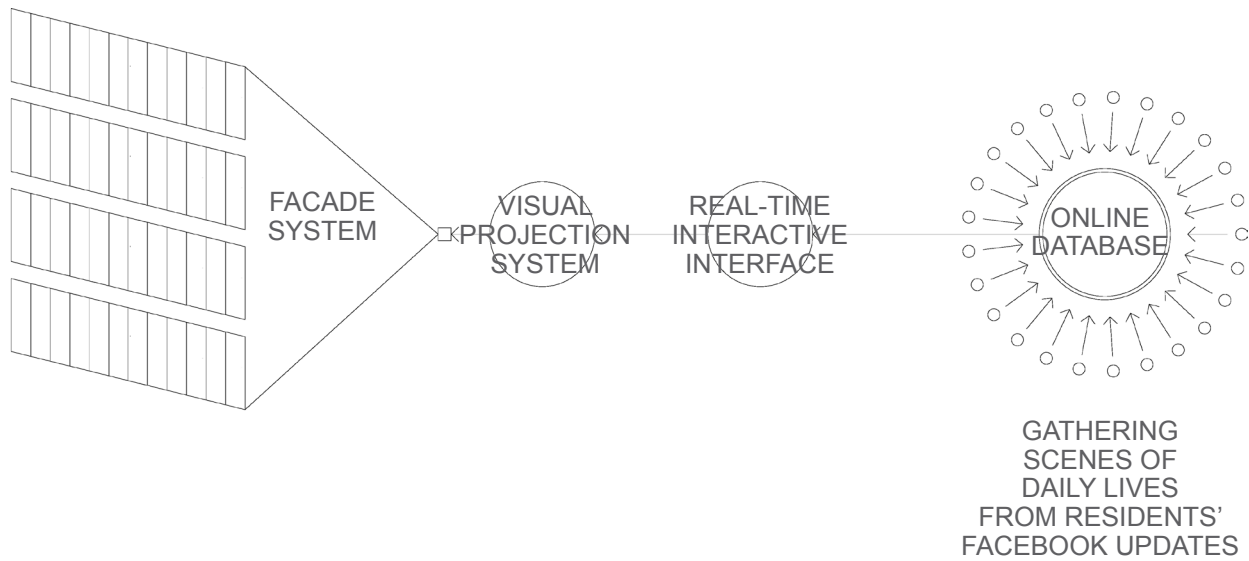
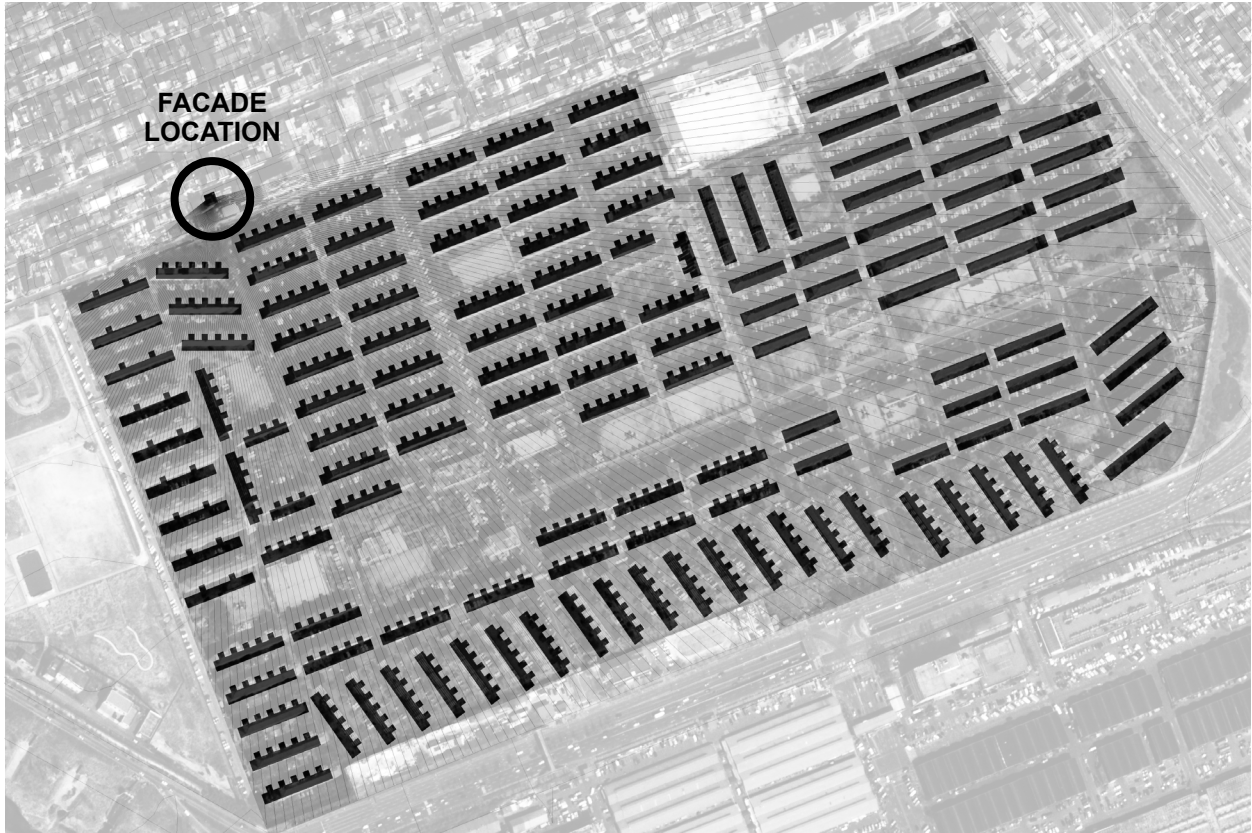


