European Union – World Cities

Seoul & Eindhoven

City Pairing Results

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Introduction

Tradition meets modernity

Gyeongbok Palace

Teheran Boulevard

Nanta Performance

Traditions, such as Gyeongbok Palace, Deoksu Palace, Namdaemun, exist in a cutting-edge city with skyscrapers and IT industrial complexes
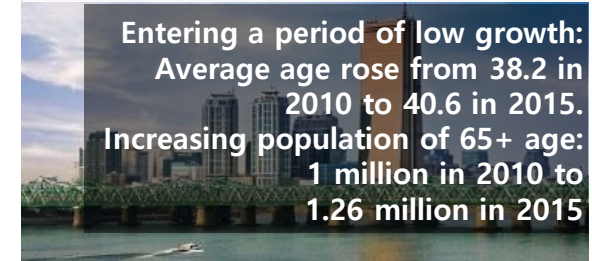
A Mega-city of 10 million population

Seoul's Challenges for Urbanization

Sustainable Green Growth?

Current status of Seoul

Population growth 3.24 million in 1964 10.38 million in 2014

Energy Self-sufficiency 8.2% Annual consumption of electricity: 48,137GWh in 2016 Production of electricity: 3,960GWh

Entering a period of low growth: Average age rose from 38.2 in 2010 to 40.6 in 2015. Increasing population of 65+ age: 1 million in 2010 to 1.26 million in 2015

In the past 50 years, Seoul has achieved a unprecedented, spectacular growth; however, the city is also suffering from its side effects.

1ˢᵗ Meeting in Seoul

> Energy: Solar Sharing Power Plant

> Internet of Things (IoT) Center and Pilot Project in Bucheon

> Urban Lighting Mini Workshop

> Seoul Innovation Park

> E-Governance: M-Voting
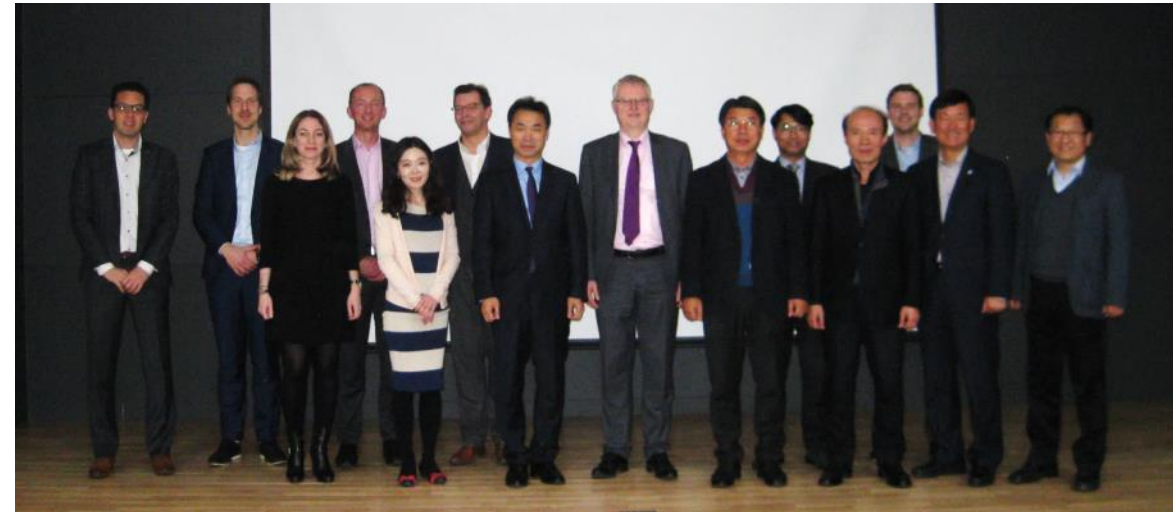
2nd Meeting in Eindhoven

