



## NUCLEUS

### 3D Unified Management System for Smart Buildings and Cities

Buildings and cities today are increasingly interconnected with sensors providing real-time information for security, facility, environmental and enterprise management applications. The exponential rise in the number of installed sensors brings out the challenge of real-time situation awareness to city and building managers i.e. the challenge of swiftly and correctly interpreting the real-time data avalanche, making decisions and responding to real-time situations.

**NUCLEUS** is the **award-winning** 3D unified management system that provides you with the most comprehensive situation awareness for your smart buildings and cities.

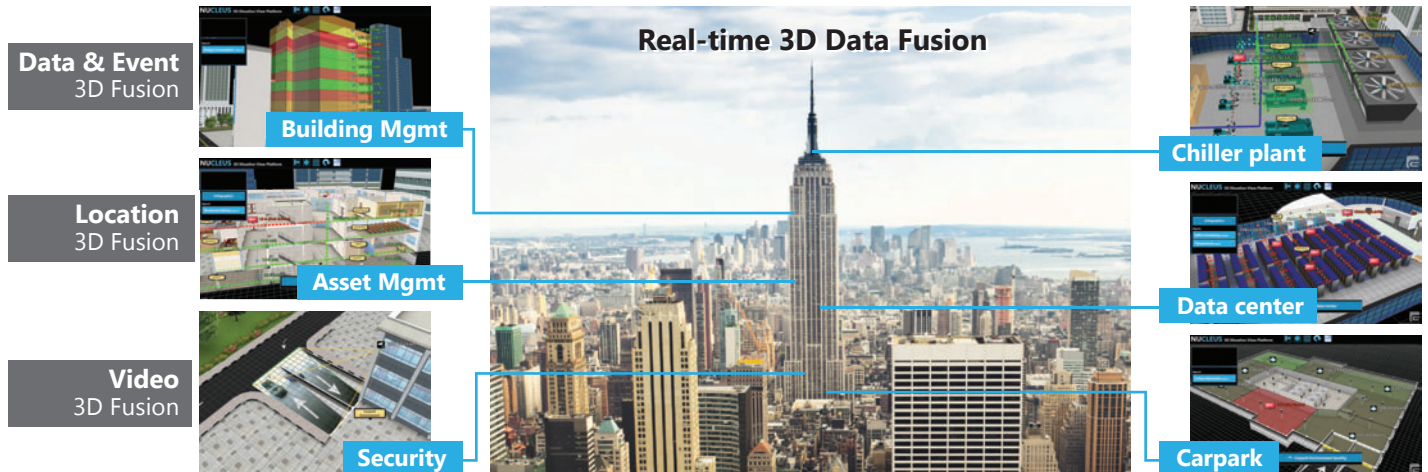
[www.nucleussense.com](http://www.nucleussense.com)

## 3D Unified Management System (UMS)

**NUCLEUS** helps building and city managers to achieve comprehensive real-time situation awareness in a single, unified view, providing unified situation awareness in the following ways:

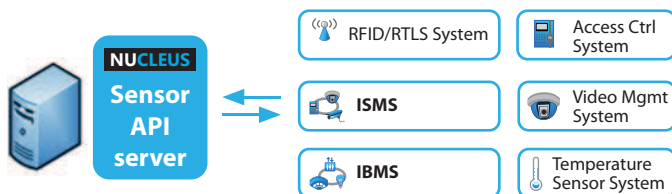
### Unified Situations

Enabling smart fusions that integrate real-time data, analytics, videos, locations and events with 3D environments to provide unified 3D situation visualization and management for different functions and facilities of the smart building/city.



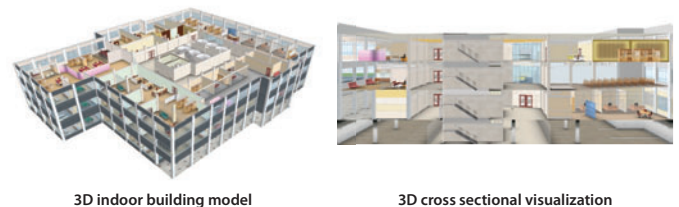
### Unified Systems

Unifying different “best-of-breed” sensor systems via NUCLEUS’s open sensor API as a neutral platform.



