

Smart City : Place and EcoPlatform

Making Good City with Utilizing Cutting Edge Technology

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UN Sustainable Development Goals University

1

the Future of the City



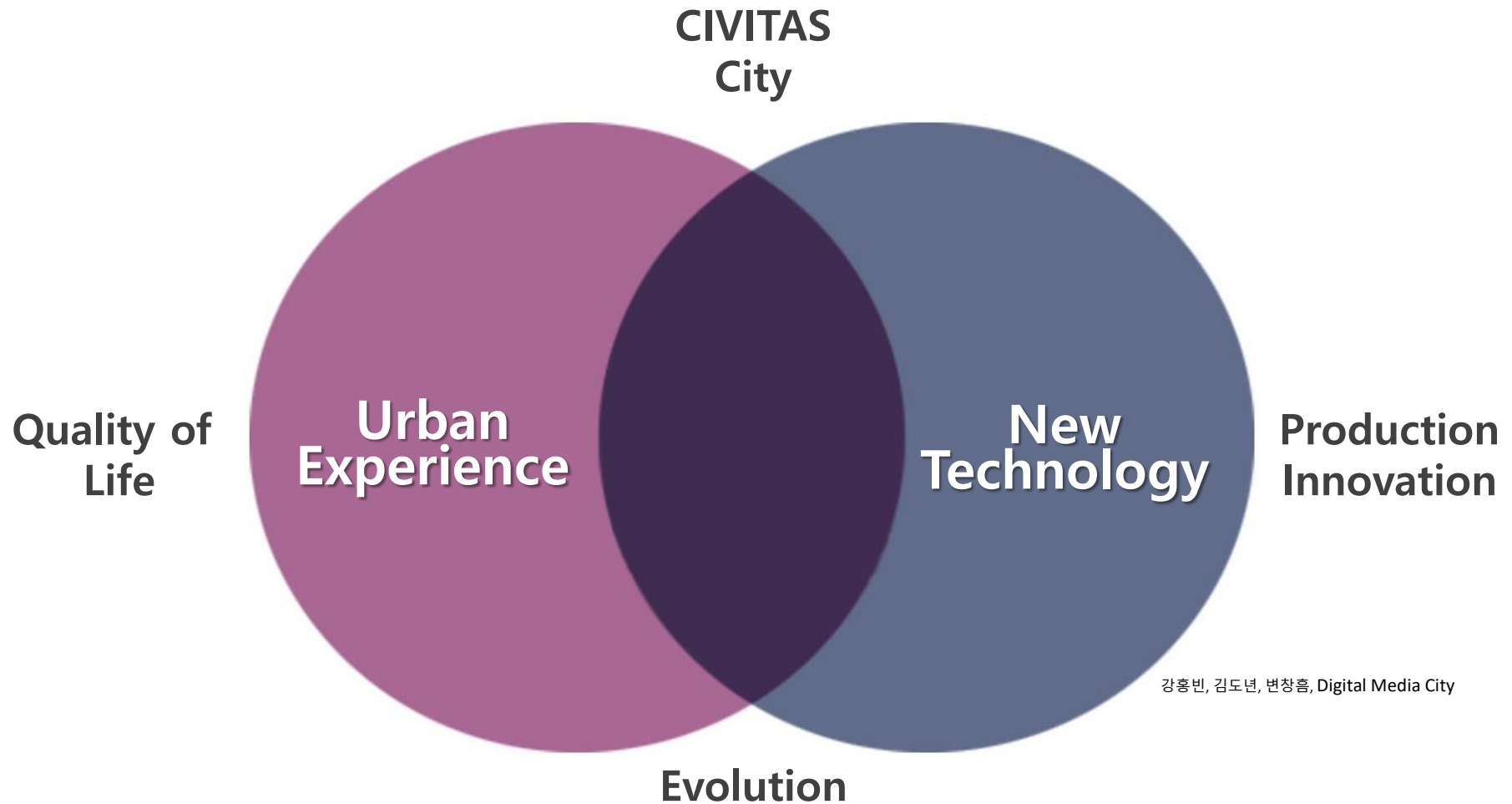
City Competitiveness and Economic Growth

Sustainable City and History

Smart City

Making Good City with utilizing cutting edge technology and wisdom for the Next Generation

Donyun KIM, 똑똑한 도시, 스마트시티, 서울 디지털미디어시티(DMC), 서울경제



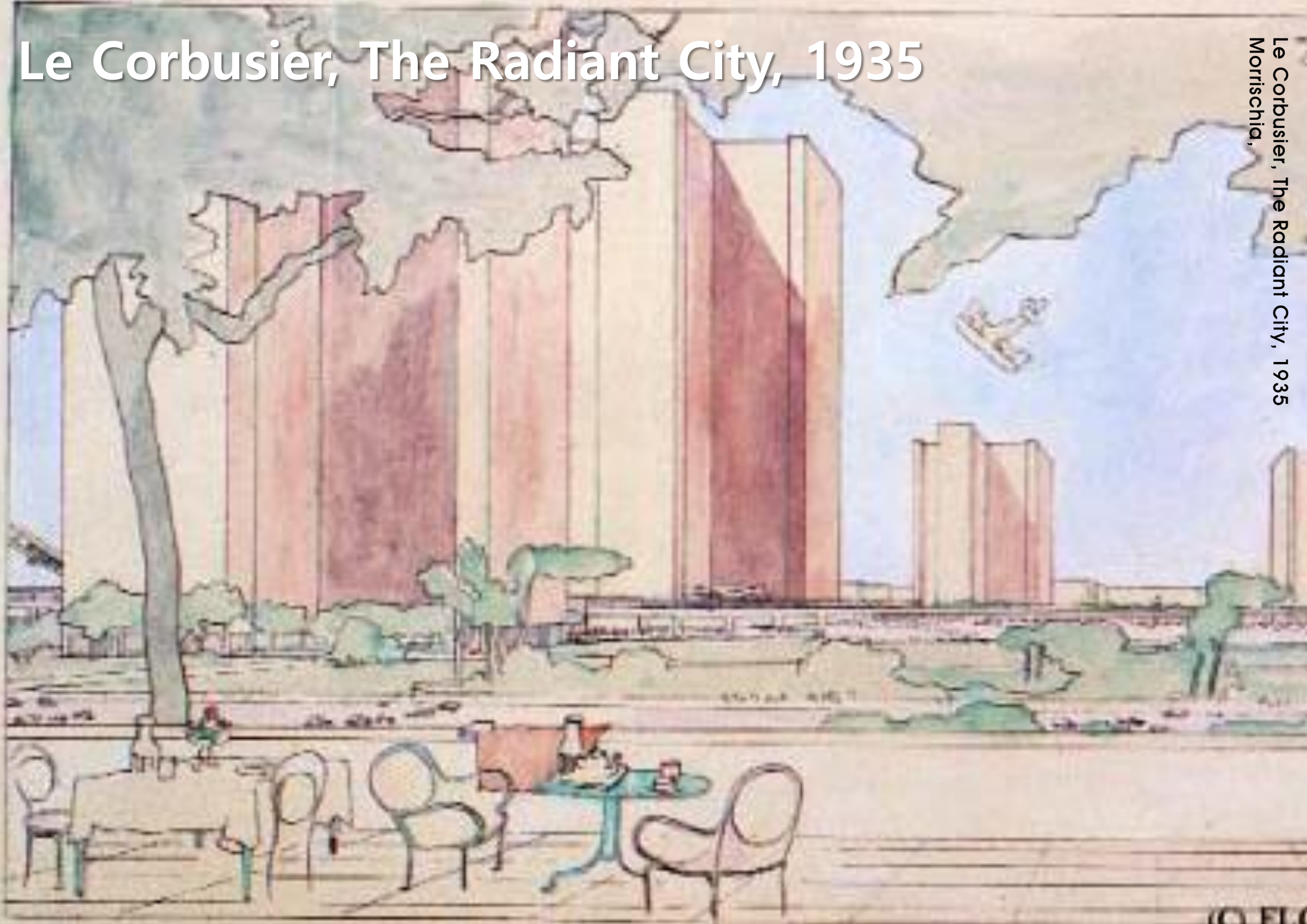
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Making a Good City for the Next Generation

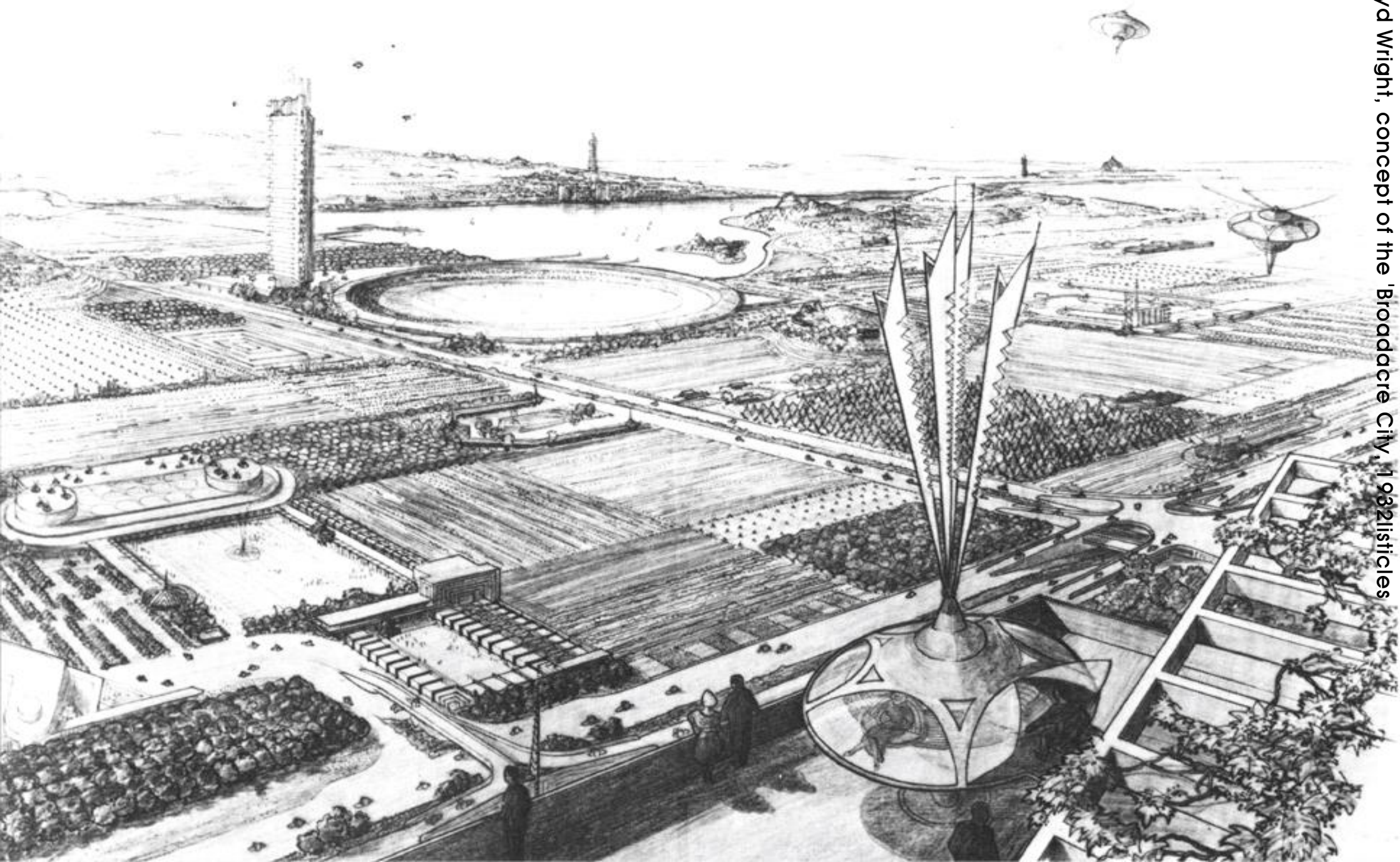


Le Corbusier, The Radiant City, 1935

Le Corbusier, The Radiant City, 1935
Morris Chia,



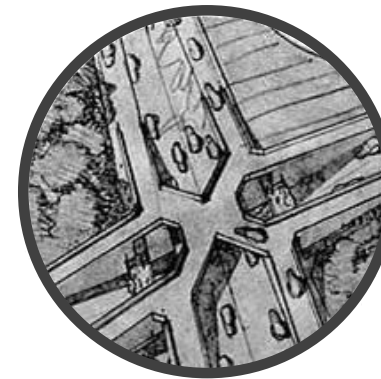
Frank Lloyd Wright, Broadacre City, 1932



Value of Plan and Vision

To integrate the outcome of industrial revolution

- The meaning of vision is to gain empathy with citizens and to communicate with market.
- Interactive market for cutting edge technology and industry. And Living Lab and experimental showcase
- Front Industry to create a market for the consumer goods and materials industries as a downstream industry.
- leads the academic and professional fields and creates a sustainable market for the past 100 years
 - Elevator, Furniture, Curtain Wall, Sink, Automobile, Skyscraper, Water Supply and Sewerage, Train, Subway, Electricity, Bulb, Road, Home Appliance, Mass Production Module
Zoning, Building Standard, Energy, Metrology, East India Company







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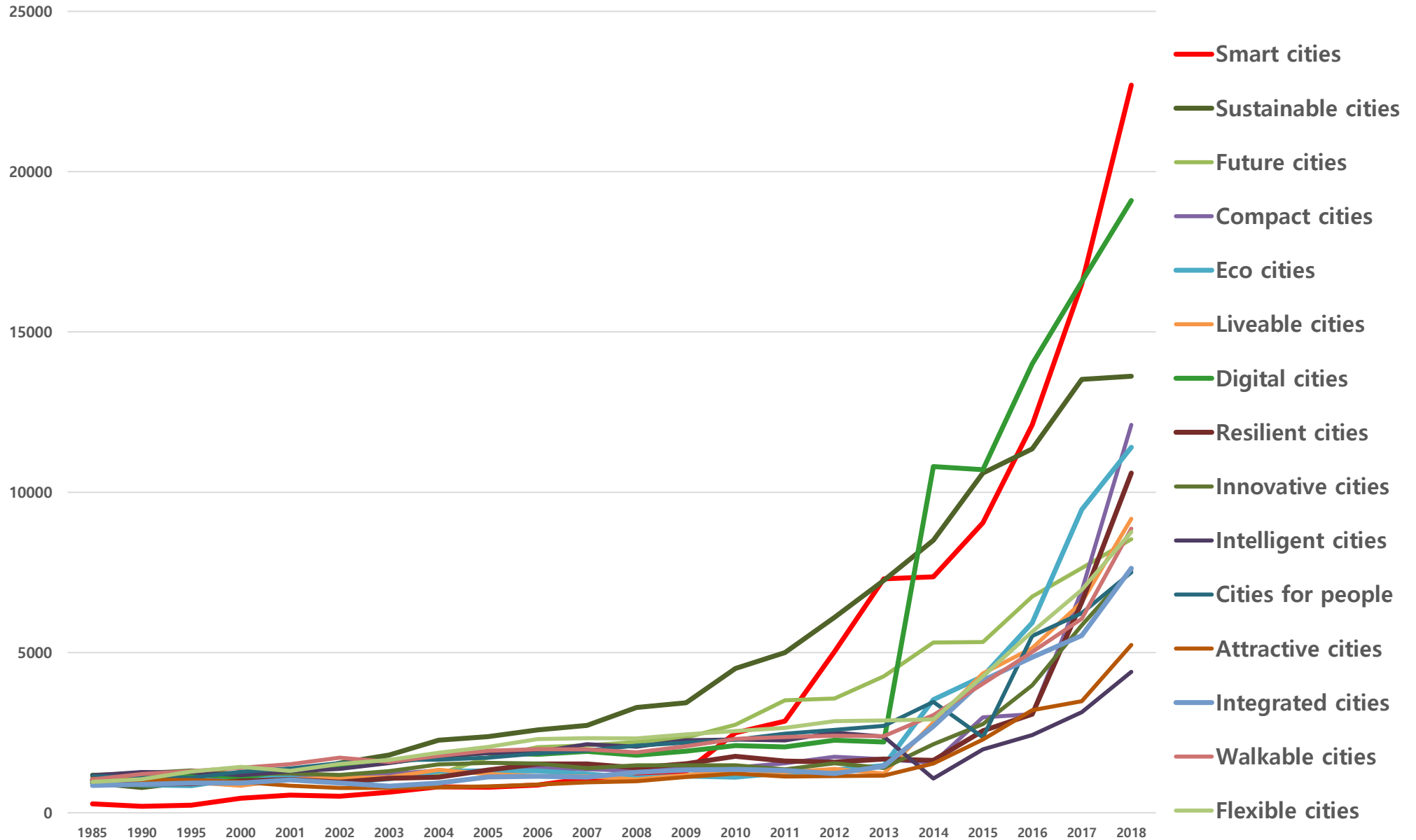
🏠 위례중앙광장

송례초교

위례중

Smart City : Trend for Future City Model

Popular and comprehensive



source : annual Google searches, google /rewritten data by KAIA

Definitions of Smart City

Direction for the Academia

Smart City is a huge system that can integrate digital neuro-system, intelligent response system, and optimized system

MIT, Smart Cities Group

Increase efficiency through integrated monitoring and management of urban infrastructure, maximize citizen service, optimize urban resources, and build resilient city

The Vision of A Smart City, Robert E. Hall, 2000

Smart cities are introducing 'smart' in the ICT sector, considering various aspects of urban development including economy, people, governance, transportation, environment, and life.

Smart cities Ranking of EU M-sized cities
Rudolf Giffinger, 2008

Smart cities include ICT as a characteristic. Pursue the integrated development of various aspects between physical and non-physical part

Smart Cities: Definitions, Dimensions, Performance, and Initiatives, Vito Albino, 2015

Smart city is built with constant efforts to improve city operation efficiency and quality of life of urban people by utilizing advanced IT technology. Smart city connects IT, social, business, and physical infrastructure to harness the collective intelligence of the city

Foundations for Smart City, C. Harrison, 2010

Cities that are more efficient, intelligent, and connected with key infrastructure components and services of the city by utilizing advanced IT technology

Understand Smart City Initiatives, Doug Washburn, 2010

A city can be defined as 'smart' when investments in human and social capital and traditional (transport) and modern (ICT) communication infrastructure fuel sustainable economic development and a high quality of life, with a wise management of natural resources, through participatory action and engagement.