Figure 6-001. Prototype A, Satellite Image Source: Google Earth

## 6-002) Prototype B: Idea-Visual-Auditory Instrument in Itaewon, Seoul

Location: Itaewon, Seoul

Target: Pedestrians of streets in and around the site

Media: Idea, Visual, Auditory

Square Footage: N/A

### Implanting Virtual Presence of Human in the Urban Crime Niche

This instrument aims to intervene in frequent crimes that have been happened in Itaewon district by adapting an interactive media system. The site has been notorious for repetitive crimes. Scrutinizing the geographical pattern of these incidents, it is possible to derive the fact that the crimes have been happened in the same place, which can be called Urban Crime Niche. This interactive system is designed to respond to the movements of pedestrians or criminals. Even if nobody remains in a place, this system will create and project the virtual presence of human into the space using visual and auditory medium. Therefore, pedestrians can be relieved and criminal could not easily commit the crimes.

This system could be considered as the active form of security system. CCTV, which mainly records a crime process, is the passive form of security. It can find the criminal afterwards but cannot effectively prevent it. However, this interactive system can intervene in potential crime scenes more actively by creating responsive physical environments on-site.



Figure 6-002. Prototype B Conceptual Sketch

## **7. Conclusion**

### 7-001) Challenges and Conflicts

/Possibility of information contamination from upward = information monopolization

It is important to acknowledge that there are strict hierarchy and division of levels among the owners of digital information. Even though the data is more accessible than before, there is a good chance of the manipulation of data by the owners in a high position. A data structure could be controlled by skewed intention, and this might cause the physical and virtual malfunction of the project.

/Possibility of information contamination from downward = computer crime by hackers

Not only by the superior owners of information but also by minor independents, information can be contaminated. The word “hacker” has both negative and positive meanings: one is a criminal who exploits weak points of a computer system, and the other is a creative programmer who makes innovative digital softwares and hardwares. The hacker as a criminal can create problems in this system .

