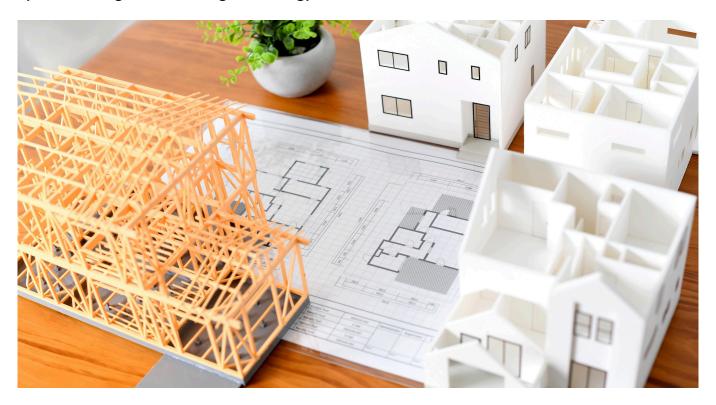**TECH OFFER**

Spatial Sensing and Modelling Technology

KEY INFORMATION

TECHNOLOGY CATEGORY:

Infocomm - Video/Image Analysis & Computer Vision

Infocomm - Artificial Intelligence

Electronics - Sensors & Instrumentation

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 streamline renovation processes across various fields.

When renovating offices, houses, 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 makes it easier to provide customers with quick estimates and proposals.

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 IT system providers, IoT solution providers, BIM/CAD 3D platformers, 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:

- **Factory optimisation:** Optimize work processes through simulation.
- **Renovation renovation:** Quickly propose the optimal plan to customers.
- **Office reform:** Design comfortable spaces for office workers.
- **Retail design:** Create retail layouts optimized for attracting customers.

UNIQUE VALUE PROPOSITION

Reducing cost

- Labor costs can be reduced since all spatial information can be captured in a single day (approximately one-tenth the usual time).
- The assistance function and automatic 3D model transformation eliminate the need for specialists and extensive worker training.
- Realistic 3D representation of spaces shortens consensus-building time and reduces travel costs.

Quick and High-Quality Proposals

- Rapid 3D model generation allows delivery of quick, high-quality proposals to customers.

- Proposals can be prepared within 2–3 days, helping maintain customer engagement and motivation.