Caragliu 외 2명, Smart Cities in Europe, Serie Research Memoranda 0048, VU University, Amsterdam, 2009

City

Smart
Technology



Sustainable Smart City is an innovative city that uses ICT technology to improve urban management, services and competitiveness while meeting current and future needs in economic, social and environmental aspects and improving the quality of life.

Smart sustainable cities: An analysis of definitions, ITU(International Telecommunication Union)-T FG-SSC(ITU-T Focus Group on Smart Sustainable Cities), 2014

A city that pursues the environment, safety of life, and convenience at a global level through the organization of infrastructure. Realization through infrastructure organization composed of infrastructure system that connects urban management infrastructure with consumer's lifestyle through IT technology

Smart Cities: Hitachi, Hitachi, 2014

Smart City uses technology to change core systems and optimize limited resources, integrate and analysis information based on efficient information management.

Advanced cities are constantly competing, focusing on maximizing the available resources and building a foundation for change.

IBM's Smarter Cities Challenge, IBM, 2013

The relationship and structure between the various systems of the city is simplified by contemporary technology and design. Smart City can respond to the problem immediately and is flexible

Transforming the 21st Century City via the Creative Use of Technology], ARUP, 2011

A Smart City is a community where you can closely coordinate the three elements of efficient, livable and sustainable

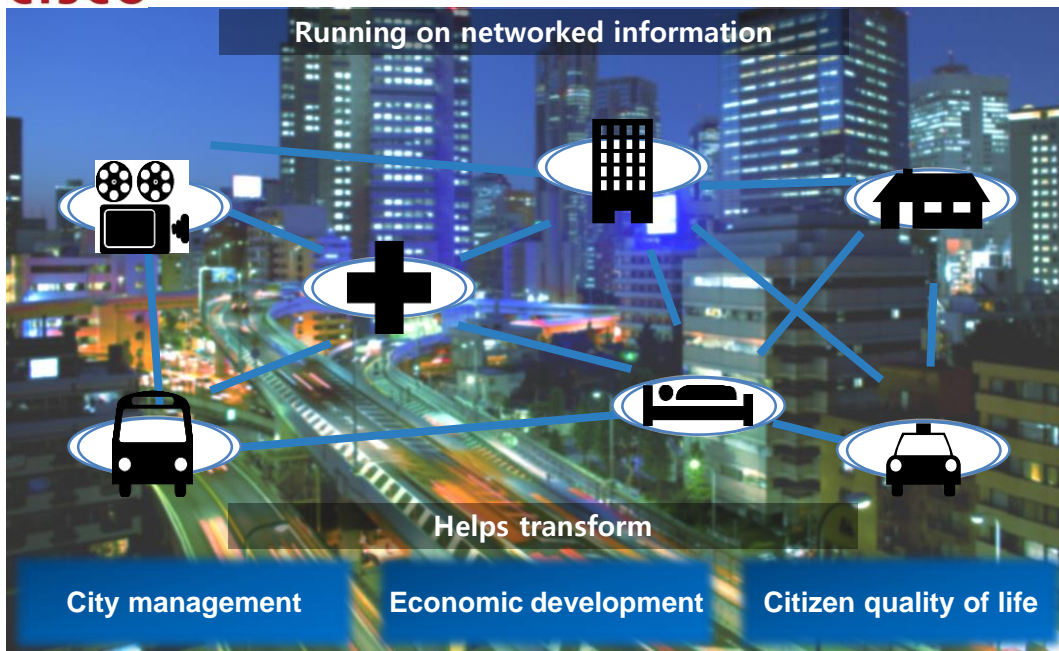
The Smart Sustainable City Cornerstone: Urban Efficiency, Schneider Electric, 2013

Smart Cities use ICT to make their core infrastructure, components, and public works more interactive and efficient

[What Is a Smart Sustainable City?], Telefónica



A Smart + Connected Community



Google

SIEMENS



MITSUBISHI

HITACHI
Inspire the Next



HUAWEI

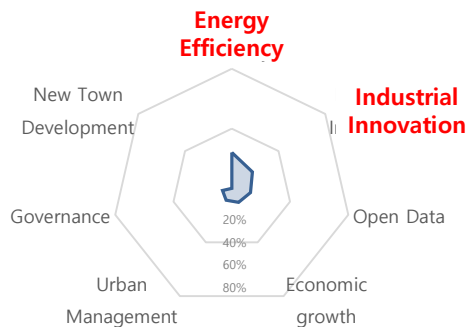
McKinsey & Company



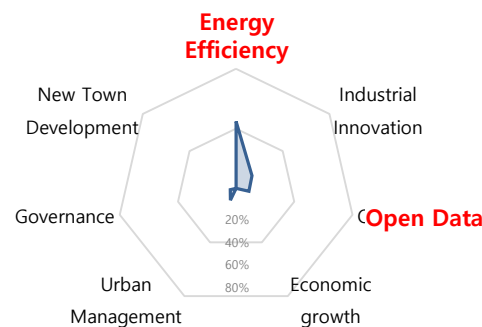
Objectives of Smart City

- Korea's smart city(U-city) used to be a large-scale new town development project and government driven technology-oriented plans.
- New smart city policy concentrates on urban regeneration and restoring urban ecosystems through integrated planning in developable unit(districts) and focused on consumers, places and industries
 - Smart cities around the world focus on **energy efficiency**
 - Europe, America and Oceania focus on **energy efficiency and industrial innovation**
 - Asia and Africa focus on **new town development**

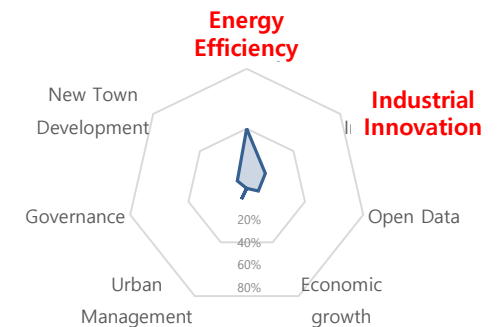
EUROPE



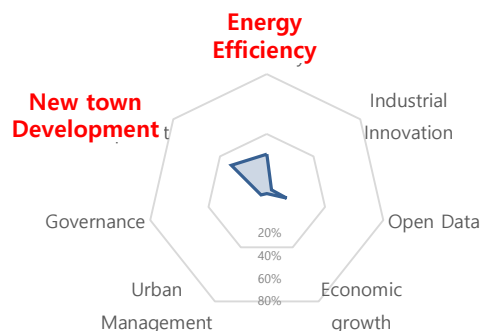
NORTH AMERICA



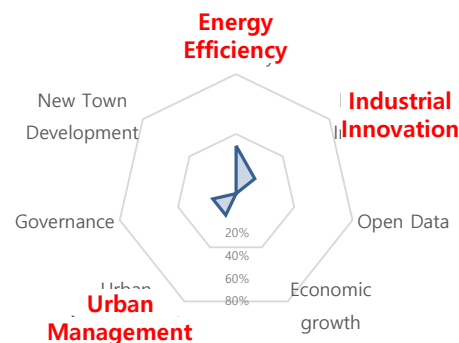
SOUTH AMERICA



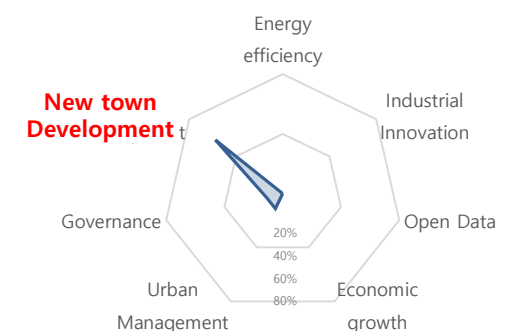
ASIA



OCEANIA

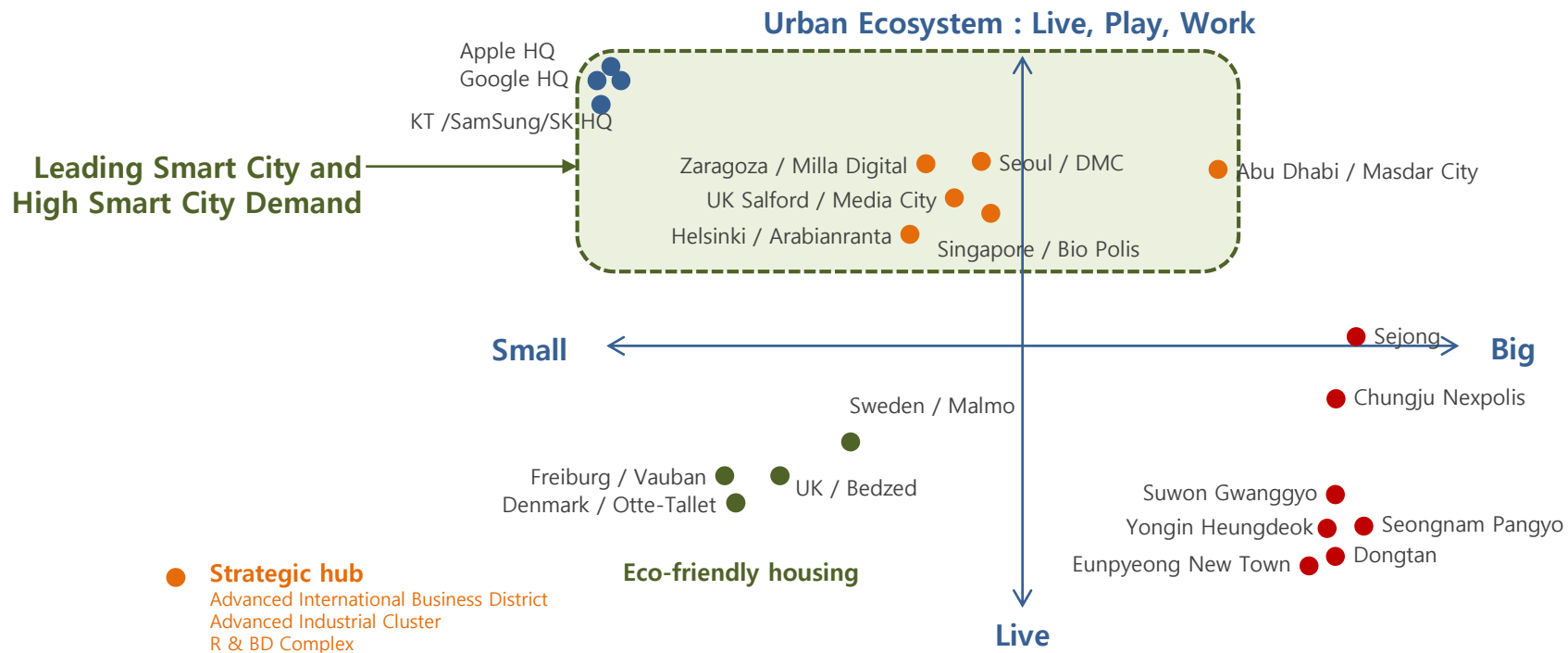


AFRICA



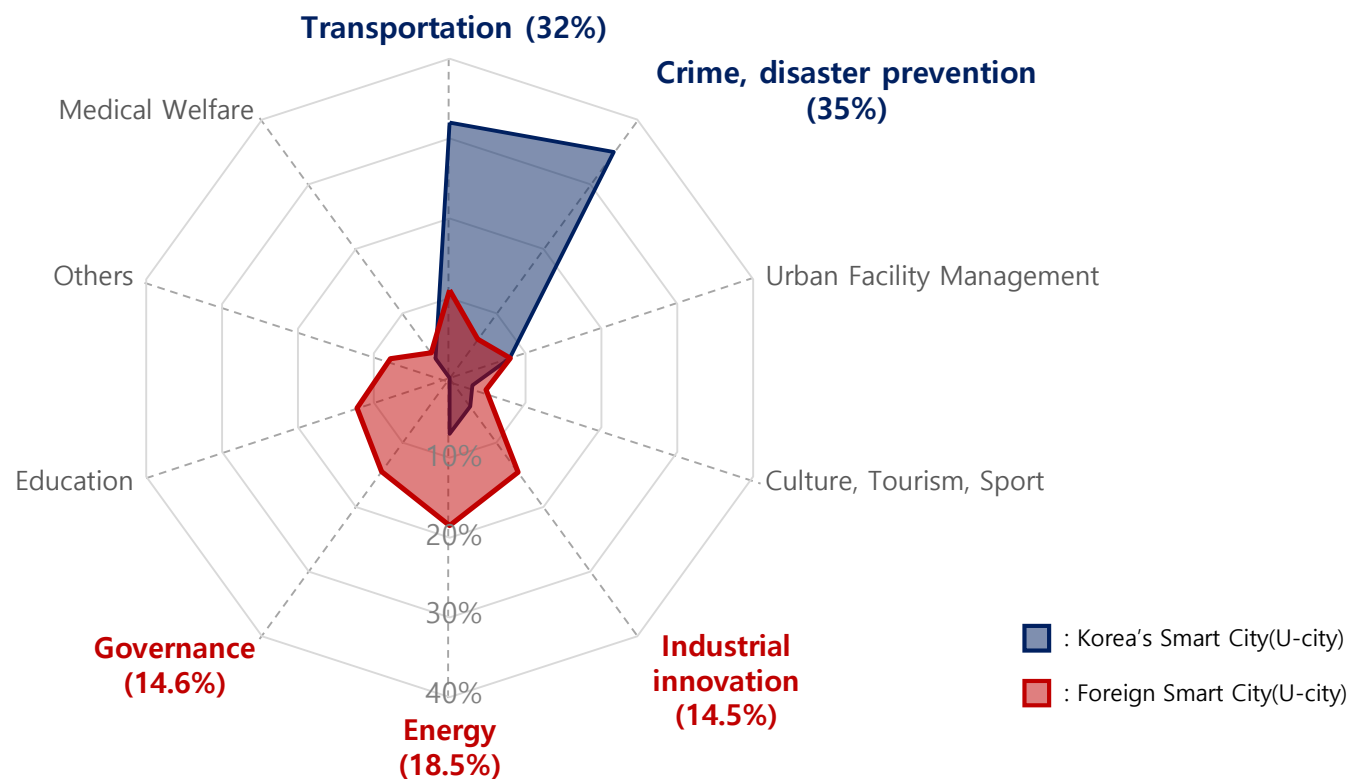
Scale and Level of Technology on Smart City

- Korea's smart city(U-city) used to be a large-scale new town development project focused on suppliers and technology-oriented plans.
- New smart city policy concentrates on urban regeneration and restoring urban ecosystems through integrated planning in developable unit(districts) and focused on consumers, places and industries



Target Service of Smart City

- Korea's smart city(U-city) used to be a large-scale new town development project and government driven technology-oriented plans.
- New smart city policy concentrates on urban regeneration and restoring urban ecosystems through integrated planning in developable unit(districts) and focused on consumers, places and industries
- And expand the Target Service :
 - Korea's smart city(U-city) concentrates on transportation(32%), crime and disaster prevention(35%), and major foreign cities concentrate on place based energy, governance and industrial innovation



Domestic and Foreign Smart City (U-City) Target Service

3

Smart City Planning and Design

Smart City Urban Design

Lessons from Korea

When we first got here,
we thought 'Wow, this is it.'



1997



2017



2000



2000

CONCEPT



Cell phone



Hand phone



Dicaphone
Musicphone



Galaxy


Transformation

Amplification

Bridge

M&E Cluster

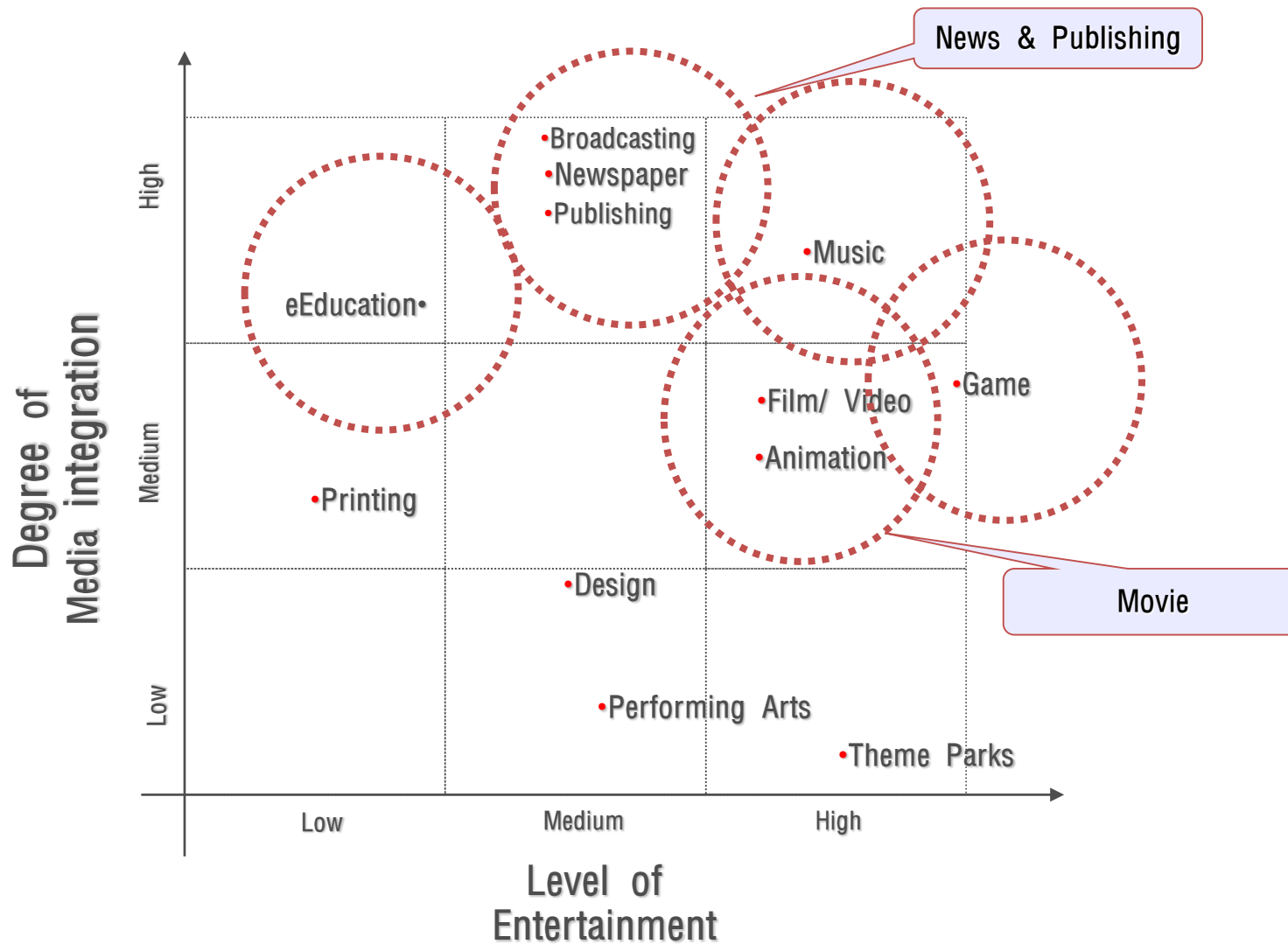
Mapping of Core Industry Portfolio in Competing IT Clusters, 2000