> Eindhoven's IoT Charter and Digital Principles

> E-Governance

> Urban Lighting
- *Living Labs: Innovative Procurement Process*
- *Eindhoven's Lighting Roadmap 2030*

> Health

2nd Meeting in Eindhoven

Identified Areas of Cooperation

> Intelligent Urban Lighting

> Long Distance Living Lab Exchange

> M-Voting Adaptation in Eindhoven

> Potential cooperation for Horizon 2020 (joint application)

Potential Areas of Cooperation

Draft MOU is in discussion on the following topics:

> Intelligent Urban Lighting as a carrier for the Smart Society

> Interoperability: As additional functionalities are increasing rapidly, interoperability of urban lighting infrastructure

> Socially Relevant Innovation: establishing the first joint "Global Living Lab" addressing key societal challenges through innovation

> E-Government: E-Government Policies and Technologies in the global digital transition

Urban Lighting

Seoul's public lighting infrastructure

700,000 luminaires + 270,000 poles + pole height 4~12m
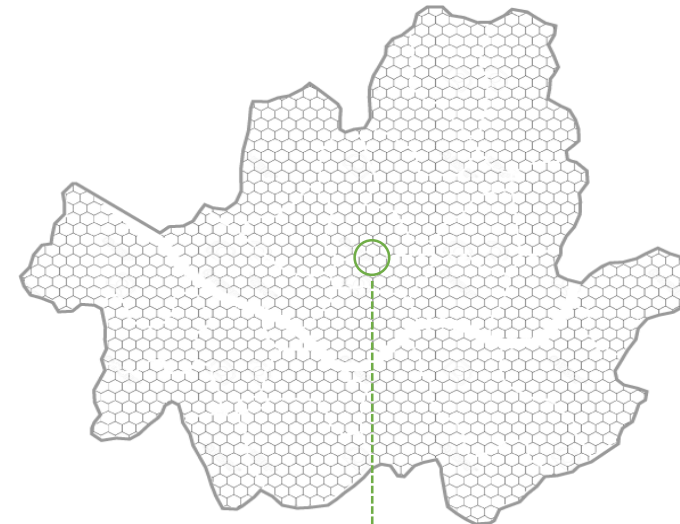
Luminaires

MH   310,000
HPS   184,000
CDM   12,600
FL   14,000
LED   66,000

Poles

Street lamps
126,000
Security lamps
108,000
Park lamps
36,000

Utilization of smart lighting infrastructure network
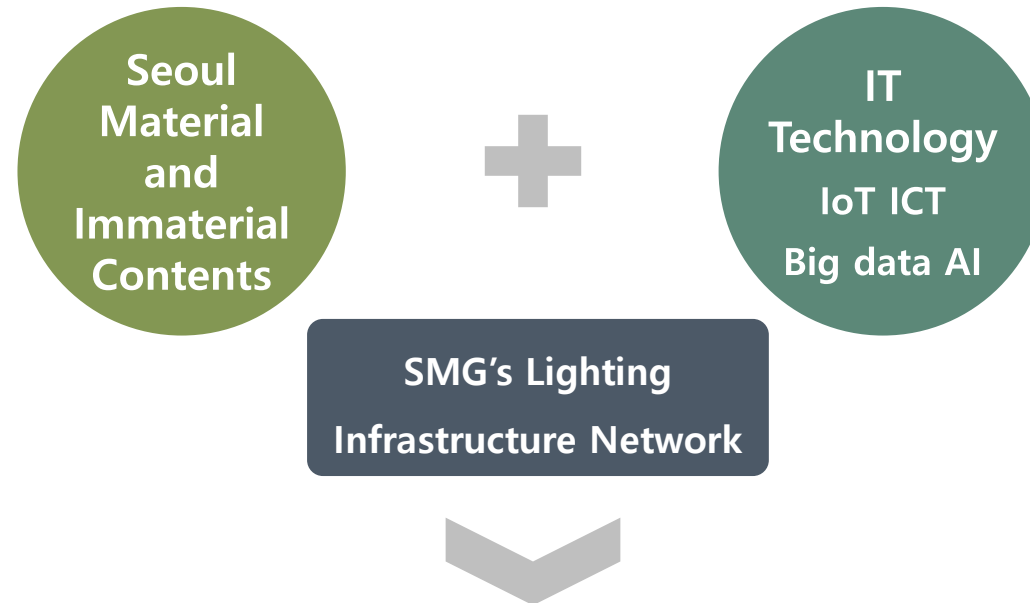
Smart lighting cell