/Conflict of Censorship

With the contamination of skewed information, another problem about the conflict of censorship can be happened at the same time. To prevent the wrong intentions of a control system, there is a need of censorship which can judge whether the information is proper or not. However this censorship could be the shackle of the system if it creates another type of monopoly .

An alternative model for the solution of this conflict is the combined vertical and horizontal hierarchy structure. A vertical hierarchy structure can create information monopolizations and a horizontal structure can cause computer crimes by hackers. To prevent both critical problems, the synthesization of both structures can be effective. In the combined system, information can be controlled by a smaller group that is organized by a larger population.



An autonomous civic organization, which is free from profits by the system, can perform the maintenance of the system. Wikipedia, a free-content online encyclopedia, can be a good case of this model. Basically, this system is opened to any internet volunteer who wants to contribute to the intellectual archive. At the same time, it also has a group of administrators. The members of this group are granted the ability to proceed the maintenance of the structure and to perform a review process as representatives of the community(Wikipedia, 2013).

/Disparity between virtual and physical space

Even though this project aims to create a connection between a digital system and urban environment, the approach still needs substantial investments for a realization. A quality of public space that is created by a set of digital instruments might be resulted worse than an expected level. An experiment before an actual implementation can help to overcome these discrepancies.

/Lifespan of implementations

Compared to conventional architectural structures, this system has relatively short lifespan and needs more effort for keeping itself in good shape. For the maintenance of digital instruments, periodic checks and updates should be performed.

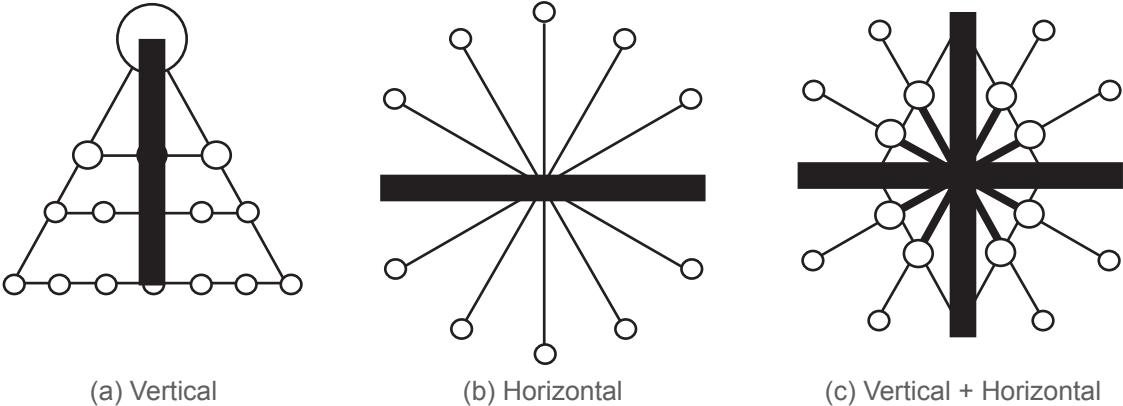


Figure 7-003. Three Types of Information Administration, Created Based on Tunney Lee's Sketch

## 7-002) Towards IVAAIU Urban Instrumentalism

**The fundamental goal of this thesis is the emancipation of civic ideas. The complete version of liberation is not a society of majority but a society of hyper-complexity. The society should give every member a chance to express each thought intactly.**

**To make this possible, the development of the perfect conductor of civic ideas is essential. This thesis proposes IVAAIU Urban Instrument as a method.**

**I: IDEA**

**V: VISUAL**

**A: AUDITORY**

**A: ARCHITECTURE**

**I: INFRASTRUCTURE**

**U: URBANISM**

**Within six categories of IVAAIU instrument, the most fundamental one is I(Idea). V, A, A, I are combined with each other to make proper linkage between I(Idea) and U(Urbanism). A digital technology eliminates barriers between different media and connect I(Idea) to V, A, A, I and finally U(Urbanism).**

**And [I: Idea] means every thought of every individual in a city.**

-agos



U R B A N  
I N S T R U M E N T

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