	Software	Hardware	Telecom service	Media & Entertainment	Biotechnology (Others)
Cyberport, Hong Kong	2차 주요산업	1차 주요산업		3차 주요산업	
Cyberjaya, Malaysia	3차 주요산업	2차 주요산업	2차 주요산업	3차 주요산업	
Singapore Science Park	1차 주요산업		2차 주요산업		
Taicang Science and Technology Park China	2차 주요산업	1차 주요산업			
Hi-Tech Park Shanghai, China	2차 주요산업	1차 주요산업			2차 주요산업
Hong Kong Science park	2차 주요산업	1차 주요산업			2차 주요산업
Hsinchu Science based industrial park, Taiwan		1차 주요산업			2차 주요산업
Nankang, Taiwan	1차 주요산업				
Digital Media City	2차 주요산업	3차 주요산업	3차 주요산업	1차 주요산업 	

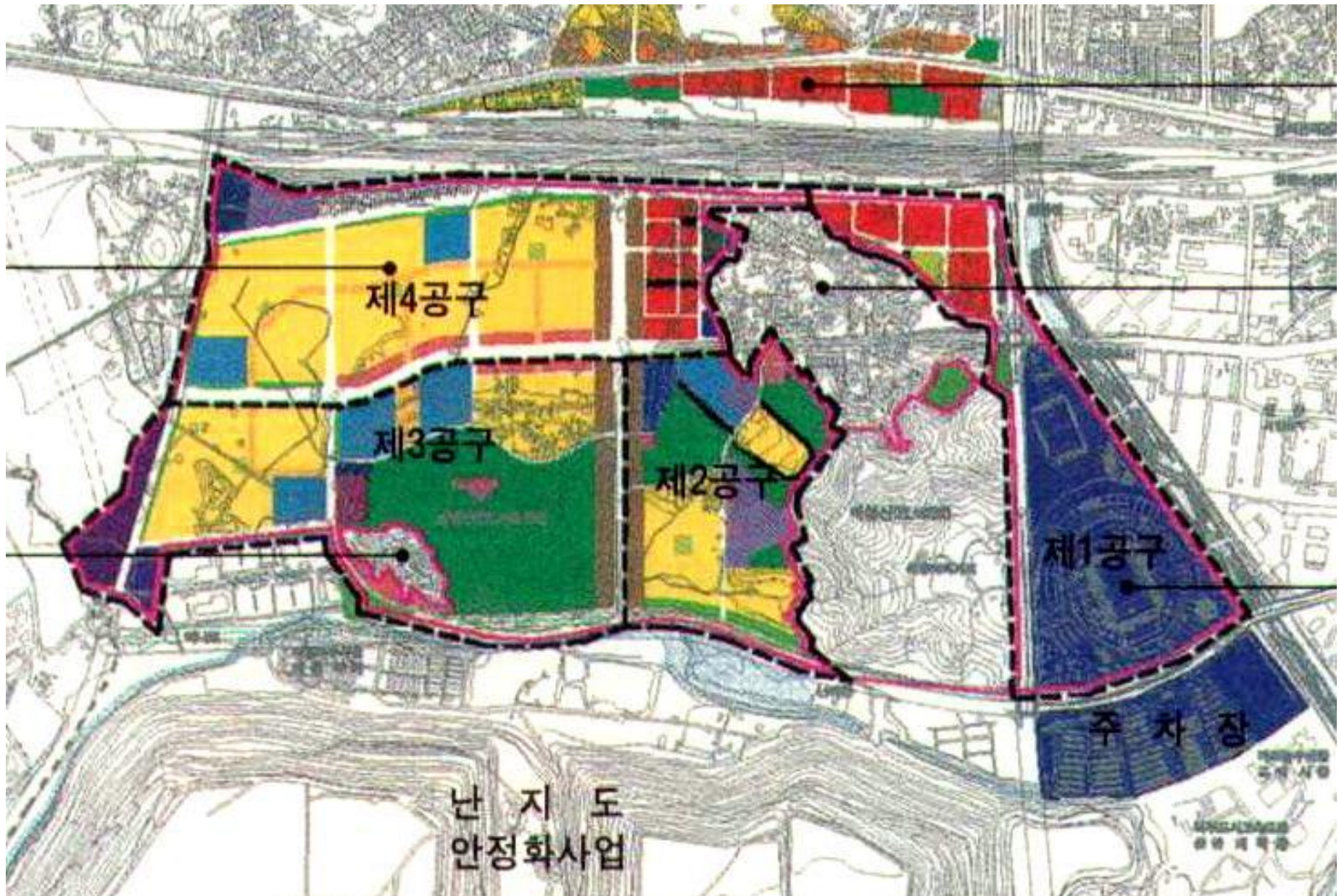
- Mapping of Core Industry Portfolio in Competing IT Clusters -

Core M&E Cluster : eEducation, News & Publishing, Movie, Game, Music

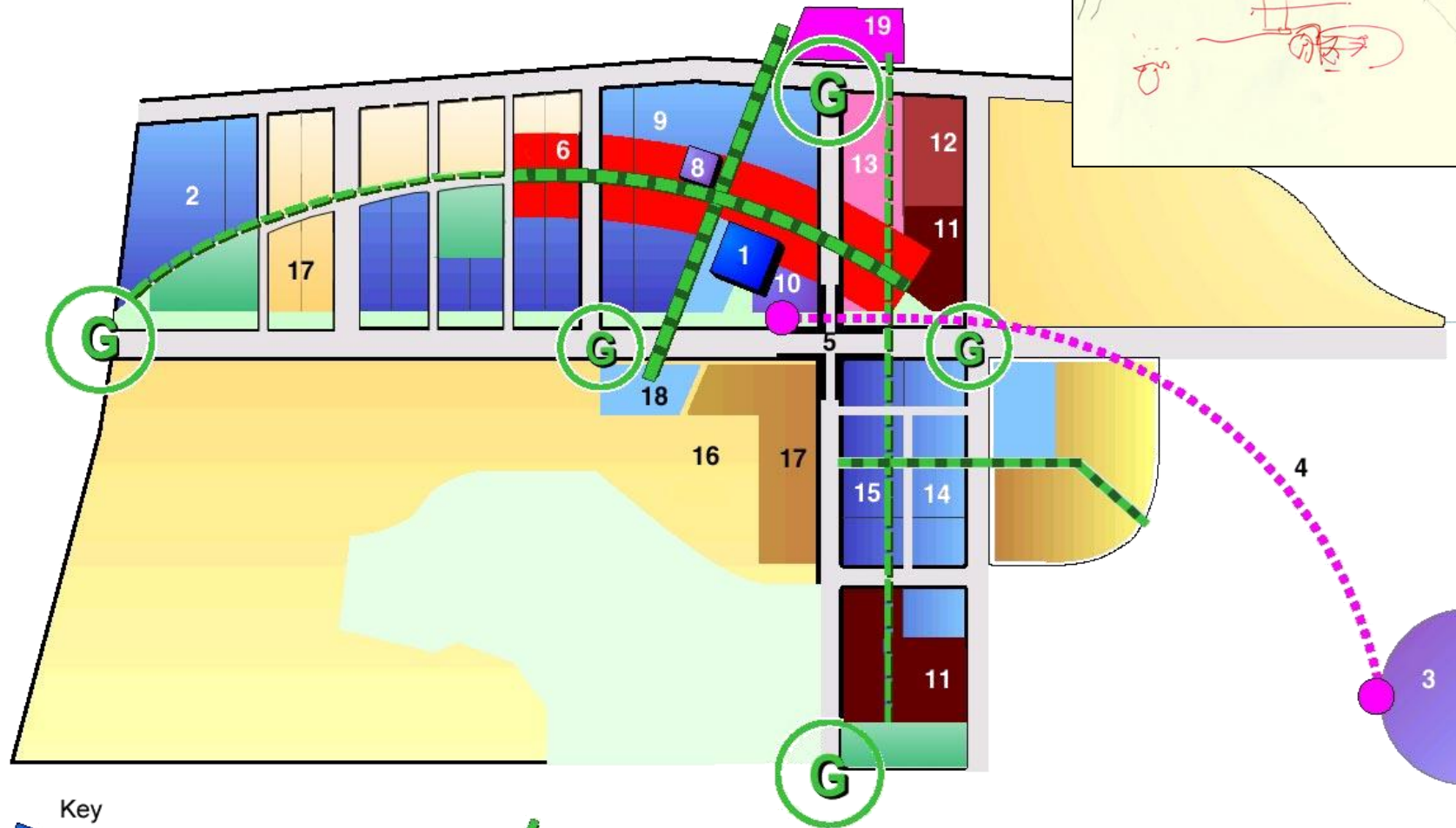
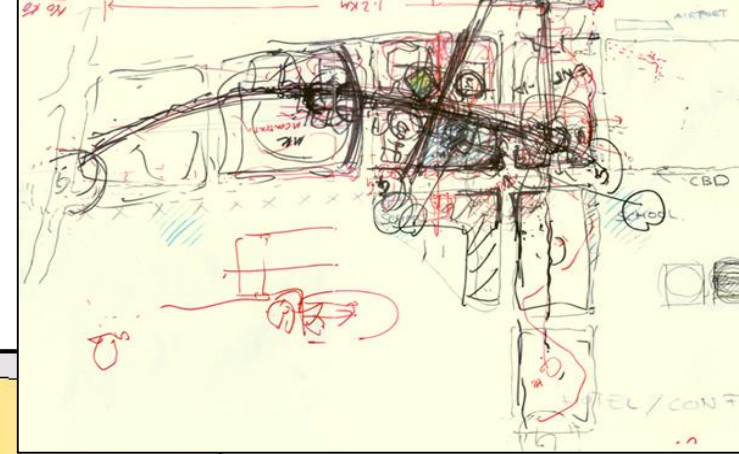
Mapping of Core Industry Portfolio in Competing IT Clusters, 2000



Plan before DMC (1994)



Master Plan for Urban Ecosystems (2000) DMC Plan



- Key**
- 1. Media Lab
 - 2. Incubator Town
 - 3. Main Science Museum
 - 4. Monorail or aerial tram link
 - 5. Main vehicular intersection "center of town"
 - 6. Retail mixed use ped. street
 - 7. Main pedestrian street / intersection
 - 8. Experimental media theatre
 - 9. Broadcasting Site
 - 10. SBC site
 - 11. Hotel
 - 12. Conference
 - 13. Entertainment
 - 14. Corporate
 - 15. Higher density corporate
 - 16. Residential
 - 17. Higher density residential
 - 18. Education
 - 19. Train Station
 - 20. "Gateway" (distinctive forms)

DMC Seoul Media Street MIT TEAM

March 04, 2002



Find that Show
Located in DMC plaza, Find that Show uses the "Audio Spotlight" invented by F. Joseph Pomeroy at the Media Lab to broadcast sound waves along with an image display. The cones will be projected strategically through out the plaza to capture strategic places for people to cluster and find comfortable seating, as well aligned to the optimal viewing location to the image display. This will encourage dynamic use patterns as show programming changes throughout the day, or as the audience determines that one program is more interesting than another, or as one seeks to identify the location of the sound cone projection across the plaza for the image they want to view (or vice versa). NBC can simultaneously broadcast all their various programs into the plaza on different screens to different audiences.

Kiosk Orchard
The Kiosk Orchard pulls the internet and information interface into the flow of the street. The kiosks comprising the orchard can be used as temporary workstations, game stations, government service stations, or any other utility utilizing the World Wide Web. Configured in a variety of patterns and clusters, they will provide different commodities that vary in size and individual users to participate in visual commodities in urban place-based activity.

Urban Odometer
Utilizing a massive video wall, the urbanometer features a series of giant bar graphs much like the subset meter on a powerful stereo amplifier. Only here the data being displayed is the amount of data flowing into and out of Digital Media City and the greater Seoul metropolitan area. Some of the info returned might include number of e-mail transfers per second, number of e-commerce transactions, and even throughput of keywords across the entire city.

SisterWall
The SisterWall is a composite video wall displaying live, real-time webcams feeds from each of Seoul's sister cities around the world. At any moment of day or night, people in DMC can peer in on their sister-citizens elsewhere in the globe.

Who-When DMC
This location-based electronic exhibition wall displays the photographs of the people who have visited the exhibit past and present. Inspired by Jan Wurster, the digital archive of location-based visitors participate in the exhibit by having a picture taken at the exhibit photo kiosk. Their images will immediately be displayed in the procession of images that recycle on the display screens or they can choose to recall an image of themselves or their friends taken previously.

Pixel Plaza
An urban participatory theater with an active dance floor, Pixel Plaza is based on the popular video game "PLUM" that uses a screen to scroll through footages that the dancer must follow. The dancer's ability is determined by the accuracy of performing a dance routine of ever-increasing speed and complexity. Pixel Plaza can support hundreds of users at once, and dance steps can change based on new sequences developed by the participants themselves. The screen can be displayed on the building facades or on the adjacent ground surface. Different urban dancers can participate at different ability levels all choreographed as one continual theater piece.

LocAware
Media Street's location-aware information delivery system will enable pedestrians equipped with PDAs and mobile phones to receive a variety of information—movie listings, stock quotes, site coupons, and more—that is relevant to their physical location and its features. For example, a student walking by a cinema on Media Street can instantly receive on their mobile phone display a schedule of films playing at that cinema location. A visiting businessman can receive a time-limited coupon for a cappuccino as he walks within 100-feet of one of Media Street's cafes.



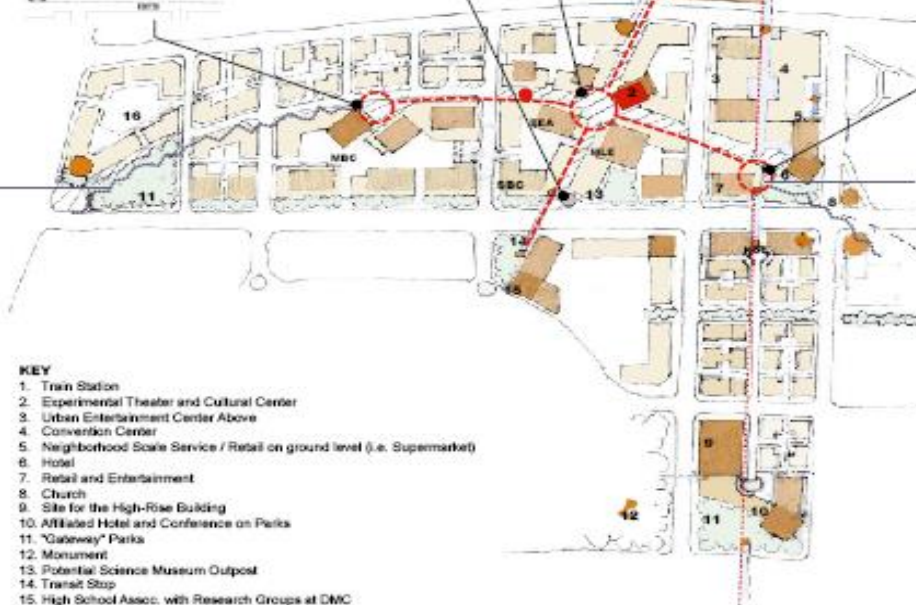
Wireless LAN
The Street will be equipped throughout its length with wireless local area network (LAN) base stations, enabling anyone with a wireless modem to access the internet and World Wide Web from any location on or near Media Street. No longer confined to their desks, DMC denizens will be able to tap into the global bitstream while sipping a latte or sitting on a park bench.



Intelligents
The intelligent street lamps on Media Street transform the ordinary "dumb" street lamp into an artifact that responds both to individual and groups of pedestrians as they move through the space. Intelligents vary their light by color, intensity, and distribution. The intensity of the light is determined by the proximity of a body or bodies to its sensor, as is distribution among adjacent intelligents. The color varies from cool blue to hot pink, based on average body temperature of the pedestrians and their activity level and degree of bodily movement. As ambient digital music and dance content will be felt which will culminate in an attempt to gather enough dancers into the street to trigger the elastic dance feature.



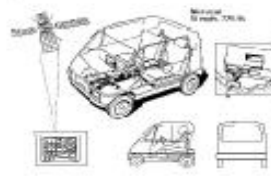
Experimental Digital Theater
Let your imagination go... This is a theater that pushes the relationship of audience and actor: the visitor notices where the theatrical piece begins and ends. They also feel that through their journey at the DMC, the experimental theater exists in many places. The MIT, City Design, and Development Group and the Media Lab students collaborated in a joint workshop to explore the notion of place making, participation and theatrical exhibits in the Urban Narratives Workshop to telling the story of Boston.



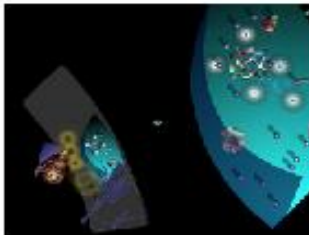
ThinShop
ThinShop is a "bricks and clicks" station that combines the power of information technology and the personal appeal of the little shop on the street. ThinShop is staffed by people and features real products, but only for display and demonstration. Customers may purchase the products in the store, via computer interface, but the item itself is delivered from an off-site warehouse. ThinShop focuses on transparency and de-fortification, as there is little or no visible stock to be pilaged.



