



NUCLEUS

3D Unified Management System for Smart Cities

With the advancement in technology, more and more cities are looking to becoming smarter, greener and safer. As the city becomes smarter, the number and types of sensors increases exponentially. With NUCLEUS, city monitoring becomes more efficient as all types of safety, security, transport and environmental sensors, such as energy saving sensors, flood detection sensors and CCTV cameras, on disparate systems are unified into a single 3D management system. Unified information can now be easily shared across agencies such as municipal authorities, transport authorities and police departments, allowing them to have a superior situational awareness for better city planning and decision-making.

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3D Unified Management System for Smart Cities

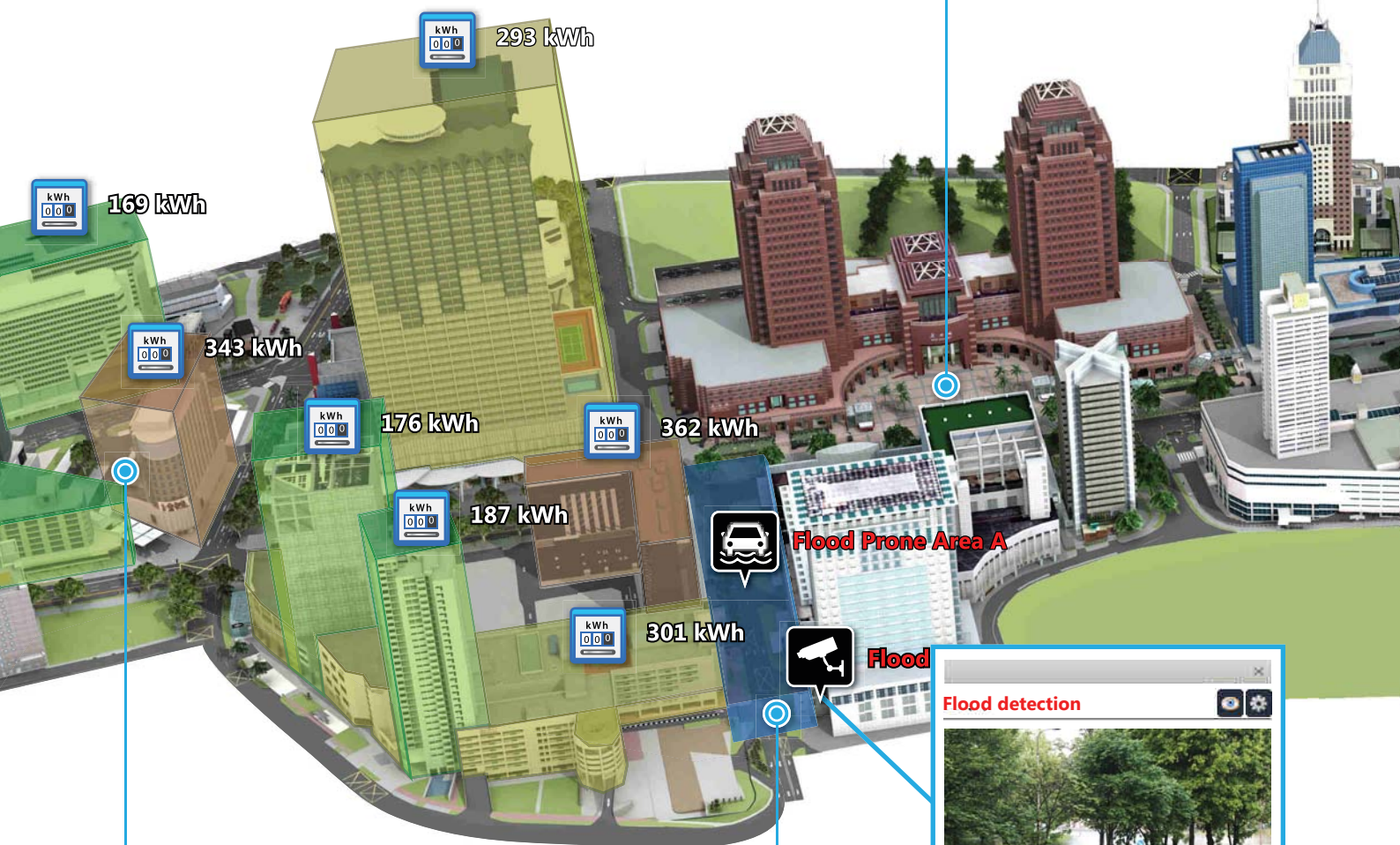
NUCLEUS for Executive Management

Unifying systems for efficient management

As a Unified Management System, NUCLEUS overlays information from multiple systems in one 3D environment, providing real-time situational awareness of the entire city. This helps to paint a realistic picture of the situation on the ground. With real-time situational awareness, management can do a close study of the city and carry out city planning while monitoring on-going situations. When a real disaster occurs, based on live information, management can make informed executive decisions to take counter measures quickly and efficiently.

City planning

Planners can view the 3D cityscape from an overlying, 'Bird's eye' perspective and identify areas that need improvements. Planners can also simulate a virtual walk-through the city in first-person perspective.



Green, sustainable city

NUCLEUS retrieves relevant information from intelligent energy management systems and overlays such information in the 3D environment. These information are then rendered in coloured volumes for fast indication of sensors' data value ranges.

Real-time disaster management

Disaster-prone or high crime rate areas can be installed with sensors to detect abnormal activities. Upon sensing abnormal activities e.g. flooding, NUCLEUS homes into the affected area, displaying details in the callout of the alert-triggering sensor.

