Intelligent SOC activation strategy

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Contents

I. SOC-ICT status analysis

II. Vision and strategy
I. SOC-ICT status analysis
1. **Background** *(Objective, the 2030 Agenda)*

   ⟨Effective Public Policy for Advancing the SDGs⟩

- **ICT technology** is important enabling tools to support the transformation towards SDGs:
  - ① To provide a platform for decision-makers
  - ② to give the opportunity to public service delivery
  - ③ to strengthen public governance to implement the SDGs

- New opportunities for public institutions will arise with the 4th industrial revolution, which will have people interact and collaborate.

- The 4th Industrial Revolution characterized by robotics, AI, the IoT has the potential to enhance the participation of all people in public decision-making processes.
1. Background (Perspective of Korea Government)

- 4th Industrial revolution, accelerating the connection & convergence between industries
  - The influence of the 4th Industrial Revolution will revolutionize the social structure
    (Key words: connection, convergence, intelligence, predictability)
    * connection & fusion among human-things, things-things, human behavior and future prediction based on the results of analysis and pattern grasping regarding the huge data connected (intelligent)

- Establishment of ICT system, data based public institutions for SDGs

- Build platform based on citizen participation who can interact
  - platform that all stakeholders can participate to build sustainable performance
  - a platform for citizens to experience and participate in public services anytime, anywhere

Government-led Platform in the SOC field based on emerging ICT technology AI, IoT, Bigdata, Cloud (4th Industrial revolution & SOC informatization project)
2. Change of Paradigm (ICT SOC)

ICT Industry Paradigm
- Intelligence
- Informatization
- Computerization
- Mechanization

Physical Infrastructure
- ICT Infrastructure
- Smart Physical infra
- National convergence & Linkage of infra

SOC Project Paradigm
'National Infrastructure Intelligence Informatization' : the whole country infrastructure has intelligence by utilizing data technology and artificial intelligence.

- Achieved through the process of "digitization (sensor) → data connection (IoT) → analysis (big data) → optimization and autonomy (AI)"
- Divided into Monitoring, Control, Optimization, Autonomy *
  * possible to prevent problem occurrence in advance even if there’s no special request and automated decision can be made

- The step of national infra intelligence informatization
  - **Autonomy**: Infrastructure self–diagnostics and repair decisions
  - **Optimization**: Predict event occurrence and improve performance through real–time data analysis
  - **Control**: Responds to specific conditions or environment changes according to stored algorithms
  - **Monitoring**: Through data sensing, it alerts you to changes in the target infrastructure and the external environment.
"Smart Country Infrastructure" is a platform of innovation growth

<table>
<thead>
<tr>
<th>Existing national infrastructure</th>
<th>Intelligent national infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Goal</strong></td>
<td><strong>Proactive</strong></td>
</tr>
<tr>
<td>Reactive</td>
<td>Proactively predicts breakdowns, prolongs lifespan prevents accidents through preventive maintenance.</td>
</tr>
<tr>
<td>Experience-based safety management</td>
<td>Minimize direct human intervention by utilizing artificial intelligence decision models</td>
</tr>
<tr>
<td>Short-term limited impact</td>
<td>Induction extensive innovation</td>
</tr>
<tr>
<td>Centralized resource input → Expansion of facilities</td>
<td>Creating New Industry and New Demand</td>
</tr>
<tr>
<td>Termination of employment when financial spending ceases</td>
<td>Create sustainable employment in related industries</td>
</tr>
</tbody>
</table>

(Comparison of *existing national infrastructure* and *intelligent national infrastructure*)
III. Vision and strategy
1. Vision and executive strategy

Vision

Intelligence of national infrastructure through promotion of SOC–ICT convergence

Goal [3S]

Secure Infra (Safety)
Sustainable Infra (Sustainability)
Efficient infra (Saving)

Strategy

Identification and promotion of intelligent SOC lead model
Technical support for strengthening SOC institutional capacity
Continuous system improvement for activation of SOC-ICT convergence
Activation of organic and cooperation system between related ministries
Executive strategy modeling

2. Intelligent SOC ICT fusion-based building model (AS-IS)

(1) Intelligent SOC ICT lead model to discover and diffuse

- Excavate Intelligent SOC ICT fusion lead model through data based multi-government ministry Cooperation

- SOC-related technology R&D (Ministry of Land)
- Intellignet SOC lead model develop (SOC-ICT Council)
- SOC information plan consulting: ISP project (Ministry of ICT)
- National Infra intelligent project: Pilot project (Ministry of ICT)
- Intelligent SOC proliferation project (Ministry of Land)

(2) Strengthen Multi-government ministry Cooperation System

- Strengthen ICT convergence-enforcement functions centered on ministry of land and ICT
- Expanding and strengthening SOC-ICT council network by expanding cooperation partners
  - SOC ICT Council Steering Committee
    - Policy Division
    - Business Division
    - Technology Division
    - Security Division