MateSpace
A cafe and entertainment space, MateSpace leverages communications and spatial positioning technology to help people find a roommate. As a person enters the space, he or she instantly "joins" a virtual community overlaid onto the real gathering of people at Red Square. Having previously completed a personality profile, the newcomer is then alerted to the co-presence of a matching potential mate also in the space. The two then have the opportunity to meet.



EtherBottles
In collaboration with Hyundai, Digital Media City will make available a number of small electric-powered intelligent personal transport. Used free of charge, the EtherBottles can only operate within the confines of Media Street. They are equipped with voice recognition software that responds to rider inputs and a computerized interface that provides information about the shops and services along the way. The EtherBottles will provide Hyundai researchers with insights on cockpit design for next-generation automobiles.





Digital Media Street: Augmented Place Scenario

SKKU Team

Media Edu-Place

미디어에 대한 흥미를 유발 시키는 것은 중요하다. 미디어를 접하는 모든 사람에게는 미디어에 대한 흥미를 유발 시키는 것은 중요하다. 미디어에 대한 흥미를 유발 시키는 것은 중요하다.

Open Studio

오픈스튜디오는 모든 사람이 참여할 수 있는 공간이다. 누구나 자신의 아이디어를 표현할 수 있는 공간이다.

See Through Center

투시 센터는 모든 사람이 볼 수 있는 공간이다. 누구나 자신의 아이디어를 표현할 수 있는 공간이다.

DMC Drop

DMC Drop은 모든 사람이 볼 수 있는 공간이다. 누구나 자신의 아이디어를 표현할 수 있는 공간이다.

Open Stage

오픈 스테이지는 모든 사람이 참여할 수 있는 공간이다. 누구나 자신의 아이디어를 표현할 수 있는 공간이다.

Korean Wave Shop (Invented Place)

한국 웨이 샵은 모든 사람이 볼 수 있는 공간이다. 누구나 자신의 아이디어를 표현할 수 있는 공간이다.

Digi-Roof

디지털 루프는 모든 사람이 볼 수 있는 공간이다. 누구나 자신의 아이디어를 표현할 수 있는 공간이다.

DMC Gate

DMC 게이트는 모든 사람이 볼 수 있는 공간이다. 누구나 자신의 아이디어를 표현할 수 있는 공간이다.

Interactive Place

인터랙티브 플레이스는 모든 사람이 참여할 수 있는 공간이다. 누구나 자신의 아이디어를 표현할 수 있는 공간이다.

Fun Incubator

펀 인큐베이터는 모든 사람이 참여할 수 있는 공간이다. 누구나 자신의 아이디어를 표현할 수 있는 공간이다.

Cyber Fitness

사이버 피트니스는 모든 사람이 참여할 수 있는 공간이다. 누구나 자신의 아이디어를 표현할 수 있는 공간이다.

Step out. Log on.

스텝 아웃. 로그 온. 모든 사람이 참여할 수 있는 공간이다. 누구나 자신의 아이디어를 표현할 수 있는 공간이다.

Play Ground

플레이 그라운드. 모든 사람이 참여할 수 있는 공간이다. 누구나 자신의 아이디어를 표현할 수 있는 공간이다.

U-Farm

유 팜. 모든 사람이 참여할 수 있는 공간이다. 누구나 자신의 아이디어를 표현할 수 있는 공간이다.

E-Board

이 보드. 모든 사람이 참여할 수 있는 공간이다. 누구나 자신의 아이디어를 표현할 수 있는 공간이다.

Show Window

쇼 윈도우. 모든 사람이 참여할 수 있는 공간이다. 누구나 자신의 아이디어를 표현할 수 있는 공간이다.



Culture-Place

문화 플레이스는 모든 사람이 참여할 수 있는 공간이다. 누구나 자신의 아이디어를 표현할 수 있는 공간이다.

Traffic Calming

트래픽 칼밍. 모든 사람이 참여할 수 있는 공간이다. 누구나 자신의 아이디어를 표현할 수 있는 공간이다.

Fountain

폰테인. 모든 사람이 참여할 수 있는 공간이다. 누구나 자신의 아이디어를 표현할 수 있는 공간이다.

Performance

퍼포먼스. 모든 사람이 참여할 수 있는 공간이다. 누구나 자신의 아이디어를 표현할 수 있는 공간이다.

Flea Market

플리마켓. 모든 사람이 참여할 수 있는 공간이다. 누구나 자신의 아이디어를 표현할 수 있는 공간이다.

Art Plaza

아트 플라자. 모든 사람이 참여할 수 있는 공간이다. 누구나 자신의 아이디어를 표현할 수 있는 공간이다.

Thin Shop

틴 샵. 모든 사람이 참여할 수 있는 공간이다. 누구나 자신의 아이디어를 표현할 수 있는 공간이다.

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Cafe Street Regulation

카페 스트리트 레귤레이션. 모든 사람이 참여할 수 있는 공간이다. 누구나 자신의 아이디어를 표현할 수 있는 공간이다.

Event Boulevard

이벤트 보우levard. 모든 사람이 참여할 수 있는 공간이다. 누구나 자신의 아이디어를 표현할 수 있는 공간이다.

Multi-Layer Plaza

멀티 레이어 플라자. 모든 사람이 참여할 수 있는 공간이다. 누구나 자신의 아이디어를 표현할 수 있는 공간이다.

Global Palette

글로벌 팔레트. 모든 사람이 참여할 수 있는 공간이다. 누구나 자신의 아이디어를 표현할 수 있는 공간이다.



Principles of Infrastructure for Smart City

Provision of Customized Knowledge

- Provides customized information for residence, workers, visitors by smart infrastructure
- Provision of Networking and Integrating High-tech Industry Ecosystem



Permeable Street Edge

- Improved interaction between building and public environment by increasing penetration of inside and outside of buildings
- Provide a Digital connection with other places, events and time periods



Mix of Uses

- Mixed functions in a single place that was impossible in the existing zoning system
- More Spatial flexibility and efficiency for responding various needs by utilizing cutting edge technology



Augmented Place and Urban Landscape

- Provide interaction between Physical environment and Smart Devices
- Improved place identity of Urban Production Place by utilizing Smart Infrastructure
- Programming of public space



Energy Efficiency & New Renewable Energy

- Reduce fossil energy and resources
- Testbed for New renewable energy
- Utilize Hi-tech material (LED) to save energy and actualize Digital Media Facade





2000



New Media Industry Ecosystem

1000 Companies, 50,000 Creative Workers, 20 Billion USD

Broadcasting companies including MBC HQ, SBS and KBS Satellite, and YTN(5)

Newspaper company including Chosun Daily, Donga Daily, Joongang Daily, Hankook Daily, and Seoul Daily(5)

Contents business of IT like Samsung SDS, movie and game like LG U+ HQ, CJ E&M HQ, Dragon Fly, Pan Entertainment

Research institutions and incubating centers established by Seoul City including Nurikum Square, DMC R&D Center,

cultural Contents Center and IT complex

SMART CITY



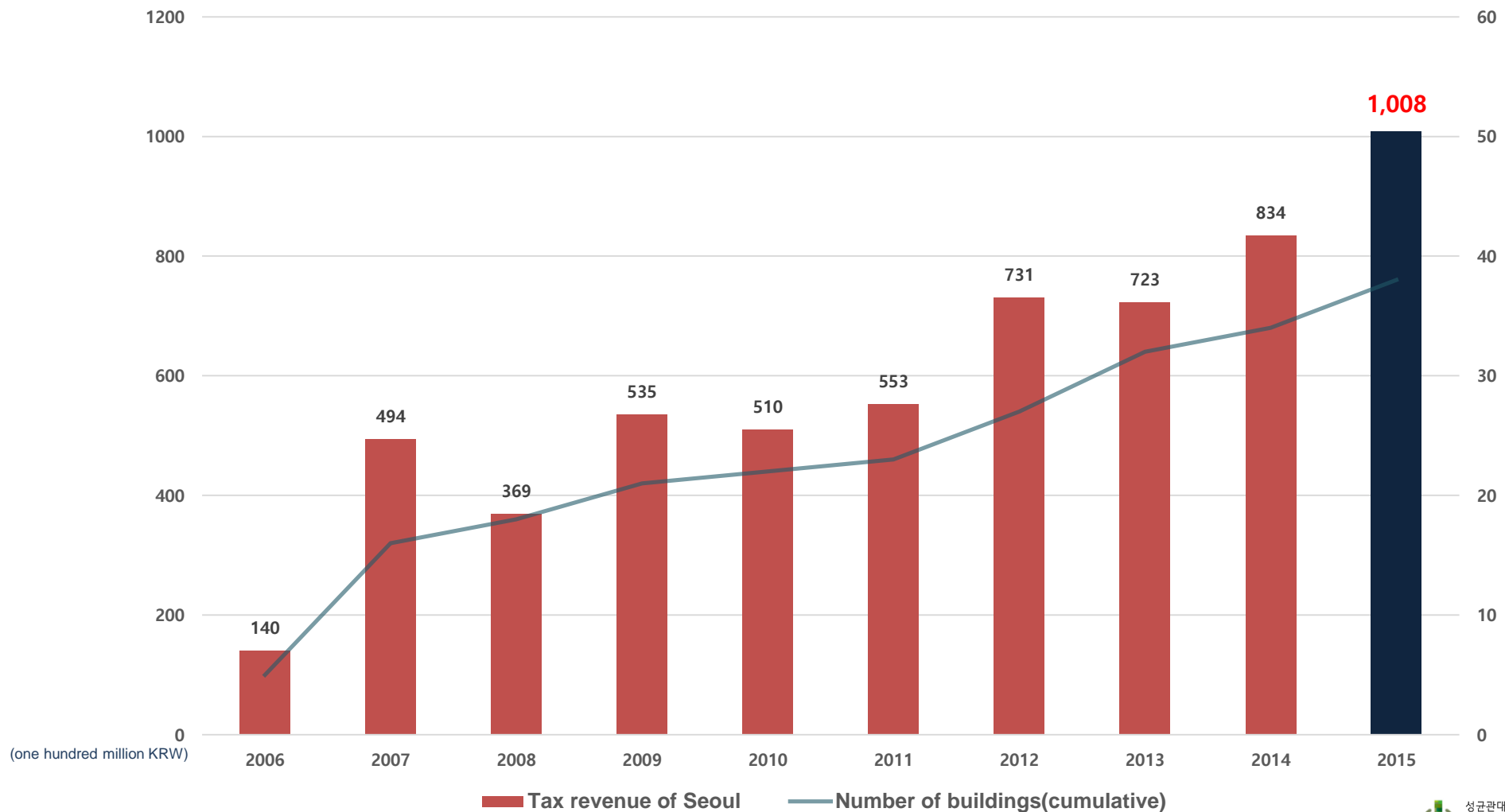
Foundation Head of Digital Media Culture

Korean wave(Movie, Drama, Kpop, Audition, Video Game, IT)



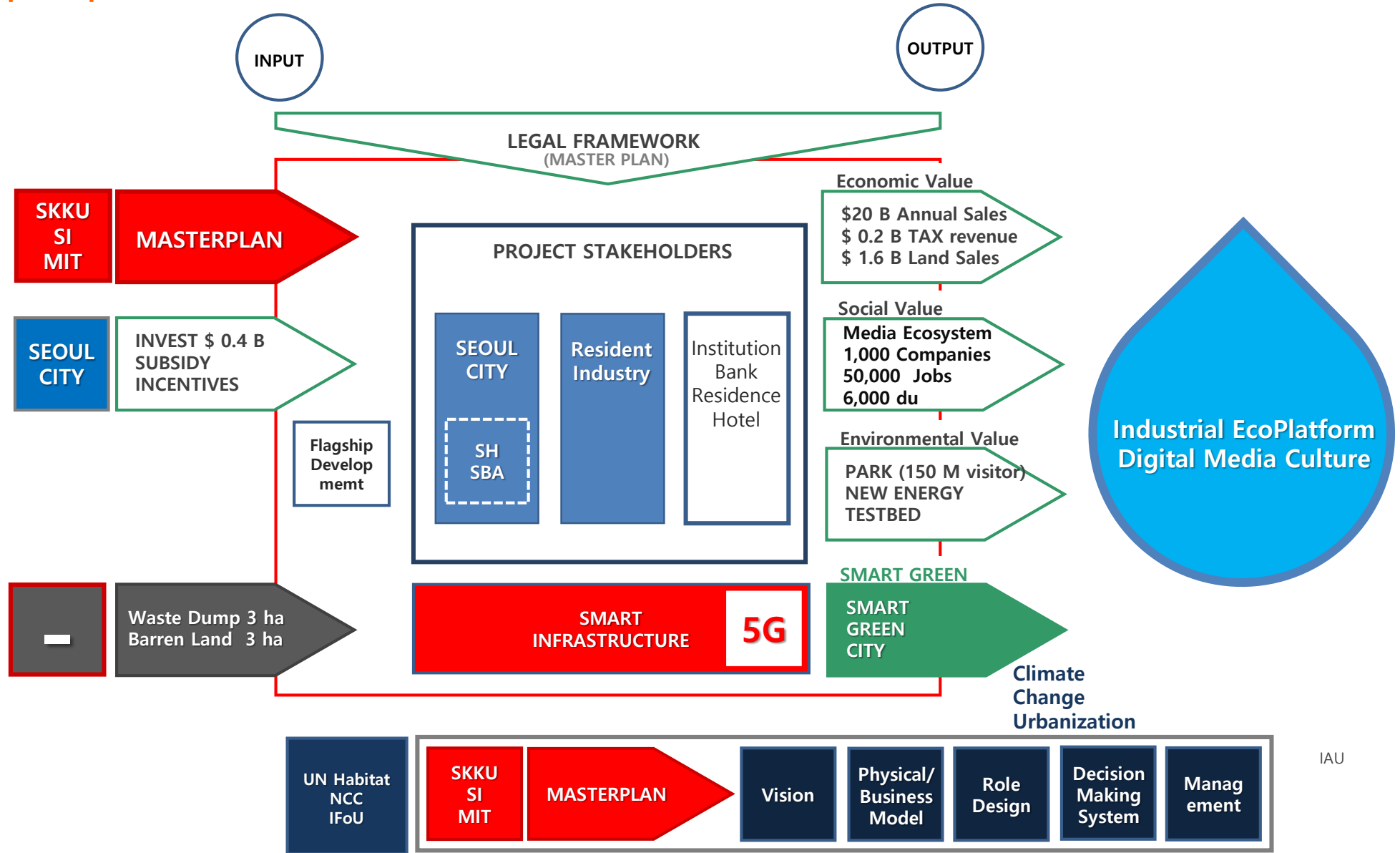
Tax Incremental Financing

- The initial investment of city in DMC was \$390 million, accumulated land sales proceeds of DMC rises to 1.6 billion dollars
- Tax Revenue in DMC: \$110 million, total \$1 Billion until 2016



Value of Smart City : Portfolio and Track Record as Reference

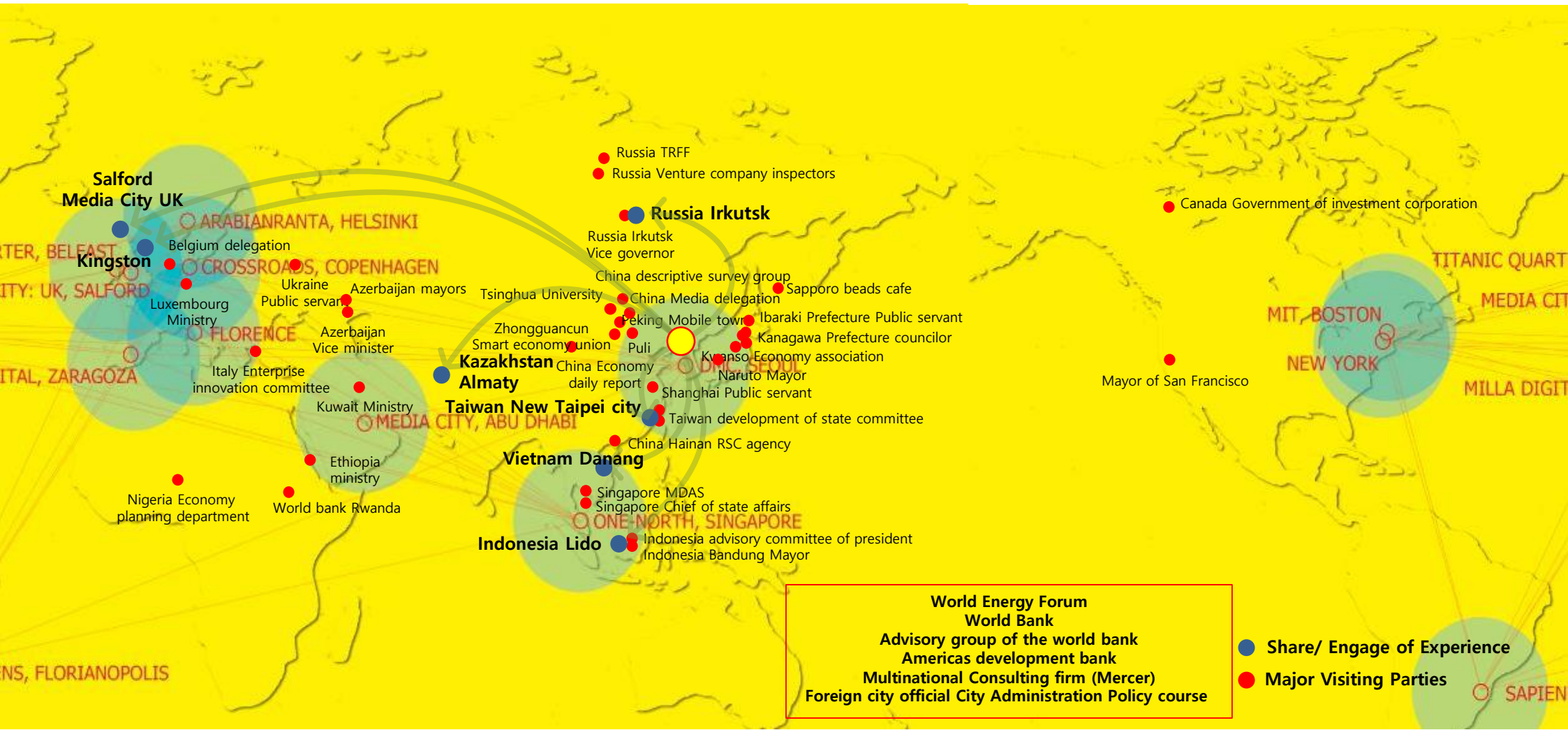
Korea is the only country that has led the Fourth Industrial Revolution and not participate in the last Industrial Revolution.



