A Case Study of IFEZ(Songdo) Smart City

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A BUSINESS BASE FOR NORTHEAST ASIA

Area
123.8km²

Period of development
2003 ~ 2022

Estimated population
540,000 people
Why "Smart City"?
International Standards Organization

“Sustainable cities and communities' standards activity”

- Strategic / Leadership
  - Guidance for Community Sustainable Development
  - Indicators for city services and quality of life
- Process / Management
  - KPIs for Smart Infrastructure Project
- Technical
  - Vocabulary for Smart Sustainable Cities
  - Smart City Framework
  - Smart City Data Concept Model
  - Data Exchange For Smart Infrastructure
  - Automatic Resource discovery for IoT

Time
“Smart-City” has all important IT words for the future
“Smart-City” has changed the way to solve urban problems.

**Conventional**
- Large-scale investment
- Long-term plan
- Physical infrastructure
- Residential space

**Non-Conventional**
- The right investment at the right place
- Step by step plan
- Maximization of investment efficiency
- Services based on city data
“Smart City” Components

Smart City Approach 5 Layers

- **Basic Infrastructure** - Land, road, water, electricity, etc.
- **Smart Infrastructure** combined by IT - Energy, Traffic, Communications system
- **Smart Space** combined by IT - GIS, Facility, Equipment
- **Smart Service** evolved by Public & Private Service - E-Government, Smart Home IoT
- **Urban Planning (Real Estate Development)**

Smart City Focal Area

- **Urban Utilization Side**
- **Consumer-centered**
- **Commercial, Cultural and Business**

Smart City Focal Area

- **New Town Development Side**
- **Provider-centered**
- **Residential and public services**

Normal City Focal Area
through “Smart City”, services that were previously configured individually are integrated into one
Structure of IFEZ Smart City
“Smart City” Main Components

- **Smart City Management**
  - City Control System
    - Service
      - Application
  - City Database
  - Smart City Operation Center

**EDA**

**Public Agencies**
- Traffic Information Center
- Crime Prevention Center
- National Police Agency
- Environment Agency (Meteorological Office)
- Local Government Office
- Police Office (Local)
- Fire Station (Local)

**External Facilities**

**Districts**
- 3rd District
- 2nd District
- 1st District

**Cities**
- 3rd District
- 2nd District
- 1st District

**Facilities**
- Visibility sensor
- Camera
- Wind direction/speed sensor
- Precipitation sensor
- Solar radiation sensor
- Sunlight sensor

**Smart City**

**Operation Center**
How to build "Smart City"?
“Smart City” Components

Smart City Approach 5 Layers

3 Core Elements

Service

Platform

Infrastructure

The First Focal Area

Urban Planning (Real Estate Development)

The Second Focal Area

Smart Service evolved by Public & Private Service
- E-Government, Smart Home IoT

Smart Space combined by IT
- GIS, Facility, Equipment

Smart Infrastructure combined by IT
- Energy, Traffic, Communications system

Basic Infrastructure
- Land, road, water, electricity, etc.

• Urban Utilization Side
• Consumer-centered
• Commercial, Cultural and Business

• New Town Development Side
• Provider-centered
• Residential and public services
The infrastructure and services are linked to each other in the center of the Smart City Platform. The City Integrated Operation Center is equipped with a technology drive system centered on core technology, a data driven system for integration between areas, and a governance system for continuous implementation.

3 Core Elements

Service

Feedback ▲▼ Data

Smart-City Platform

Decision Making ▲▼ Data

Infrastructure

How to Collect many different data and information
How to Store and Manage data and information
How to Transform those to service
How to Provide service to citizens
Structure of IFEZ Smart City Platform

**Smart City Services Layer**
- Administration
- Transportation
- Environments
- Crime Prevention
- Culture & Tourism
- Facility Mgt
- Logistics
- Education
- Citizen Portal Service
- City Mgt Statistics

**Smart City System Layer**
- Application Layer
  - EDA
  - API
  - Microservices
- Data Layer
  - Main DB
  - Big-Data
  - GIS

- Internal Infra Layer
  - Backbone Network
  - Access Network
  - Wi-Fi Network
  - SDDC (Software Defined Data Center)

- External Infra Layer
  - IoT Devices & Sensors
  - CCTVs

- External Interfaces
  - (Local) Governmental Agencies
  - (Local) Government-affiliated organization
  - Private Companies (Telecommunications / Credit Cards / Internet Portal ..)