(3) Continuous improvement of SOC-ICT related systems

- Budget guidelines
- National Contract Law
- Implementation Guideline for Post-Construction Evaluation
- Act on National Informatization article 13
- SOC Core legislation (ex. Basic Act on Construction Industry)
- SOC individual statute (ex. National Transportation Science Technology Promotion Act)

(4) Establishment and operation of SOC-ICT support center

- SOC-ICT Council operation
- SOC Information plan system operation
- Standardization and surveys conduct for each SOC type.
3. Intelligent SOC ICT fusion-based building model (TO-BE)

Realize national infra intelligence
data based autonomic response SOC-ICT fusion platform
3. Building plan of Intelligent SOC Fusion Foundation (TO→BE)

Establish a basis for ICT planning and data securing by SOC type through amendment of the Basic Act for mandatory Informatization plan of all public SOC project

[SOC-ICT fusion platform]

Database of ICT Convergence detailed information plan by public SOC projects (about 200 cases per year)
- Business contents from the aspect of SOC type (building, traffic, space, etc) from a vertical perspective
- Establishment of integration and linkage basis from a horizontal perspective

DB of Public SOC Business ICT Convergence Survey Results (about 7,500 cases per year)
- Establishing foundation for SOC business big data

Maximize Citizen-Participating Platform by ‘Network Effect’
- Monitor SOC facility and establish automatic response system (citizen participation in data collection, sharing, disaster response, recovery)
  - Maximize the ‘network effect’* that represents the new economic phenomenon led by ICT tech innovation (ex, Airbnb, Uber)
  - A model that further enhances the value of platform producers by strengthening each user feedback loop associated with the platform

Find and promote large-scale planning tasks based on government-wide data

Establishment of SOC facility monitoring and self-response system
  - Build the foundation for SOC structure safety data acquisition and simulation technology
3. Building plan of Intelligent SOC Fusion Foundation (TO-BE)

[ SOC-ICT fusion Infra]

**Improvement of related systems and practices**

Enhance linkage between relevant legal system and SOC projects informatization system
※ Revise the improvement plan by the SOC-ICT council with related organizations (ministries, national assembly, etc.)

**SOC-ICT Cooperation Network (Council)**

Joint research on data standards, policies, and systems of SOC sector for fusion of different SOC-ICT field
※ Cooperation and coordination between the ministries on the planning-execution-evaluation process of SOC project for SOC ICT convergence

**Build SOC platform using network infrastructure**

Supports platform based on KOREN-based network infrastructure of national network
※ Provide infrastructure such as network performance, data traffic and security test required for platform construction

**Build SOC platform using cloud infrastructure**

Large-scale analysis of SOC data in various fields and establishment of smart SOC foundation
※ AI algorithm provides predictable autonomous derivation and simulation system technology development basis to be able to data analysis, learning, inference
[Reference] Intelligent SOC Facility Disaster Response Model

**<Intelligent SOC type>**

**Smart energy**
- Usage analysis - forecast based energy management
- Smart water and sewage meter inspection and management

**Intelligent Traffic**
- Traffic safety through autonomous vehicle
- Traffic efficiency through intelligent traffic signals
- GIS based situation control system

**Macro data collection system technology**
- Air quality
- Large building

**Micro data collection system technology**
- Electricity gas
- Water sewage

**Decrepit facility management**
- Disaster prediction & response such as flood, earthquake etc.
- Prolong life and prevent accidents through optimizing old facility

**Territory Security**
- Secure safety by Intelligent CCTV
- Sink hole prediction and response
- Intelligent disaster control prediction

**AI**
- Integrated platform
- Traffic
- Railroad
- Water·sewage
- Air quality
- Bridge

**Real-time forecast fine dust**
- Effective water management for drought
- Air pollution forecast & warning system

**Smart environment**
- Decrepit facility management
- Disruptive response to disaster such as flood, earthquake etc.
- Prolong life and prevent accidents through optimizing old facility
- Secure safety by Intelligent CCTV
- Sink hole prediction and response
- Intelligent disaster control prediction

**<Intelligent SOC tech development>**

**Technology development**
- Autonomic derivation execution system technology
- Macro data collection system technology
- Micro data collection system technology
- Simulation system technology

**Commercialization Research**
- Build and Demonstrate Testbed
- Research operation plan and standardization
- Study on legislation
- Index
  - Ministry of ICT
  - Ministry of land
  - Joint project between the ministries

**Simulation tech development**
- Construction of property DB → Modeling → Development of simulation technology such as BIM, GIS, collapse type information, etc.

**Research AI based response system**
- Collect micro data
- Implement AI-based disaster, awareness, prediction, and response

**Promote commercialization**
- Build and Demonstrate Testbed
- System diffusion
- Legislation
- AI-based SOC facility management technology commercialization → spreading nationwide
Thank you