IAU

DMC Network

New Century City Forum and IFoU etc.

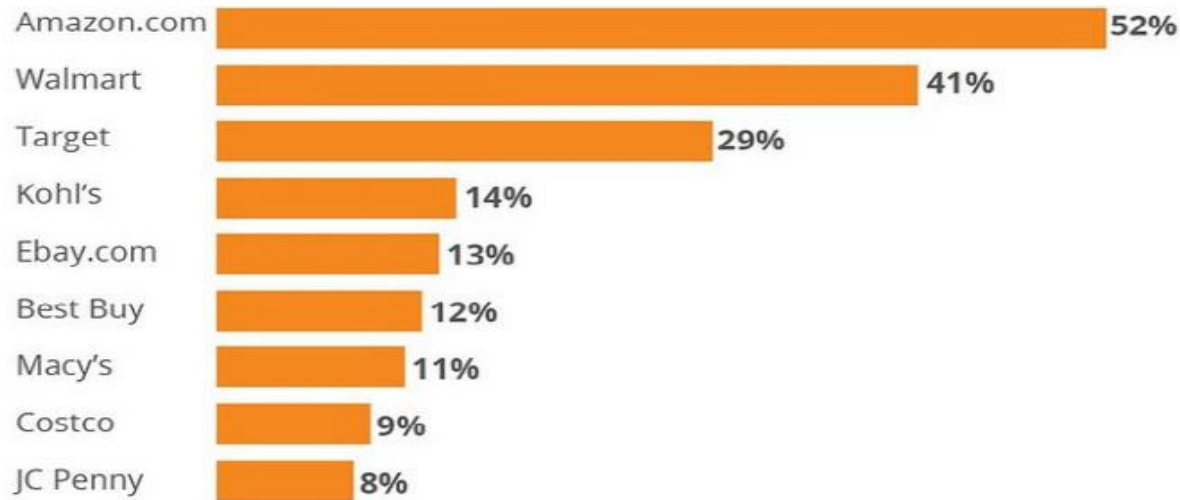


4

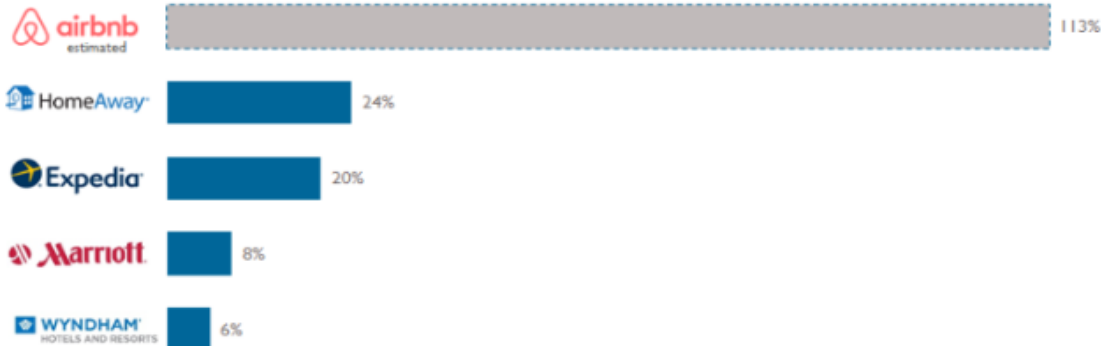
The Age of the City

**Smart Urban Regeneration :
Urban Ecosystem Restoration with
Convergence of Digital and Analogue Technology**

amazon.com[®]



airbnb



UBER

KICKSTARTER

kakaobank

NETFLIX

TILDA PAUL INTRODUCING AN AND JAKE
SWINTON DANO SEO HYUN GYLLENHAAL

okja

A FILM BY
BONG JOON HO

NETFLIX

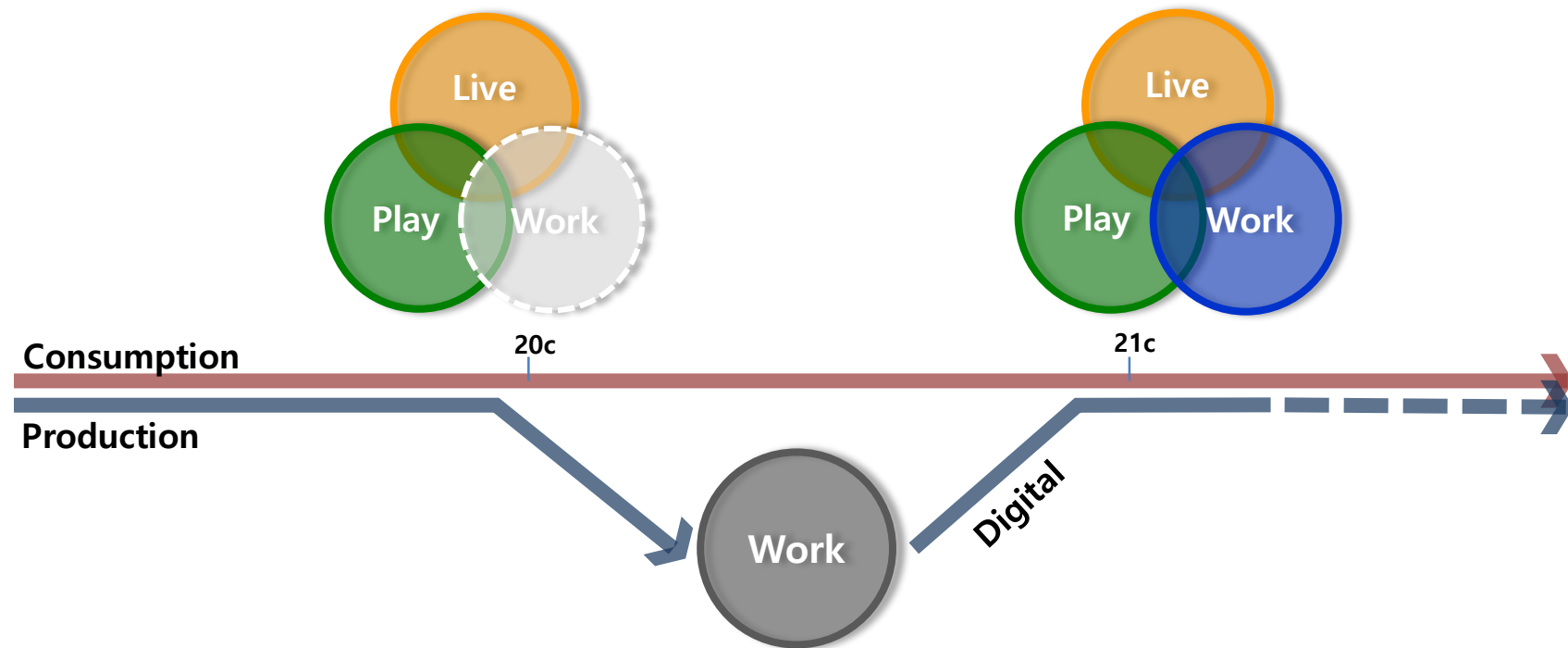




21st century: restoration of urban production and the regeneration of urban ecosystem

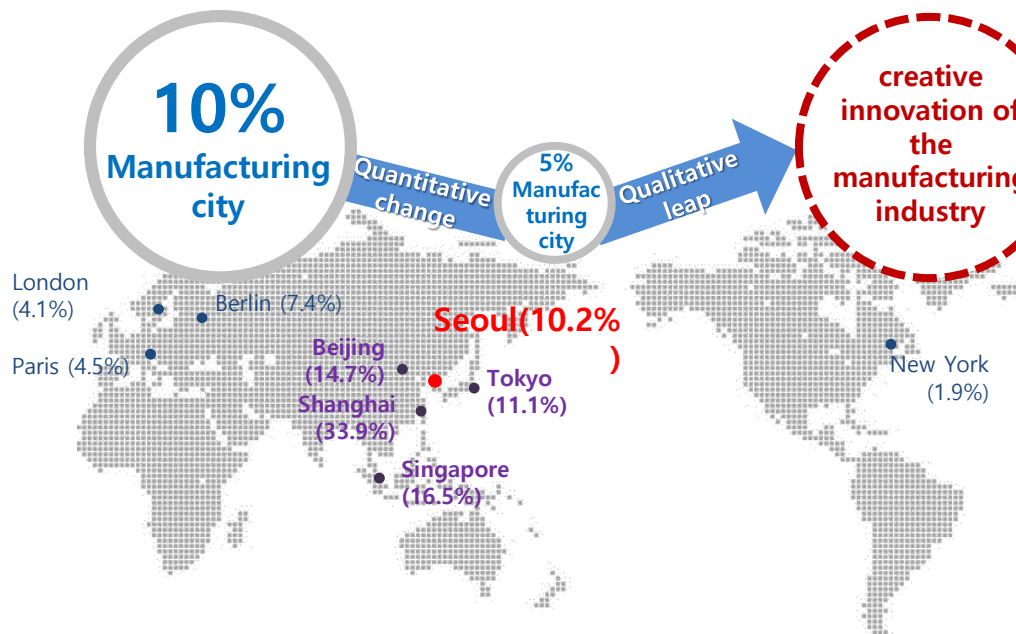
The Age of the City: Urban Ecosystem Restoration and Regeneration

- 20th Century : Consumption and service oriented city by zoning
- 21st Century : **Digital Technology** create innovative urban production ecosystem as **harmonious integration of Live, Work and Play**.
- To bring the creative workforce back to the city and
- To upgrade **existing industries and convergence with new industries** for sustainable growth.



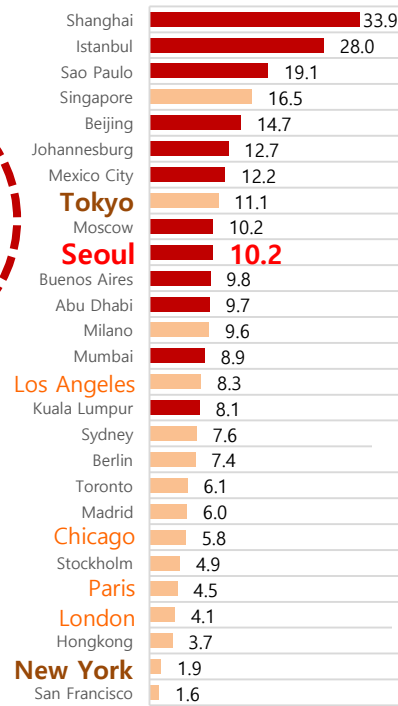
The Age of the City: Creative Industry and Digital Manufacturing

- The City is emerging the major subject of the economy index.
- Major cities focus to create new industries and to accelerate for converging traditional and existing industries.
- **Seoul metropolitan area ranked 28th (\$ 804b), Korea ranked 13th (\$ 1,696b)**
 - Bigger than countries and cities such as Netherlands 30th (\$ 770b), South Africa 33rd (\$ 672b), London 29th (\$ 794b) and Paris 32nd (\$ 680b) ('100 Top Economies : Urban Influence and the Position of Cities in an Evolving World Order'(2016))



[Manufacturing employment rate in major cities]

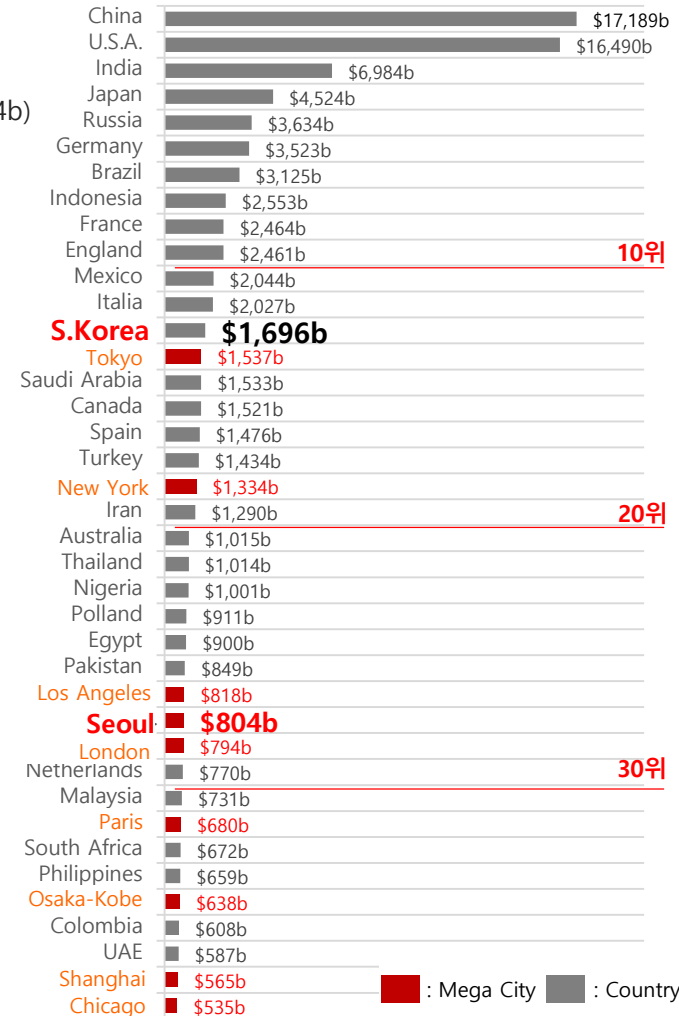
출처 : ' Cities of Opportunity 2013 ' , 2012년 기준, 제조업비율(종사자 수 기준)
Reference: Oxford Economics, Cities of Opportunity



Emerging : Emerging Mature : Mature

[Manufacturing employment rate]

Reference : The Chicago Council on Global Affairs, '100 Top Economies : Urban Influence and the Position of Cities in an Evolving World Order', 2016



Emerging : Mega City Mature : Country

[Revenue / GDP]

Boston Innovation District

- 1st place for Prepared innovation city at Digital Economy, 2nd place for innovation city 'Boston' at CNN
- After the construction of the Innovation District in 2010, it has created 5,000 jobs and attracted 200 start-ups.
 - Start-up that has less than 10 employees 25%
 - Start-up that has a shared space, business incubator 40%
- \$ 67 million annual tax revenue



New York Lower Manhattan

- '2010 Lower Manhattan Reconstruction Project' to attract businesses, promote investment and development, and create new vitality
- Approximately \$30 billion will be invested to promote more than 60 large-scale projects including residential apartments, roads, transportation hubs, and hotels.
- Relatively low rents and relocated companies targeted tax exemption benefits(\$ 3,000 per employee)



London Tech City

- Tech City is existing urban manufacturing complex in the north, based on the London Financial Hub(The city)
- After completion, it has attracted 50,000 employees and more than 5,000 companies.
- The support scale of start-ups and venture companies 1st in Europe and the production inducing effect of £66.9 billion
- Currently, It recorded that 42% of Fintech investment in Europe is done by London and the growth rate of Fintech in 2014 is 136%

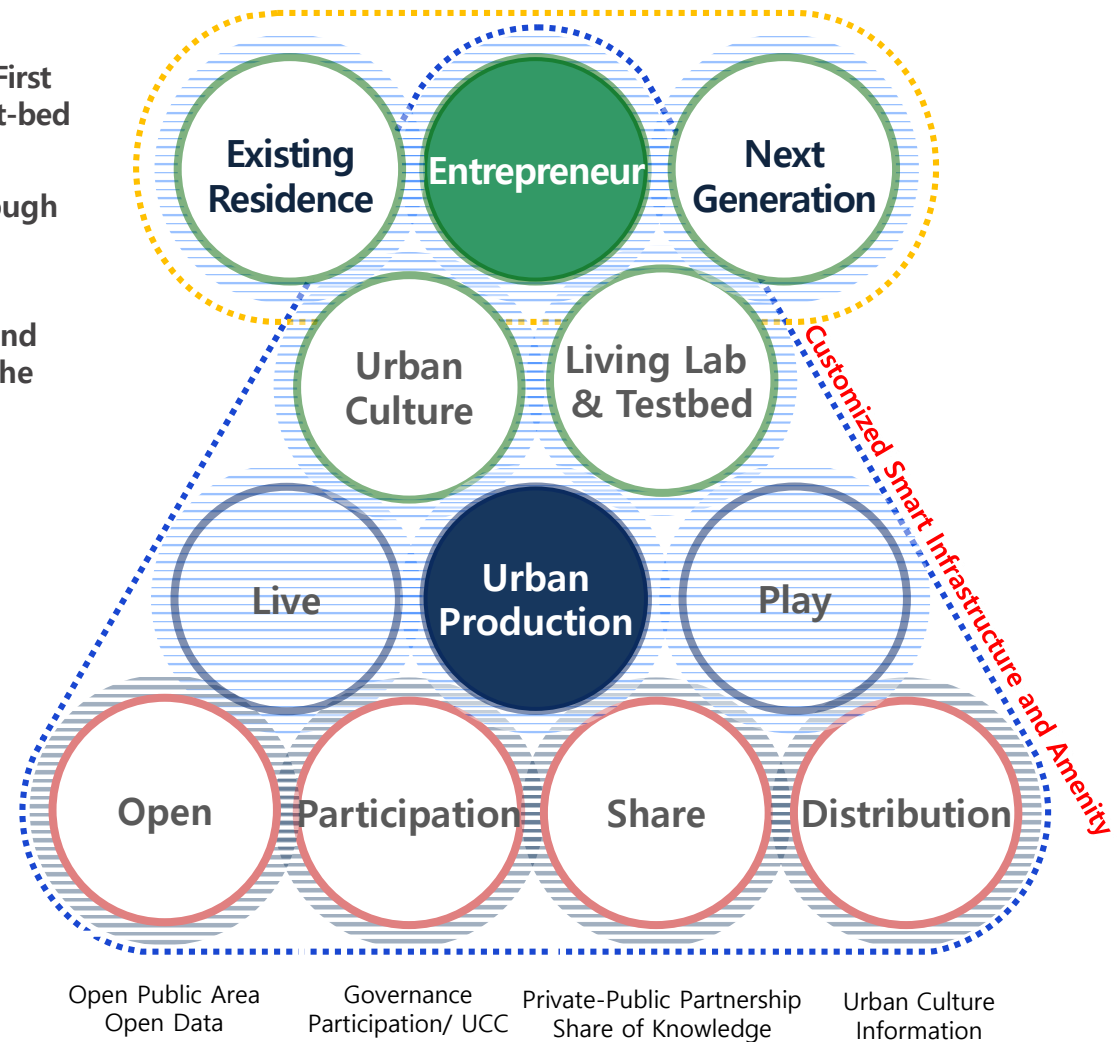


Smart City: Making Urban Ecosystem + Entrepreneur

Entrepreneur and Digital Native: The First Class Infrastructure for Creative Industry and Digital Manufacturing

- Entrepreneurs are leading civilization and culture
- They prefer highly open society with rich culture,
- They are expected to prepare cutting edge smart infrastructure(the First Class Infrastructure) in order to play a role as a Living Lab and a Test-bed
- Realizing and supporting the value of the shared-economy and inclusive city through utilizing cutting edge technology, and through open, participation, share, and distribution, which is the major megatrend in this era.
- The major cities of the world are creating the urban ecosystem and concentrating their efforts to gain industrial competitiveness in the era of the 4th Industrial Revolution.

