

Strategy for Building “Digital Twin Space” to Drive 4th Industrial Revolution

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Summary

1. Essential for spatial cognition and decision making, spatial information (e.g., topographic features, natural phenomena and location, and the shapes and attributes of people and things) has substantially grown in importance as key data in the hyper-connected and intelligent information society.
2. Coupled with the advanced technologies of hyper-connectivity, hyper-convergence, and superintelligence, the cyber-physical system (CPS) converging the physical and cyber environments will likely drive the Fourth Industrial Revolution and intelligent information society.
3. To respond to the Fourth Industrial Revolution, spatial information should go beyond merely offering static expressions in providing “digital twin space (DTS),” in which reality and cyberspace are connected and interaction is enabled between the two.
4. DTS should be converged and developed as a comprehensive and collaborative platform for a social CPS that effectively monitors and analyzes social issues (e.g., transportation, energy, the environment, and natural disasters) and seeks solutions through simulation.

Policy implications

- ① For the success of DTS, a cooperative governance system is needed with the agreement by related organizations such as central government organizations, regional authorities, National Police Agency, and National Emergency Management Agency.
- ② Since the existing method of the government providing all data is ineffective for building, maintaining, and renewing DTS, an open ecosystem is proposed to allow the active participation of both the private sector and the public.
- ③ Creation of a DTS-based platform that can simulate social issues is crucial in the construction of a smart city or society. The platform can quickly and effectively respond to negative variables and complex issues such as slower growth, climate change, and large-scale disasters.
- ④ R&D blueprints for land and transportation and basic and action plans for national policy toward spatial information should identify practical projects for DTS construction and operation and seek mutual coordination and cooperation.