**Urban Planning Layer**
- Housing/Land
- Transportation
- Environment
- Disaster
- Energy
- Citizen Participation
- Population
- Buildings
- Electricity
- Water
- Gas
“Smart City” Features

“Smart City Platform + Cloud Service”

Operating Environment Integration
Field Equipment Scalability
Common Function Interworking
System Infrastructure Virtualization
Cloud Datacenter Availability
Integrated Configuration Management

IFEZ Smart City Software Platform
Platform as a Service(PaaS)

IFEZ Smart City Hardware Platform
Infrastructure as a Service(IaaS)
IFEZ SMART CITY S/W Platform
IFEZ SMART CITY H/W Platform

IFEZ Data Center with Cloud Technology

First Public Data-Center in KOREA that provides Cloud Services
IFEZ SMART CITY S/W Platform
“Smart City” Main Components

**City Database**

**Smart City Management**

**Smart City Data-Hub Center by Cloud Services**

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**Application**

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**City Database**

**Smart City Operation Center**

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**EDA**

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**Public Agencies**

- Traffic Information Center
- Crime Prevention Center
- National Police Agency
- Environment Agency (Meteorological Office)
- Local Government Office
- Police Office (Local)
- Fire Station (Local)

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**3rd District**

**2nd District**

**1st District**

**External Facilities**
IFEZ SMART CITY Platform

Smart City Service

IFEZ Smart City Platform

Data & Information Collection

Citizen participation through data provision
Data refining, preprocessing and API provisioning

Integrated Cloud Portal for tenants (Citizen)
Providing optimized development environment for IT service development
The latest and optimal IT service infrastructure

Data & Information Collection

Data Visualization
Data Analyst
Data Catalog

Smart Application
Smart DevOps
Smart Office

Service Portal

Multi Cloud

Public Data
Private Data

Public Data
Public Data
Private Data
Private Data

Public Data
Public Agency Data
Private Company Data

Government Data
Public Agency Data
Private Company Data

Public Data
Private Data

Public Data
Private Data

Public Data
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Public Data
Private Data

Connect More Efficiently to Public Cloud Applications
What
"IFEZ Smart-City"?
“Global Leading Smart City”

Anytime,
Anywhere,
Anyone
with Smart City Services
“Simple & Complete Smart City”

One Space
IFEZ Smart City Operation Center

One System
IFEZ Smart City H/W Platform

One Service
IFEZ Smart City S/W Platform
Development Plan

“Comprehensive & Efficient Smart City”

- Smart City Service Design (2010~2013)
- Integrated Operation Center Design (2013)
- Smart City Center / Service Planning (2007)
- Smart City Strategy Planning (2005)
- Smart City S/W & H/W Platform Implementation (2014~2016)
Progress

“Step by Step Smart City”

1st step
Construction of Smart-City Infra
2003~2009
- Establishment of information strategy
- Construction of communications infra

2nd step
Implementation of Smart-City Service
2010~2016
- Progression of 3-Areas Smart-City project
- Integration of Smart City in 3-Areas into one IFEZ Smart City

3rd step
Upgrading the Smart-City & Expanding new services
2017~2022
- Advancement of IFEZ Smart-City Platform
- Development of new Smart-City Services (with IoT, Big-data skills & Cloud technique)
“Integrational & Equivalent Smart City”

Public Service
- U-Traffic
- U-Crime Prevention
- U-Facility
- U-Disaster
- U-Green
- U-Traffic Facility

Private Service
- U-Home
- U-Store
- U-Education
- U-Building
- U-Healthcare
- U-Office
Characteristic of IFEZ SMART CITY

**Planning**

**Why?**
- Smart-City Concept

**Execution**

**How?**
- Smart-City Platform

**Benefit**

**What?**
- Smart-City Service
The city of the future that you’ve been dreaming
And waiting for, Already exists,
IFEZ Smart City
Thank you

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