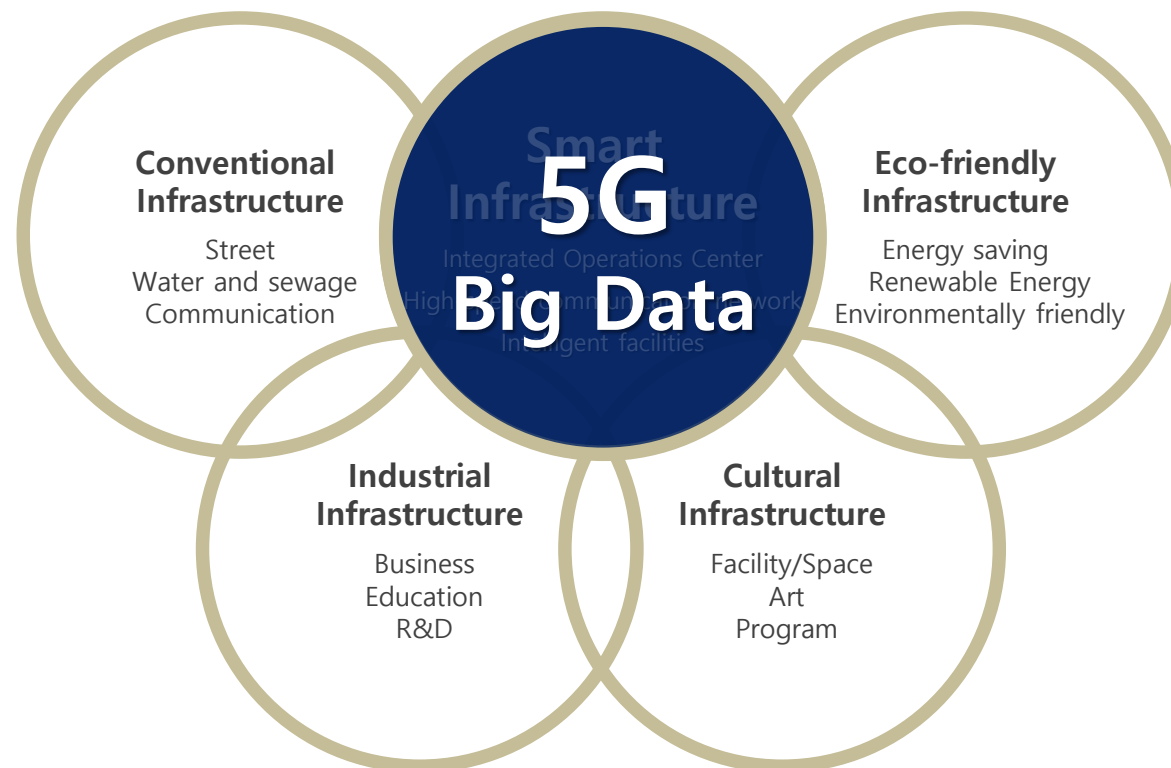
Living laboratory
 Experienceable Test bed
 Showcase and Marketing Place
 Interesting market and pop-up mall
 Start-up platform
 Open Campus
 Real-time safety / maintenance



Infrastructure and Amenity Networks

Smart Infrastructure networks and upgrades Existing Infrastructure

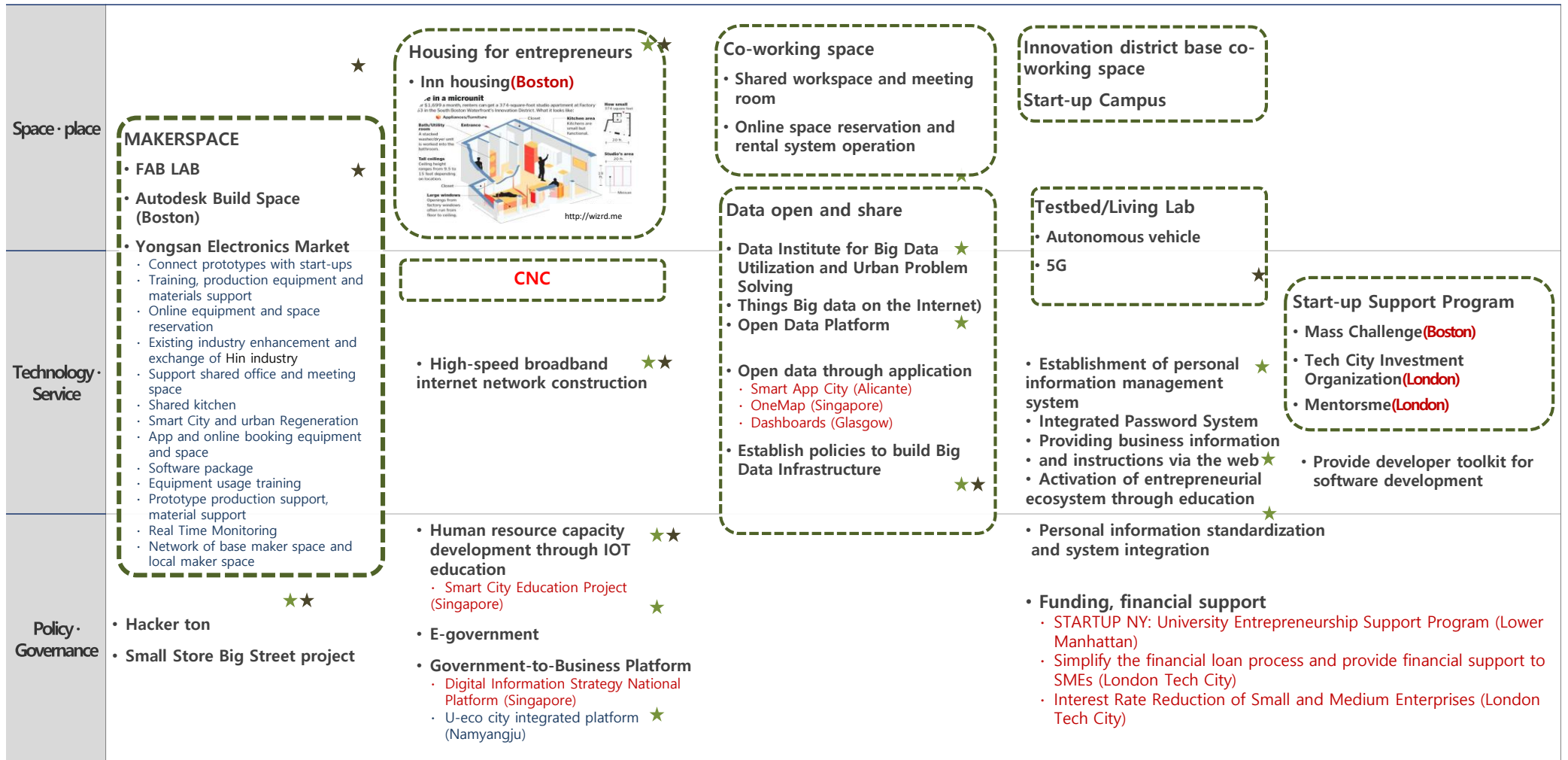
- New Digital Infrastructure Improve conventional and existing infrastructure and integrate urban amenity
- Building infrastructures(ICT, IoT, AI) that can evolve sustainably for consumer(citizen and industry) life quality and production innovation
- The core Infrastructure : 5G and Big Data



Smart City Ecosystem

Essential Smart City Elements of the Innovative Ecosystem

- ★ **Smart Case which is applicable throughout the city**
 - Sensor, Network, Web, APP based services
 - Renovation of existing infrastructure is required
- ★ **Smart Case which is applicable regionally**
 - Strategic Place Creation Case (Smart Green Town, Innovation District, TestBed, Living Lab, etc.)
 - Customized Plan which is suitable for place and community characteristics
 - Infrastructure installation is required

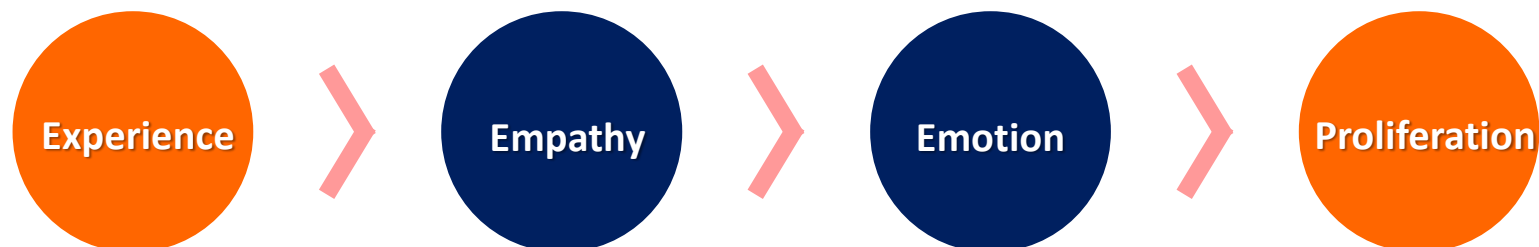


Smart Urban Ecosystem Regeneration

Smart Urban Regeneration is

- To Regenerate Urban Ecosystem that *Live, Work, and Play* promotes the Evolution of Education and Industry for heathy sustainable growth with cutting edge technology(ICT, IoT, AI, Big Data) and wisdom.¹⁾
- To Harmonize Analogue and Digital for the Augmented Place Making to improve life quality, recover community, and innovate production ²⁾,
 - In particular, to promote the fusion of existing industries and new industries, pedestrian activity and smart mobility.
 - This allows more produces with less resources, more diverse urban activities in smaller places,³⁾
- To contribute the happiness and wealth to every Citizen as well as each Citizen.

1) 서울경제, 김도년, 도시재생과 산업생태계 회복, 2017.11.14 /2) 전남일보, 김도년, 스마트시티, 2018.05.25 /
3) 서울경제, 김도년, 똑똑한 도시, 스마트시티, 2017.11.06



YongSan Urban Regeneration Flagship Project for an Experimental Showcase



YongSan Electronics Market

The largest electronics market in Korea that has led the popularization of electronics industry, which combines R&D, manufacture, distribution

- Knowledge based 4,000 companies 30years history
- The birth place of Korea's ICT industry
- The whole spectrum of ICT ecosystem

30 years of History opened in 1987

200,000m² Largest in the Country

3,932 Number of largest companies

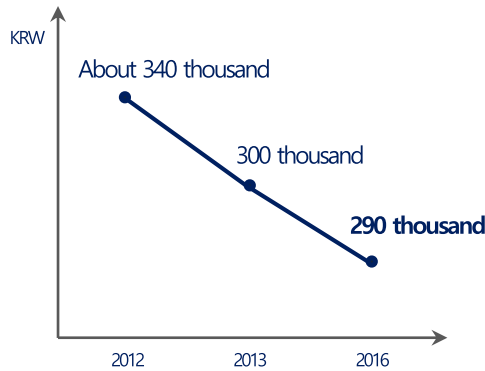
Market + Manufacture + Repair



The Decline of Yongsan Electronic market and CBD

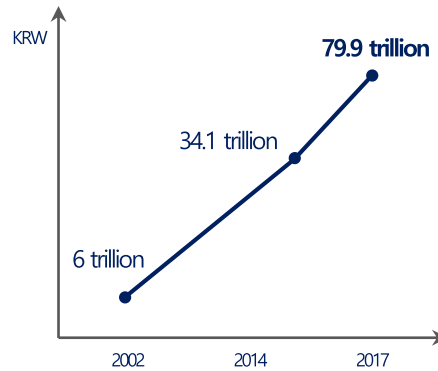
- Miss market flow of the online and finished product-oriented computer trend(50% sale reduced, 20% vacancy increased)
- Poor environment and lack of urban amenity

Changes in PC shipment worldwide
50 thousand PC export declined over 5 years



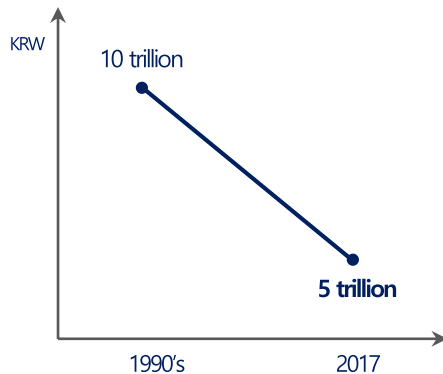
※ 출처: 용산전자상가활성화 방안 (2016, 도시계획국)

Changes in domestic online commerce trend
74 trillion KRW increased in 10 years



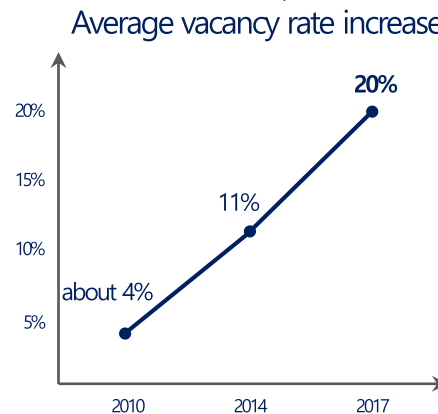
※ 출처: 통계청 온라인쇼핑동향조사

Yongsan electric store sales change
50% drop in sales over 30 years



※ 출처: 용산구 상공회의소 면담 결과

Vacancy rate change by year(whole electronic market)



※ 출처: 용산전자상가활성화 방안 (2016, 도시계획국) 현장조사 (2017.6) *상가별 현황에 따라 변동될 수 있음

Park, Green, Square 0.0%

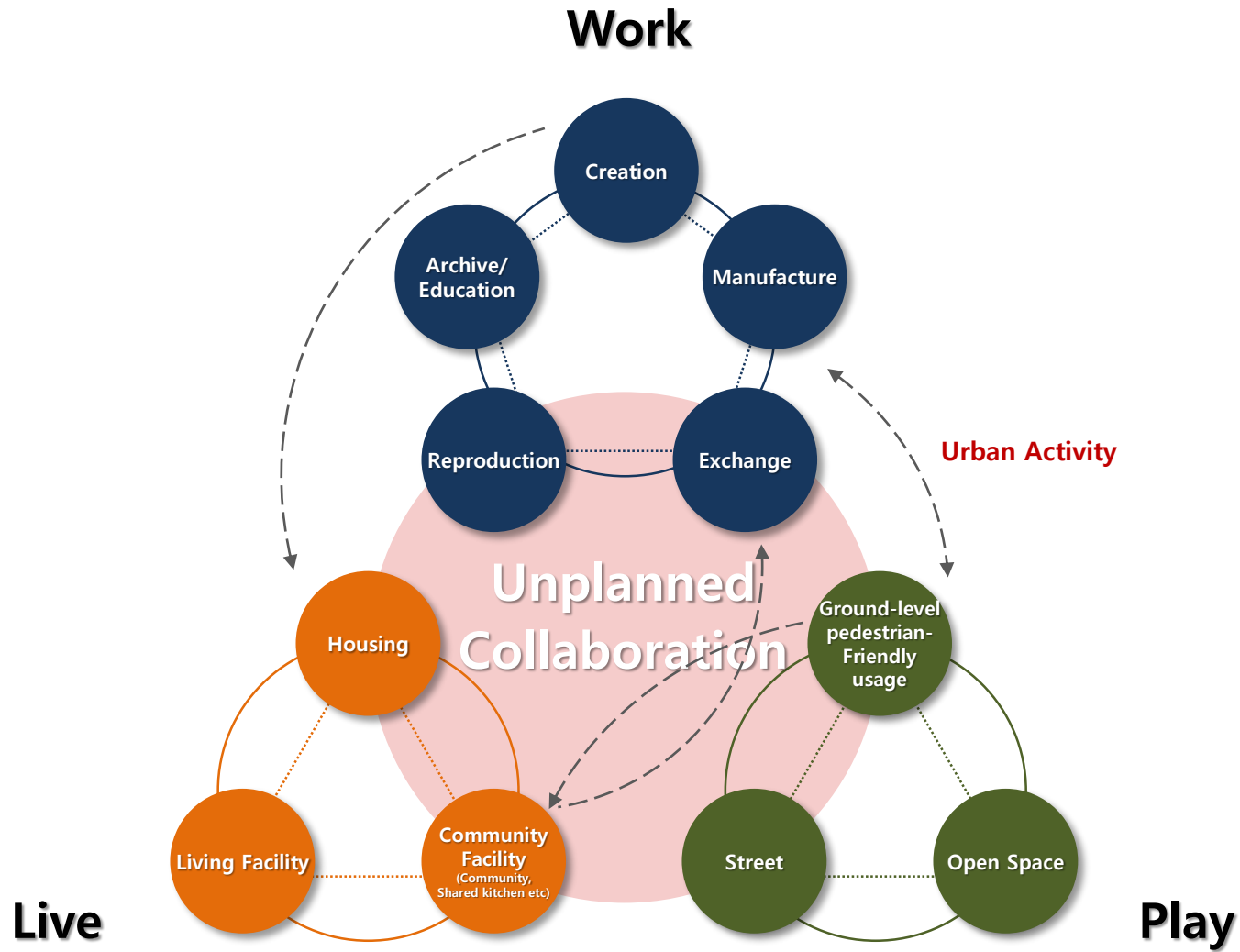
12 Amenities near Cheongpa-ro
of 180 amenities in 800m, 2018. 07