### Unified Maps

Converging all disparate plans and drawings into one single 3D building/city model which managers interact with.

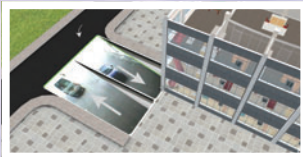


## Benefits of NUCLEUS 3D UMS

- 1 ONE Unified 3D Model** to monitor the entire premise, instead of 10-100s of 2D maps to monitor. Improves location interpretation and avoids errors in communicating locations.
- 2 Immediate Situation Sense-making.** NUCLEUS fuses real-time sensor and 3D building information in one unified view for quick situation insight and informed decision-making.
- 3 Enhanced Situation Management/Response.** NUCLEUS enables quick on-demand retrieval of 3D building model and device information for situation understanding, and provides easy tools to visualize 3D indoor building layouts and annotate/plant 3D asset objects for situation response planning.
- 4 Direct Situation Communication/Co-ordination.** Enables managers to vividly coordinate and brief situations and response plans through 3D situational display and direct 3D multi-touch user interface.
- 5 Enables Optimal System Design.** Premise owners are able to achieve “best-of-breed” integrations for their system design. System Integrators are able to deliver target system design at lower costs via NUCLEUS, compared to R&D costs in direct integration.
- 6 Open Integration Platform.** NUCLEUS’s open integration platform enables future upgrade scalability and extensibility.



# Product Features



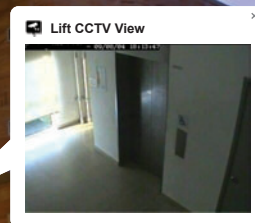
## Safety & Security Integrations



## Building & Facility Management Integrations



## Enterprise Tracking Application Integrations



## Features Summary

### > Building Visualization & Control

- 3D indoor building rendering
- 3D outdoor city rendering
- 3D cross-sectional visualization
- Multi-level building control
- Optimized 3D building load caching with progressive texture loading

### > General Administration

- Multiple 3D site management
- Multiple site profile management
- User account and access management

### > 3D Situation Management

- Real-time device/event management
- Supports definition of event-based 3D behaviour and SOP information
- On-demand device query/control
- NUCLEUS Sensor API and interface (unifiable with third-party IP-based systems e.g. VMS, BMS, ISMS, RTLS)
- Device/site information search

### > Advanced User Interface

- easy-to-use web browser interface
- 3D multi-touch user interface

### > 3D Situation Annotation/Planning

- 2D/3D object annotation/planning
- 2D/3D object placemark management




### > 3D Situation Visualization

- 3D data and event fusion
- 3D location fusion
- 3D video fusion
- 3D site/device tour management
- 3D bookmark view management
- Interactive orbit-mode navigation
- Interactive measurement tools