Street light

50m

2,240㎡

Security light

Park light

Urban Lighting

Seoul Material and Immaterial Contents

+

IT Technology IoT ICT Big data AI

SMG's Lighting Infrastructure Network

Design of the world's best public lighting infrastructure

IoT · IoST	ICT	Energy Sources	Visibility	Structure
270,000 poles can be utilized for IoT	Seoul has the fastest telecommunication network	Continuous power supply for 24 hours	Prime location of 4~12m	Ensuring durability with solid steel

Urban Lighting: Pilot Project

1
Living Lab Location

Jung-gu and Jongno-gu districts preserve the lives of Seoul citizens from centuries past.

Cheonggyecheon is a citizens' plaza where cultural events are held throughout the year; it is a citizen's place for rest and gathering.

Dongdaemun popular tourist spot and fashion design insdustry

2
Smart Lighting City Living Lab

Road safety

Safe public spaces for social interaction for all to improve quality of life

Lighting Infrastructure can be an ideal foundation for a 5G network, charging station for E-Vehicles, environmental sensors and many more

3
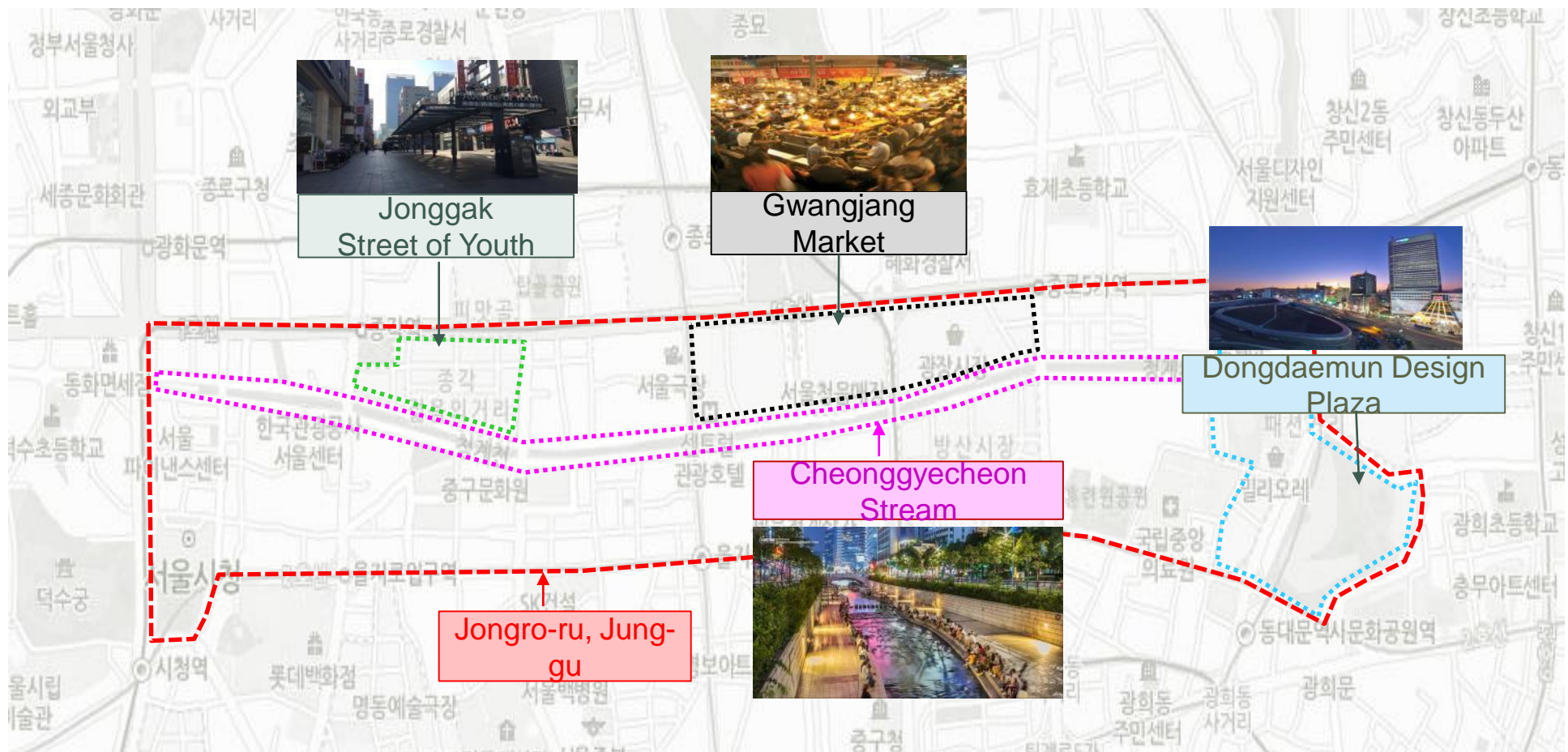### Social Lighting Living Lab

Public lighting aims to address inequality in the city through a **participatory approach**

A standard of social lighting will be established, for safety blind spots, traditional markets, parks, urban regeneration spots, in collaboration with citizens, research institutes, private enterprises and academia.
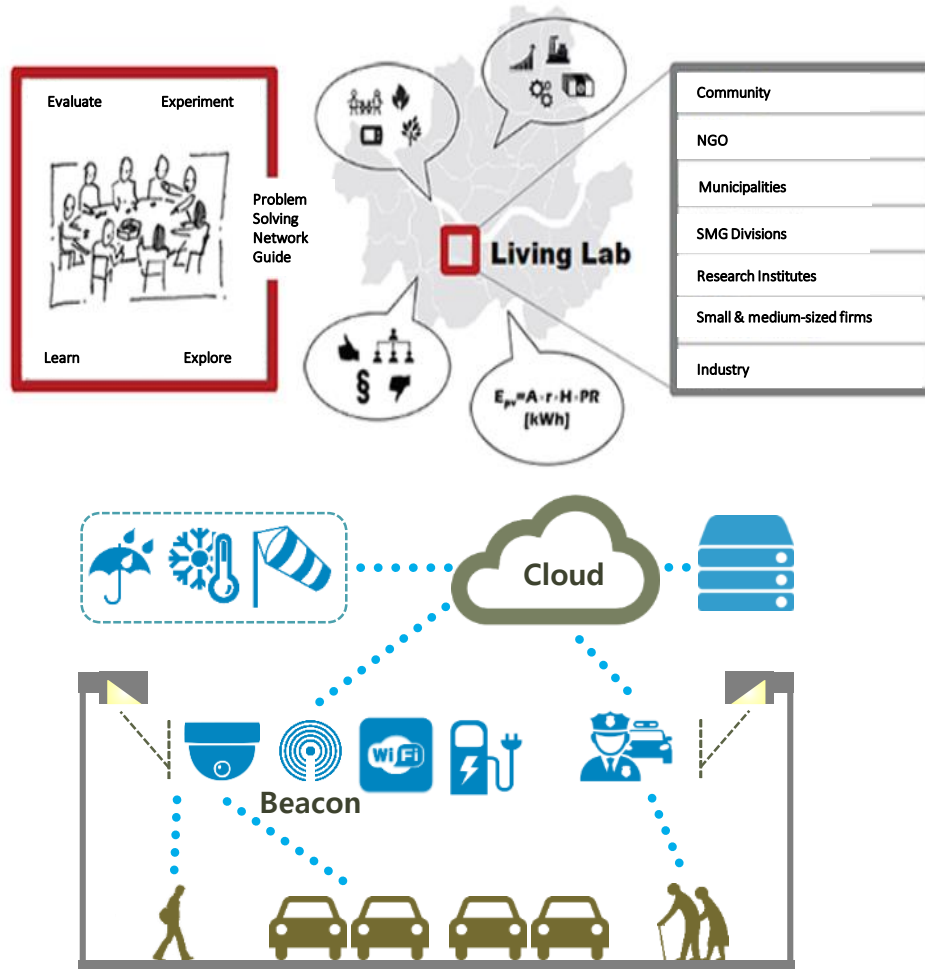
Urban Lighting: Pilot Project