Deteriorated Building 83.0%
Over 30~50 years

Reduced Manufacturing
Reduce manufacturing and opportunity

50% Decline in Sales

Unplanned Collaboration Innovation Startup Platform



Yongsan Urban Regeneration : Regeneration of market vitality and production function(manufacture) Drone, AR/VR, and robot industry which can create a new industrial culture as a representative industry of the 4th Industrial Revolution

- To upgrade potential existing industry for converging AR / VR
- To network the drone and robot industry which supported by National government
- To utilize testbed of 5G and regulation free district

9 National Strategy Projects

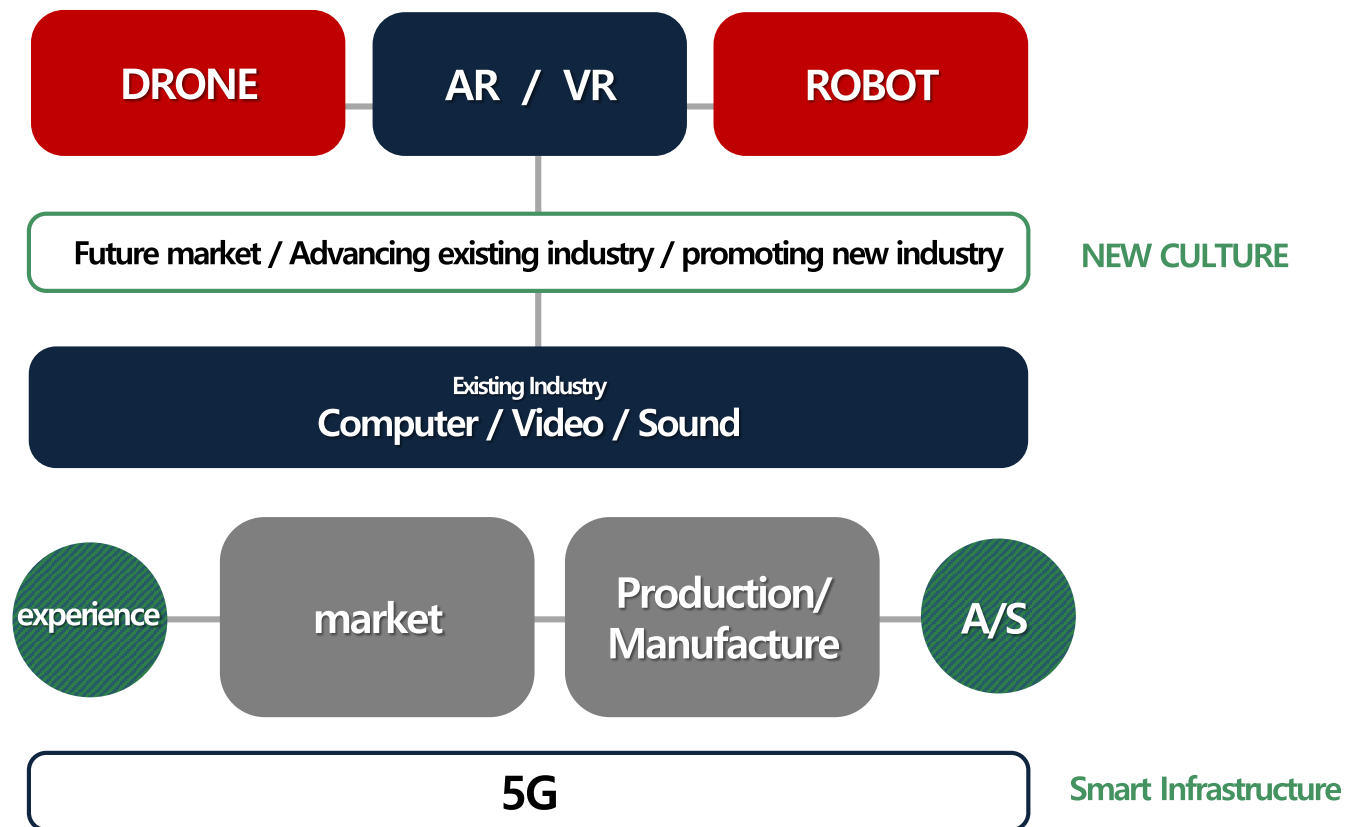
- Autonomous cars
- Post lightweight material
- Smart city
- A.I
- Virtual Augmented Reality (AR / VR)
- Precision medical
- Carbon resources
- fine dust
- Bio medicine

Ministry of Homeland

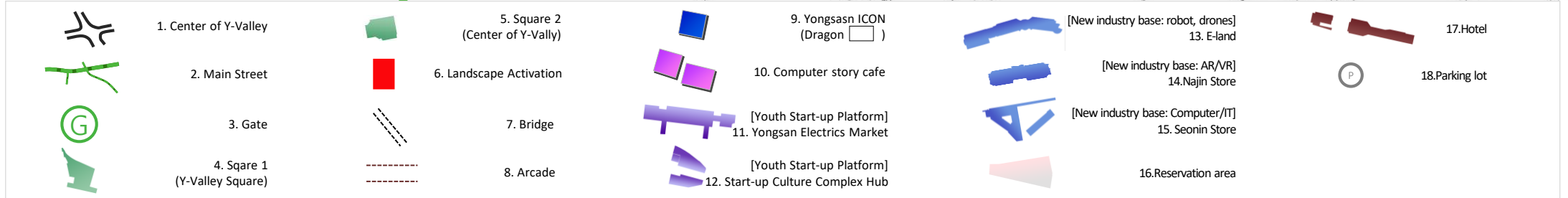
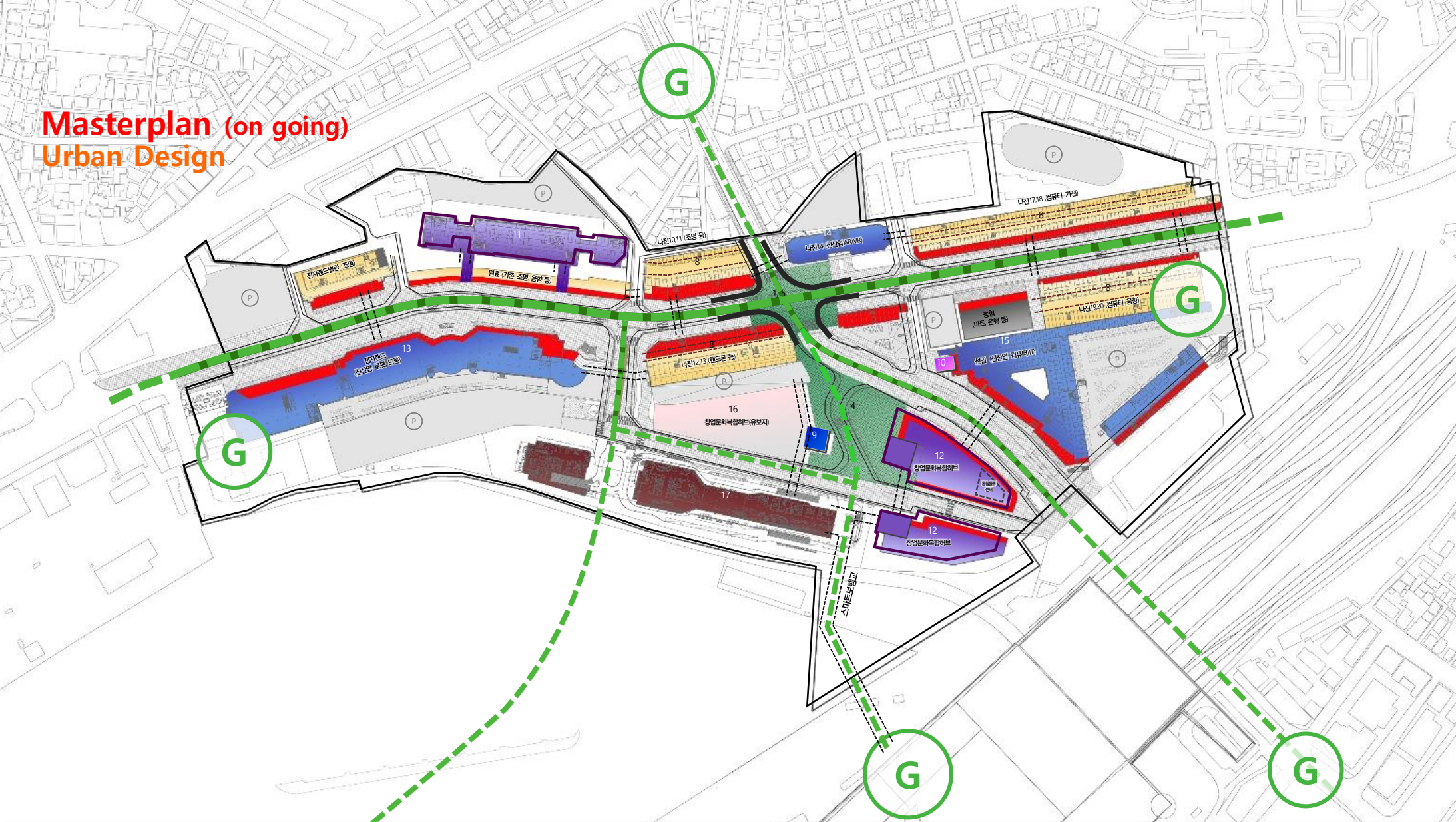
- Promote drone industry

Seoul City

- Robot
- Drone
- Maker space



Masterplan (on going) Urban Design



Masterplan (on going)

Urban Design

Strategically promote Essential Facilities and Programs in connection with industry direction setting by markets and start-up base

- Najin: AR / VR
- E-Land: Robots, Drones
- Good: Computers

Accessibility improvement

- Public Transportation - Walking Network Connection

Creating a vitality base

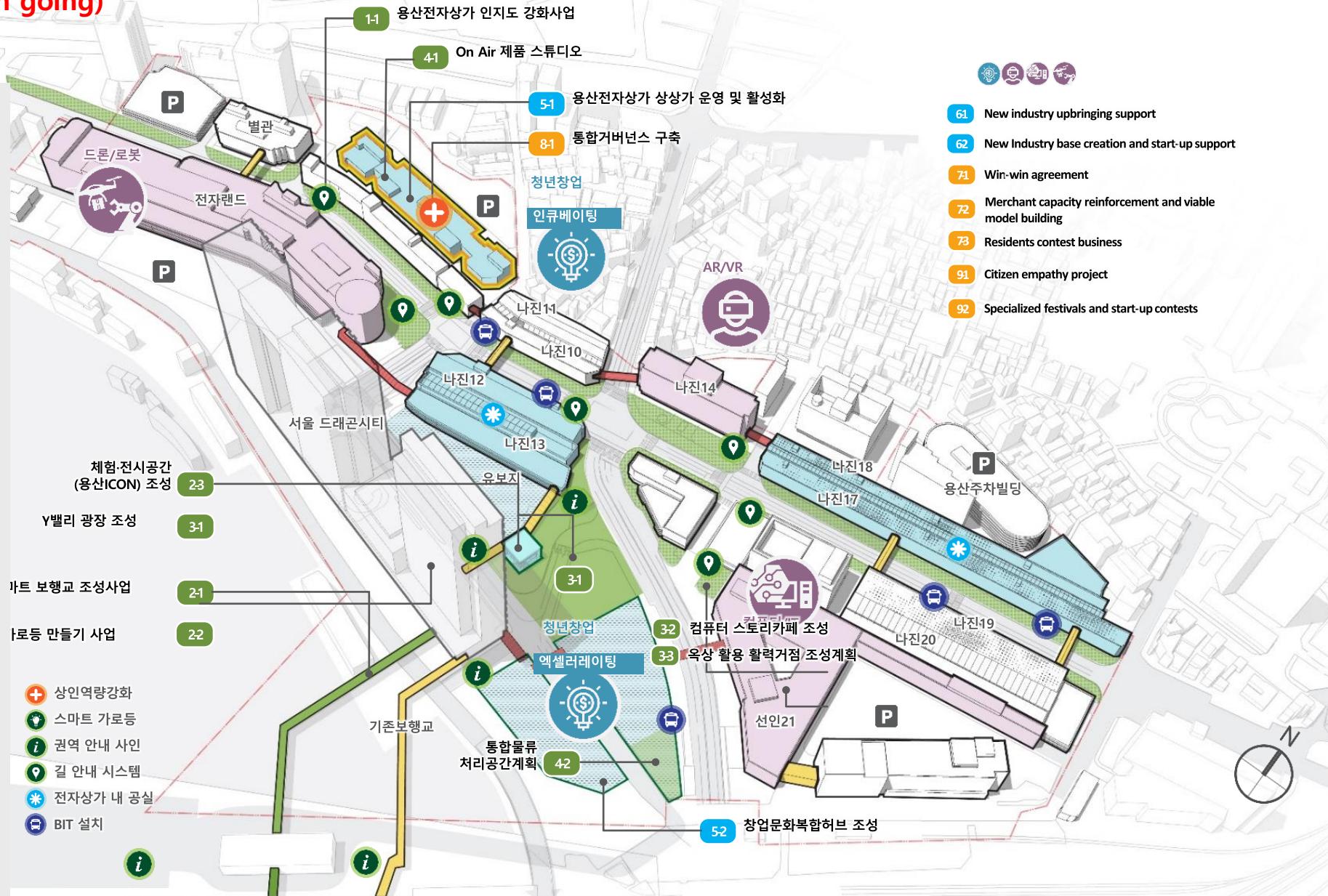
- Comprehensive promotion of smart pedestrian bridge, square, new industry experience and exhibition facility, and street environment improvement
- Improvement of Information systems by base

Symbolic object connection (Merchant request)

- Experience and Exhibition Space (Yongsan ICON): 2-3
- Smart pedestrian bridge: 2-1

Start-up support and new industry attraction

- Markets and digital blacksmith composition
- Attract universities and institutions
- Establishment of corporate culture hub

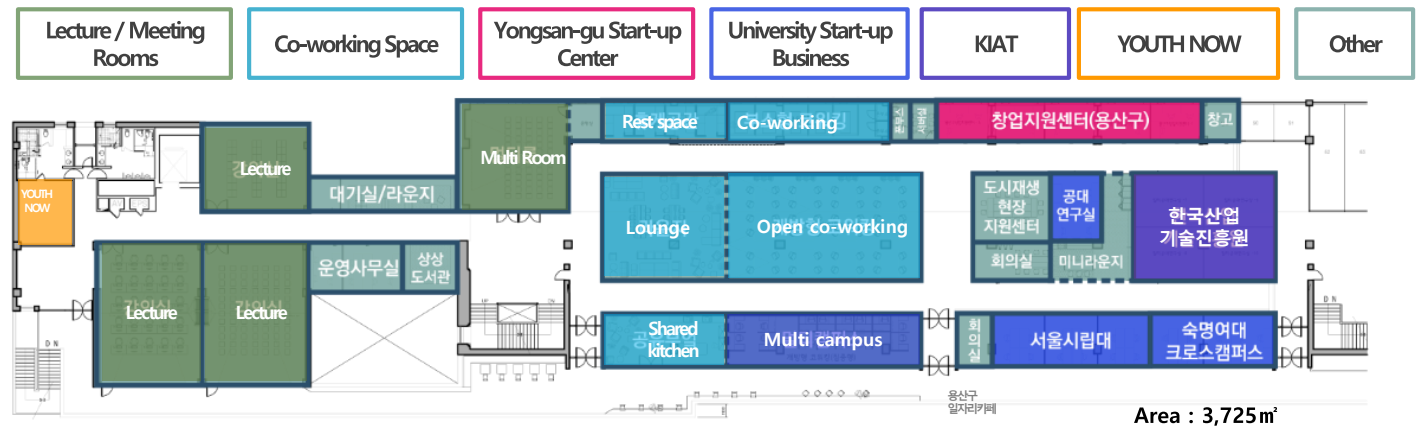


Innovative Start-up Platform: New Smart Production Infrastructure the Core Place for Production of Smart City

- Showcase and Testbed of future YongSan
- A package of spaces and programs that cover the entire processes from production to start-ups

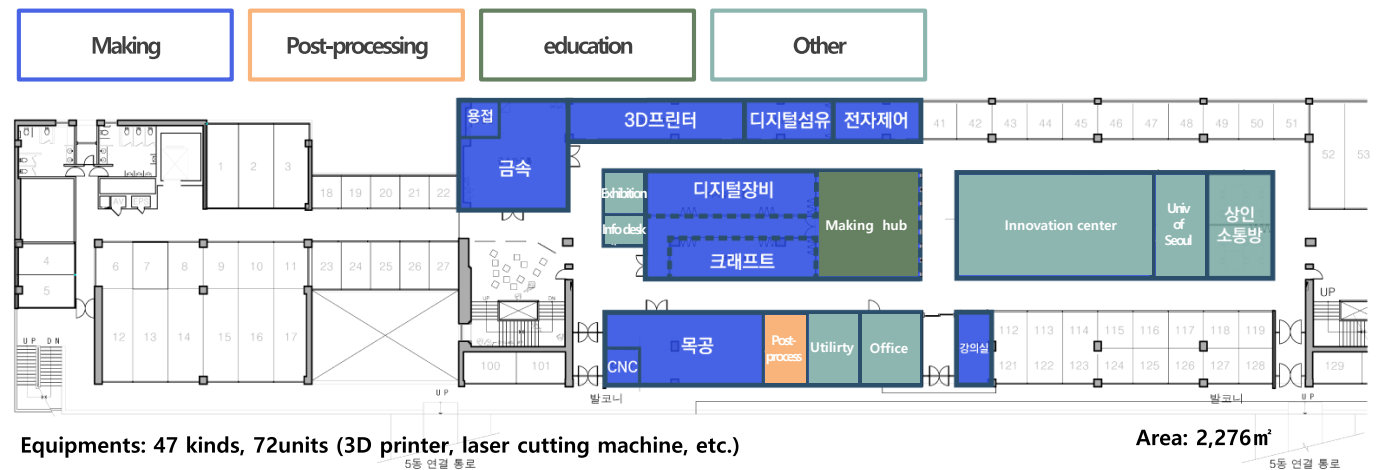
3rd floor (Start-up space)

