R&D phase | Research **Expected Commercialization** | FY29-

Mehr Licht!
More Photonics for Intelligence

#C09

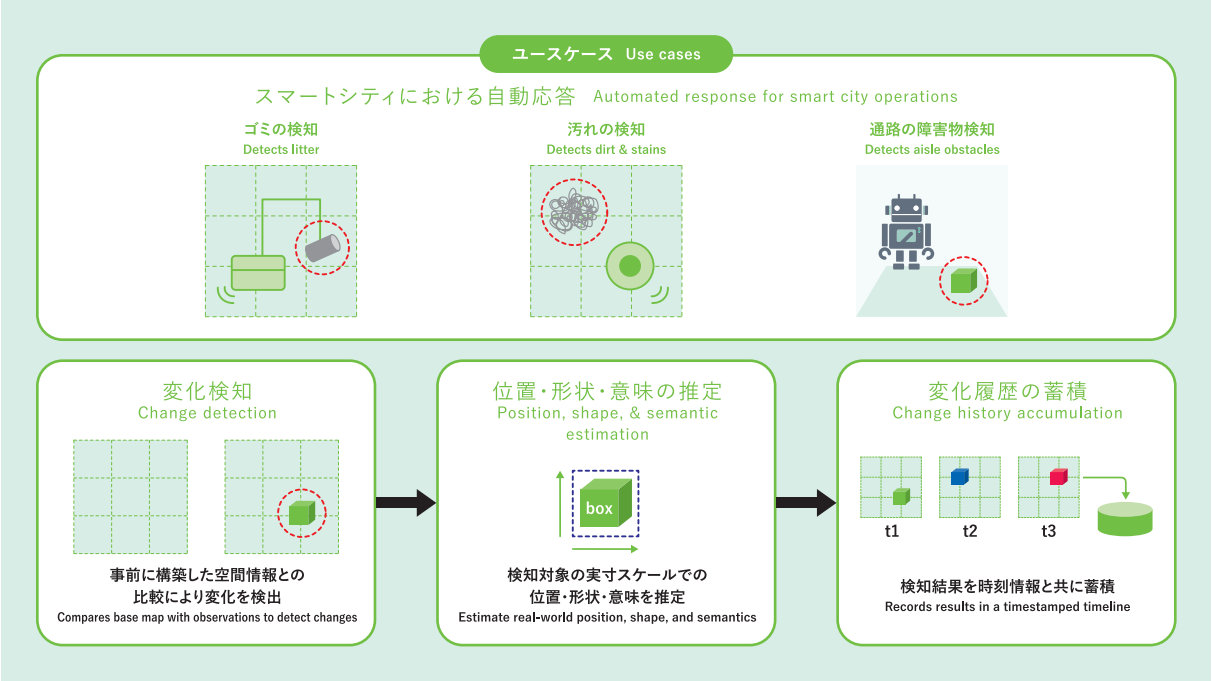
#Operational Efficiency#Digital & AI Transformation

Real-Time 3D Semantic Mapping

Detects changes and relays key data to robots, cutting patrol costs

Technical Challenges & Goals

In urban spaces, temporary obstacles appear in aisles and workspaces, obstructing people and equipment. This technology infers such changes and their semantic information on-site, reducing patrol costs by sharing them with robots for autonomous recovery and accumulating a 3D change history for World Model simulation.



Key Technologies

Core Technologies

- Detects changes in real time via 3D reconstruction; judges location, shape, and semantics
- Accumulates detection results and change history chronologically with semantic labels

Key Differentiators

- 4DGS models continuous motion; ours detects discontinuous layout change between observations
- Unlike geometry-only change detection, ours uses semantics to match objects/judge response needs

Use Cases

Smart City

In smart cities, automatically detecting dirt, trash, and pathway obstacles, then determining the needed cleaning/patrol robot type and necessity based on location, shape, and nature, enables faster, less labor-intensive urban management.

Exhibitors

NTT Human Informatics Laboratories