TECH OFFER

Spatial Sensing and Modelling Technology

KEY INFORMATION

TECHNOLOGY CATEGORY:

Infocomm - Video/Image Analysis & Computer Vision
Infocomm - Artificial Intelligence

TECHNOLOGY READINESS LEVEL (TRL): TRL6
COUNTRY: JAPAN
ID NUMBER: TO175404

OVERVIEW

Social issues such as labor shortages are becoming more apparent, making it urgent to utilize digital technology to transform workflows and work styles. In particular, there has been increasing demand for spatial digitalization to manage buildings and streamline renovation processes across various fields.

When digitalizing buildings, offices, factories, and other spaces, it is necessary to measure dimensions and create floor plans, which often involves manual work. However, measuring all dimensions and generating floor plans or 3D models manually takes a significant amount of time. Moreover, overlooked measurements often require additional site visits, further delaying the process.

Recently, spatial digitalization using sensors such as cameras has been introduced to address these challenges. By sensing spaces and generating point clouds, which are then converted into 3D models, efficiency can be improved. However, existing methods still present issues. Creating point clouds with desktop devices is costly and time-consuming. When using general mobile devices, the accuracy is low and results depend heavily on the operator. Furthermore, transforming point clouds into 3D models often

requires extensive manual work and considerable time.

This method addresses these challenges. Using low-cost mobile devices, anyone can quickly and accurately acquire point clouds, which can then be automatically transformed into 3D models within just a few hours.

TECHNOLOGY FEATURES & SPECIFICATIONS

Assistance System – Data capture is completed in a single scan with the assistance system, which enables even beginners to obtain high-precision point clouds. This eliminates the need for repeated measurements and significantly improves workflow efficiency.

Automatic BIM Transformation – Point clouds are automatically converted into BIM models on the spot, allowing immediate sharing of results. This not only reduces processing time but also accelerates decision-making by enabling discussion on building management at an early stage.

Realistic 3D Representation – High-accuracy point clouds combined with realistic 3D visualization enable remote space inspection. This simplifies spatial review, accelerates consensus-building, and reduces travel costs.

The technology owner is seeking collaboration with Digital Twin developers, BIM/CAD 3D platformers, IoT solution providers, system integrators, and IT consultants who can co-develop the technology to enhance functionality and differentiation, as well as develop and implement systems that support commercialization and market deployment.

POTENTIAL APPLICATIONS

Spatial information with high speed and high accuracy during renovation can reduce costs, enable high-quality proposals, and be applied across various use cases:

Digital Twin

- **Building management:** Manage energy and facilities through a unified digital model.
- **Construction inspection:** Inspect by comparing the digital twin with actual construction progress.

Design & Planning

- **Office renovation:** Design comfortable and productive office environments.
- **Store design:** Create retail layouts optimized to attract customers.

UNIQUE VALUE PROPOSITION

Digital Twin

- Reduces digitization time and accelerates the realization of digital building management
- Streamlined spatial digitization leads to lower labor costs and facilitates scalable deployment across multiple locations
- Provides real-time visibility into physical spaces for better operational control.

Design & Planning

- Immediate spatial digitalization allows execution without interrupting on-site operations
- Accelerates decision-making through clear, shared spatial understanding.
- Enhances collaboration among stakeholders with a common digital reference.