- AREA : 3,725m²
- FACILITY: 5 University start-up business, KIAT, Yongsan-gu start-up center, Urban regeneration center, lecture room, other



2nd floor (Digital blacksmith shops)

- AREA : 2,276m²
- FACILITY: Making, Meeting room, education, other
- EQUIPMENT: 47 kinds, 72units



Innovative Start-up Platform: New Smart Production Infrastructure

Smart Maker and Incubation Infrastructure : From Hammer to CNC Computerized Numerical Control

- To open for making prototype
- To support for easy to startup : commercialization, law, and marketing for startup
- To provide all equipment : from hammer, sewing machine to CNC

[Woodwork room main equipment]



[Craft Room Key Equipment]



[Metal processing room main equipment]



[Digital textile room main equipment]



[Electronic control room main equipment]



[Digital Equipment Room main equipment]



[Major CNC equipment]







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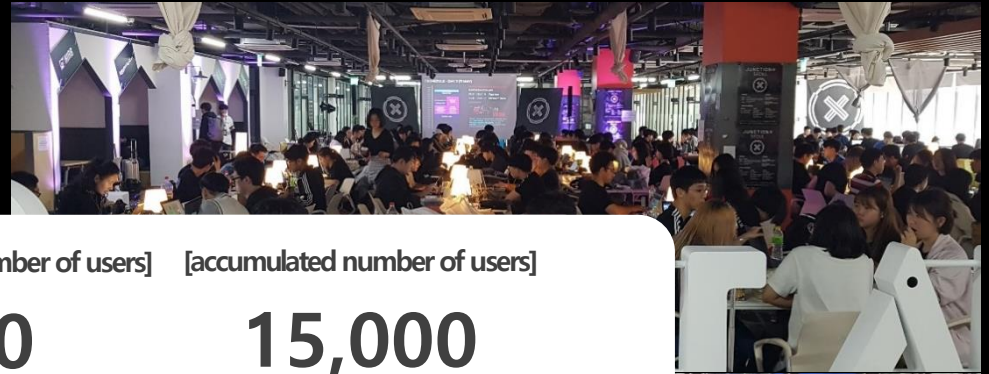
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Facilities
use

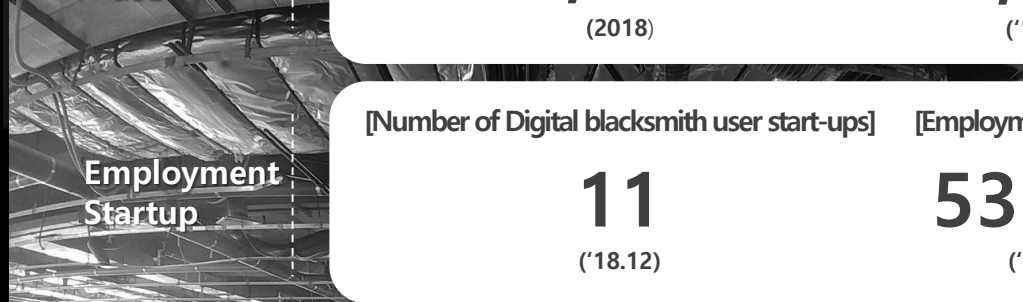


[monthly average number of users] [monthly maximum number of users] [accumulated number of users]

1,700
(2018)

2,600
(‘18. 11)

15,000
(18. 7~‘19. 3)



Employment
Startup

[Number of Digital blacksmith user start-ups]

11
(‘18.12)

[Employment of tenant]

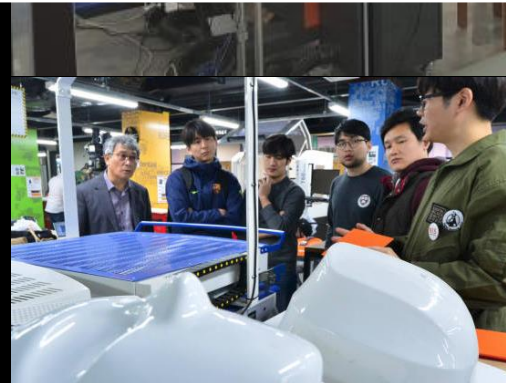
53 (+11)
(‘18.12)

2019 Additional
employment expectation

[STARBUCKS+JA KOREA direct employment]

45
(‘18.11.15)

empty room spaces that donated



게재 일자 : 2019년 04월 10일(水)

활력있는 전자상가, 상상을 현실로 만드는 '청년창업 요람' 되다

게재 일자 : 2019년 02월 27일(水)

젊음·긍정의 'Y밸리' 조성... 용산전자상가 '디지털 메카' 된다

파이낸셜 뉴스

전자랜드, 올 매출 1조 목표...
용산, 로봇 유통 메카로 육성

입력 : 2019.01.01 17:18 | 수정 : 2019.01.01 17:18

한국일보

드론, VR, 5G로... 용산 전자상가 거듭난다

중앙일보

용산전자상가, 청년 창업기지 된다

[중앙일보] 입력 2018.04.04 01:43 | 종합 20면 지면보기

산업일보

심층기획 **침체기는 그만! 용산전자상가, 어려움 딛고 4차 산업
혁명 선도 도시 꿈꾼다**

서울시, 용산 Y밸리 사업 통해 도시재생 나서

기사입력 2018-08-14 07:04:38



용산전자상가 도시재생도 속도...
청년창업 거점으로

김수현 기자
입력 : 2018.04.03 14:41

세계일보

용산전자상가 '청년창업 메카'로 거듭난다

서울시 'Y밸리 혁신플랫폼' 선포 / 대학·기업 등 16곳과 손잡고 / 5년간 200억 들여 재생사업 / 용산공원 개발사업과 연계 / 주거·일자리 인프라 확충도

입력 : 2018-04-04 03:00:00 | 수정 : 2018-04-04 03:00:00 | 가 | 가



용산상가 `디지털 메이커시티`로...
서울시, 도시재생 사업 본격화

용환진 기자 | 입력 : 2018.04.03 17:37:46 | 수정 : 2018.04.03 17:46:43



한국경제

쇠퇴한 용산전자상가, IT창업기지 'y밸리'로
5개사 현장캠퍼스, LGU+CI 등은 창업 프로그램 운영

머니투데이

"용산을 첨단공방으로... 걷는 사람, 도시재생의 척도"
용산전자상가 일대 변신 이끄는 김도년 성균관대 교수 인터뷰 "경험 토대로 새 용산을"

머니투데이 전달래 기자 | 입력 : 2018.07.23 05:45

5

Vision and Image of Smart City



Invention Of the Year: The iPhone

HAVE
YOU
HEARD
OF IT?

BY LEV GROSSMAN



STOP. I MEAN, DON'T STOP READING this, but stop thinking what you're about to think. Or, O.K., I'll think it for you:

The thing is hard to type on. It's too slow. It's too big. It doesn't have instant messaging. It's too expensive. (Or, no, wait, it's too cheap!) It doesn't support my work e-mail. It's locked to AT&T in the U.S. Steve Jobs secretly hates puppies. And—all together now—we're sick of hearing about it!

Yes, there's been a lot of hype written about the iPhone, and a lot of guff too. So much so that it seems weird to add more, after Danny Fandog and Bobby McBlogger have had their day. But when that day is over, Apple's iPhone is still the best thing invented this year. Why? Five reasons:

1. The iPhone is pretty

MOST HIGH-TECH COMPANIES DON'T TAKE DESIGN seriously. They treat it as an afterthought. Window-dressing. But one of Jobs' basic insights about technology is that good design is actually as important as good technology. All the cool features in the world won't do you any good

Photo-Illustration for TIME by Glen Wexler



THE WALL STREET JOURNAL.

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Business

Markets

Tech

Life

WSJ Radio

WSJ Podcasts

WSJ Business Center: A Special Advertising Section

Washington



Mossberg: Galaxy Tab First Real iPad Rival

WSJ.com

Capability of Smart City

Competitiveness of Smart City



IT, Telecommunication: Digital Computing

Ranked 4th(71.5%) in Smartphone Penetration Rate(2017)

- 1st UAE, 2nd Sweden, 3rd Swiss

Ranked 1st in ICT Development Index(2015)

First 3 band LTE-A Development in the world

Ranked 1st LTE Coverage(2016)

Ranked 1st (98%) Hi-speed Internet Penetration Rate(2016)

Ranked 1st (13.3Mbps) Hi-speed Internet Speed(2016)

World first smart-grid test-Bed(Jeju)

Developed the world's first 14nm NAND Flash

First 5G in the world



City : Urban Development + Regeneration

Ranked 6th with the Global Construction Share at 8.1%

Winning Overseas Construction Contract over \$ 5.3b(2016)

Winning Overseas Plant Construction Contract over \$ 13b(2016)

Ranked 7th in Global Competitiveness of Construction Industry(2016)

Ranked 11th in Global Competitiveness of Construction Infrastructure(2016)

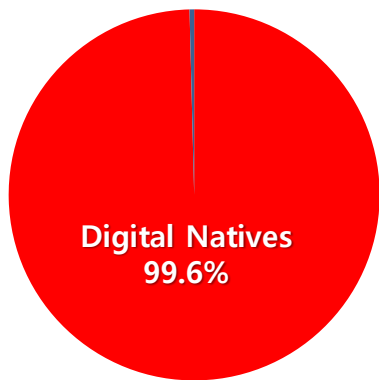
2 Companies Selected among Top 20 Construction Companies in the World

3 Companies Selected among Top 30 Architectural Design Companies in the World

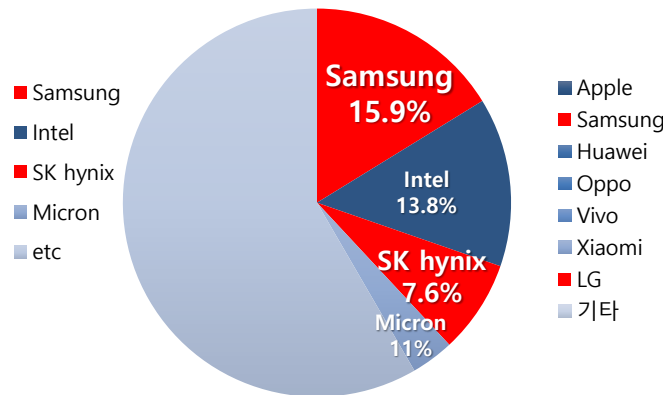
4th G20 Host(2010)

- 1. USA(Washington, Pittsburgh), 2. UK(London), 3. Canada(Toronto)

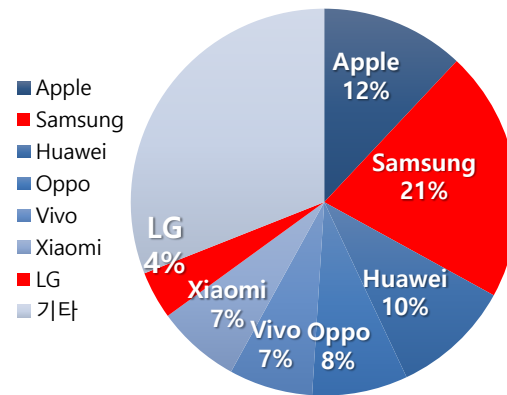
Ranked 2nd Digital Native Rate in Global Market Share /180 nations (1st New Zealand, International Telecommunication Union, ITU 2013)



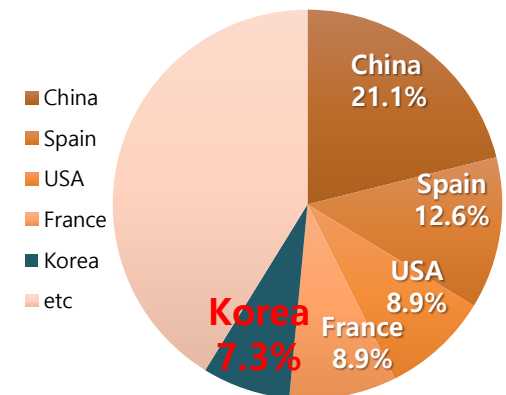
Digital Natives
Korea Ranked 2nd
in global market share



Global Semiconductor Market Share (2018)
Korea Ranked 1st & 3rd
in global Semiconductor market share



Global Smartphone Market Share (Q3, 2017)
Samsung Ranked 1st
in global smartphone market share



Global Construction Market Share (2016)
Korea Ranked 5th
in global construction market share

Package of Smart City Experience and Track Record

Smart City Competitiveness

Data Platform 'I-DIGITAL-U'
 Education Platform 'APPBUSINESS SEOUL'
 'Smart Education Center'
 Security System '안심이'
 Safety Grid 'SEOC(서울방재안전센터)'
 Civil Complaint App '서울 스마트 불편신고'
 Car Sharing 'Easy GO'
 Eco Sharing 'SEOUL BIKE 따릉이'
 Eco Trash System 'Eco Mileage'

5G <http://www.zdnet.co.kr/>

THE ULTIMATE LTE <http://www.businesskorea.co.kr/>

Public WiFi [서울특별시 공공 와이파이 Seoul WiFi](http://wifi.seoul.go.kr/index.do) <http://wifi.seoul.go.kr/index.do>

Education Platform [서울앱비즈니스센터](http://appbiz.seoul.kr) <http://appbiz.seoul.kr>

e-Vote Service [모바일투표](http://mvoiting.seoul.go.kr) <http://mvoiting.seoul.go.kr>

e-Governance [SEOUL DESIGN GOVERNANCE](http://design.seoul.go.kr/sd) <http://design.seoul.go.kr/sd>

Seoul Metro <http://www.seoulmetro.co.kr>

KTX <http://namu.wiki.kr/w/KTX-1>

SRT <https://etk.srail.co.kr/main.do>

Incheon Airport <http://www.airport.kr>

Data Platform [I-DIGITAL-U SEOUL](http://digital.seoul.go.kr/) <http://digital.seoul.go.kr/>

Smart Map [스마트 서울맵](http://www.seoul.go.kr/#bn4) <http://www.seoul.go.kr/#bn4>

e-Library [See](http://e-lib.seoul.go.kr/) <http://e-lib.seoul.go.kr/>

Smart Education Center [서울스마트교육체험관 Seoul Smart Education Center](http://smart.kkulmat.com/) <http://smart.kkulmat.com/>

One-stop Tour App [i Tour Seoul+](http://korean.visitseoul.net/index) <http://korean.visitseoul.net/index>

G20 Seoul [THE SEUL 2015 G20 SUMMIT](http://www.ehistory.go.kr/) <http://www.ehistory.go.kr/>

GPS 인공위성 [GPS 인공위성](http://www.kgis.go.kr/) <http://www.kgis.go.kr/>

Governance

Public Wifi 'Seoul Wifi'
 Data Sharing 'SEOUL OPEN DATA PLAZA'
 e-Governance 'SEOUL DESIGN GOVERNANCE'
 e-Vote Service 'MVOTING'
 e-Tax System 'Seoul ETAX'
 Community Network 'Media HUB(내 손안에 서울)'
 Smart Map 'Smart Seoul Map'
 One-stop Tour System 'VISIT SEOUL NET'
 e-Library 'Seoul Education Digital Library'



City Making Experience

U-city
 Sejong City
 Institute for Basic Science
 Songdo International Business District
 Seoul Sangam Digital Media City(DMC)
 Cheonggyecheon
 The 2002 World Cup Stadium



Media Pole <http://new.joins.com/>

Intelligent Facility <http://designhouse.co.kr/>

e-Tax System [서울ETAX](http://etax.seoul.go.kr/) <http://etax.seoul.go.kr/>

Security System [안심이](http://play.google.com/store/apps) [https://play.google.com/store/apps/](http://play.google.com/store/apps)

Safety Grid [서울 안전관리시스템](http://119.seoul.go.kr/seim/) <http://119.seoul.go.kr/seim/>

Civil Complaint App [내 손안에 서울](http://play.google.com/store/apps) [https://play.google.com/store/apps/](http://play.google.com/store/apps)

Community Network [내 손안에 서울](http://mediahub.seoul.go.kr/) <http://mediahub.seoul.go.kr/>

Smart Grid Test bed <http://www.301lab.co.kr/>

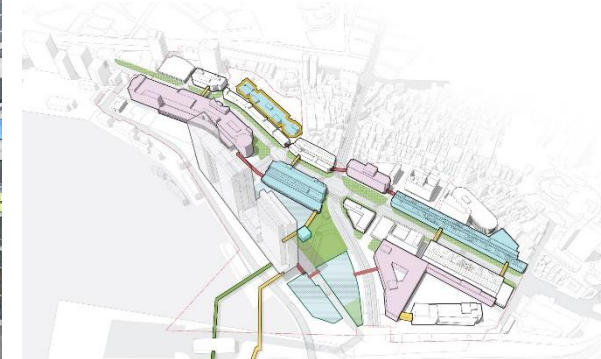
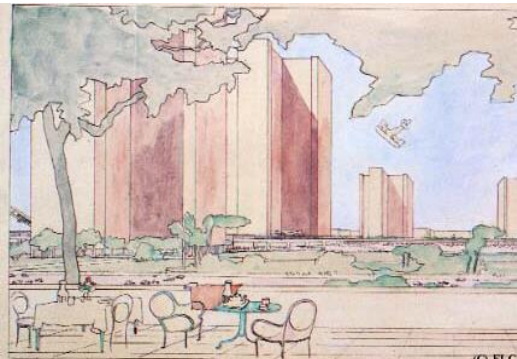
Electric Bus <http://wdk2010.tistory.com>

Skyscraper <http://www.ecoday.kr/>

Future Industry Competitiveness

Ranked 6th with the Global Construction Share at 8.1%
 Winning Overseas Construction Contract over \$ 66b(2014)
 Winning Overseas Plant Construction Contract over \$ 51.7b(2014)
 Ranked 7th in Global Competitiveness of Construction Industry(2016)
 Ranked 11th in Global Competitiveness of Construction Infrastructure(2016)
 Accounted for 4.5% of the GDP(2014)

Smart City Vision and Image : Place



Smart City : Place and EcoPlatform

Making Good City with Utilizing Cutting Edge Technology

Thank You.

Donyun KIM, ph.D

Professor, SungKyunKwan University

Director, Smart Green City Lab

Representative Professor, UN Sustainable Development Goals Partner University



성균관대학교
Smart Green City Lab
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