Location for Smart Lighting, Social Lighting "Living Lab"

Jonggak
Street of Youth

Gwangjang
Market

Dongdaemun Design
Plaza

Cheonggyecheon
Stream

Jongro-ru, Jung-
gu

Urban Lighting: Pilot Project

Smart Lighting City Living Lab

Evaluate   Experiment

Problem
Solving
Network
Guide

Learn   Explore

$E_{Pr} = A \cdot r \cdot H \cdot PR$ [kWh]

Living Lab

| Community |
| NGO |
| Municipalities |
| SMG Divisions |
| Research Institutes |
| Small & medium-sized firms |
| Industry |

Cloud

Beacon

A Comprehensive Smart City platform based on smart lighting

Multiple sensors

Hot spot

Energy-saving
Lighting control

Cameras
Data management

Billboards
Variable location

Security
Panic button

Electric mobility management

Multiple chargers
USB charger

+

5G
Future IMT

Open IoT Platform

oneM2M

| Shared Platform | Applied Platform |

Open interlocking API

Manager monitoring

Service

Smart Lighting

↓ **Expand**

Smart Security

Smart Transport

Smart Tourism

Smart Safety

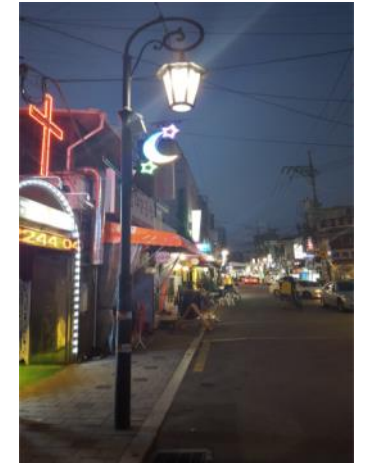↓ **Expand**

Urban Lighting: Pilot Project

**2
Social
Lighting
Living
Lab**

Social Lighting Living Lab Project

❖ Project Name : Social Lighting Project
❖ Target Location : Urban regeneration spots, traditional markets, parks etc.
❖ Participants: Citizens, research centers, companies, academia etc.
❖ Objectives
  - Development of a lighting environment reflecting regional characteristics
and application to real life
  - A unique lighting design that is safe, beautiful and efficient
  - 3D printer, virtual reality (VR), augmented reality (AR) lighting experience

Application of lighting environment, reflecting regional characteristics

Urban Lighting: Pilot Project

Creation of a smart lighting City

A livable City

Creation of a convenient urban lighting environment

Secure a sustainable growth engine

Energy Self-Reliance + Safe and Vibrant City + Higher Quality of Life of Citizens + Creation of Tourism Demands

Next Steps

> Finalize and Sign MoU

> Co-Develop Pilot Project: Global Urban Lighting Living Lab
  – *Smart City Lighting Living Lab*
  – *Social Lighting Project*

Thank you - 감사합니다