

Research to Promote DX in the Infrastructure Sector

Digital Transformation of Infrastructure Systems

NILIM has established the Digital Transformation of Infrastructure Systems Research Committee and is conducting research necessary for implementing new technologies and revising the corresponding technical standards through cross-sector information exchange and collaboration, with the aim of achieving the digital transformation (DX) of the infrastructure sector as promoted by MLIT.

Activity introduction

MLIT is promoting DX in the infrastructure sector to handle radical changes in socioeconomic conditions and to utilize data and digital technology in the infrastructure sector to reform infrastructure and public services, MLIT operations, organizations, and processes, and the culture, climate, and working style in the construction industry and MLIT.

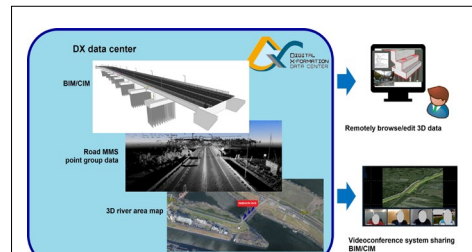
In addition to establishing the data center and experimental fields required to move forward with infrastructure sector DX, NILIM is researching and developing technologies that will be the key in promoting it. Examples of research topics in progress in various fields are presented below.

Research introduction

Building a DX data center

We are building a DX data center as a system to centrally store three-dimensional data, such as BIM/CIM and point group data, and smoothly share information between the orderer and the contractor in the construction production processes of surveying, investigation, construction, design, and maintenance.

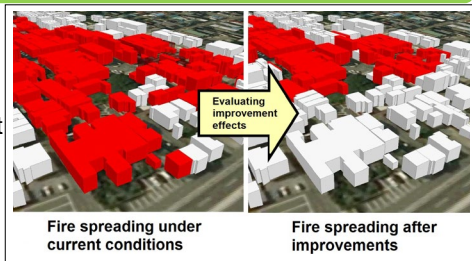
We can install BIM/CIM or other three-dimensional data software and use VDI functions to view data remotely, for example. It is also possible to provide high-capacity storage for high-speed access to and from regional development bureaus and offices.



Research on promoting the use of 3D urban modeling aimed at resolving urban issues

We are developing additional data specifications and methods to reduce data creation and updating costs for 3D urban models capable of expressing urban areas in three dimensions, including building attributes, etc., to make it possible to evaluate means to resolve disaster prevention, greening, and various other issues that cities face, while conducting highly accurate simulations.

We encourage understanding of, resident participation in, and increased administrative efficiency of policies in the urban sector, such as by using 3D urban modeling with highly versatile data to visually present the improving effects of policy measures in highly dense urban areas through fire spreading simulations.

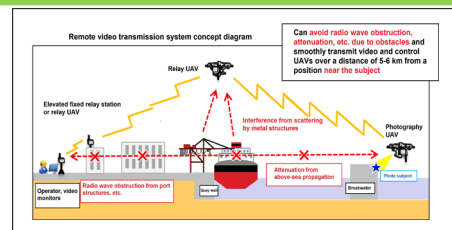


Developing efficient inspection methods for port and harbor facilities using UAVs

We are developing methods for AI to perform preprocessing to remove the sea surface, extract cracks, and carry out other tasks in place of humans in inspection data for port and harbor facilities captured by UAVs.

We are also conducting development aimed at extending the distance for real-time video transmissions using relay UAVs, accounting for environments with many obstacles, such as large ships.

This reduces the work and time required for inspection work on port and harbor facilities



Realizing infrastructure and public services to handle structural reforms for a new social economy with frequent disasters, deteriorating infrastructure, insufficient personnel, and the post-COVID era

See here for related articles

- Disaster Prevention, Environmental Conservation, and Regional Stimulation in Coastal Areas (p. 40)
- Research on Urban Area Simulations Leveraging 3D Urban Modeling (p. 126)
- Development and Operation of Experimental Fields for Construction DX (p. 154)