■ Standard Application Feature

■ Advanced Application Feature

## Product Editions

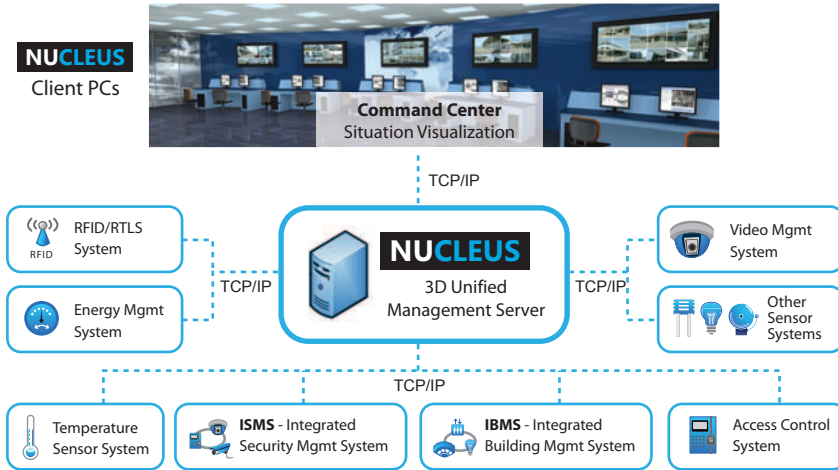
Features Comparison	Essential	Esteem	Enterprise
Default Configuration	1x 3D Site 20x Device Placemarks	1x 3D Site 100x Device Placemarks	1x 3D Site 500x Device Placemarks
Server Type	Mini Server 	Rack Server 	Rack Server 
Max. Number of 3D Site Deployment	1	10	50
Max. Number of Real-time Device Placemarks Supported	50	500	5000
Application Languages	English, Chinese		
Standard Application Features (refer to Feature Summary ■ )	Included in all editions		
Advanced Application Features (refer to Feature Summary ■ )	Available as option		
Additional Device Placemarks/3D Site Licenses	Available as option		
Embedded Integration Adapters	Available as option		

**Note:**

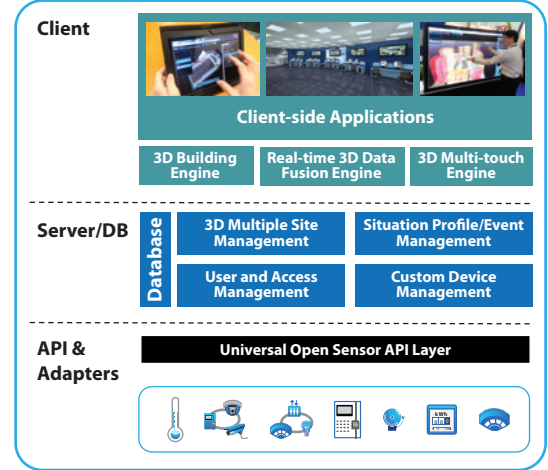
- Please refer to our official website or your distributor for the most updated product configurations
- Concurrent client access capacity is subject to actual deployment environment and embedded integration adapters deployed (if any)

## Technical Architecture

NUCLEUS can either be deployed as a 3D unified management system integrating all your sub-systems (e.g. VMS, ACS, RTLS, etc.) or as a 3D unified HMI (Human Machine Interface) integrating to an existing integrated management system (e.g. ISMS, PSIM or IBMS). Please refer to the integration architecture diagram below :



Deployment Architecture Diagram



Modular Architecture Diagram

## Target Applications

NUCLEUS can be deployed for command center use or as an interactive management dashboard for top management of buildings and cities. Its primary deployment are in applications requiring advanced 3D situation awareness, such as unified building/city management, security management, facilities management and enterprise resource management, for different building types, such as:

- > Intelligent office buildings/business parks
- > Hospitals and healthcare premises
- > Hotels and resort clubs
- > Convention and exhibition centers
- > School, university campuses
- > Major sporting venues
- > Shopping malls and marketplaces
- > Airports, train stations, cruise terminals
- > Water/power plants, oil & gas facilities
- > Military camps and prisons
- > Protected landmarks designated by police/fire agencies



Touch-interactive Management Dashboard

## Corporate Information



G ELEMENT PTE LTD is a Singapore-based software company specializing in the development of smart 3D building and city solutions. Founded since 2001, we are committed to the vision of developing 3D technologies that make buildings and cities *smarter*.

G ELEMENT's smart 3D building software products, including NUCLEUS, have won strong industry accolades and awards in the Asia Pacific, and have been deployed for a broad base of government and commercial customers across cities in Asia.

### Headquarters - Singapore

10, Toh Guan Road, #03-06, Singapore 608838

Tel: +65 6862 2900

Email: [nucleus@gelement.com](mailto:nucleus@gelement.com)

Website: [www.nucleussense.com](http://www.nucleussense.com)

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## Distributor