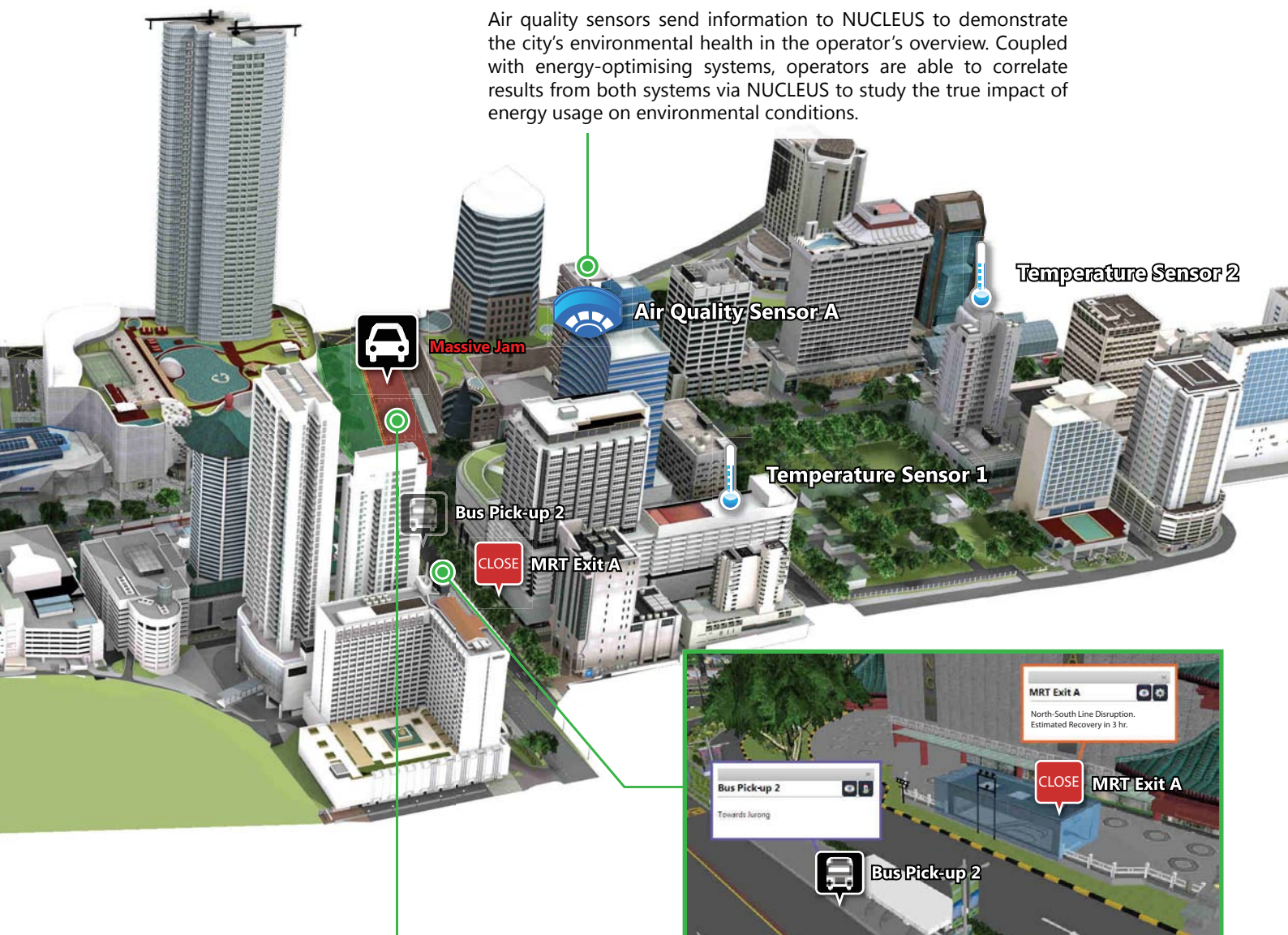
NUCLEUS for Smart City Operations

Unifying systems for efficient management

NUCLEUS provides operators with a holistic real-time view of their premises. With NUCLEUS, operators are able to retrieve information from various sub-systems through one unified management system, thus reducing the number of systems that operators have to be trained in, and increasing flexibility in manpower deployment during operations. They are also able to monitor operations on a daily basis and be notified immediately if a critical system fails, so that prompt rectification action can be performed to reduce downtime of critical systems.

Environmental

Air quality sensors send information to NUCLEUS to demonstrate the city's environmental health in the operator's overview. Coupled with energy-optimising systems, operators are able to correlate results from both systems via NUCLEUS to study the true impact of energy usage on environmental conditions.



Transportation - Traffic monitoring

NUCLEUS allows operators to view real-time data such as video streams from traffic junctions and conduct accurate analysis of road conditions. During traffic jams, operators can visualize alternative routes on NUCLEUS and send precise information to public announcement systems.

Transportation - Train system

NUCLEUS guides train maintenance crew by displaying failed components' locations, making repair works more efficient. During emergencies, NUCLEUS displays standard operating procedures to prevent conflicting instructions from being issued. Station supervisor will also be able to monitor assembly points and alternative transport pick-up locations.

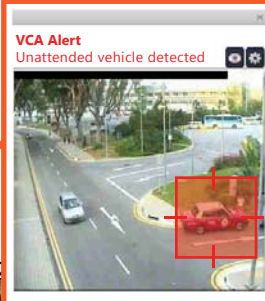
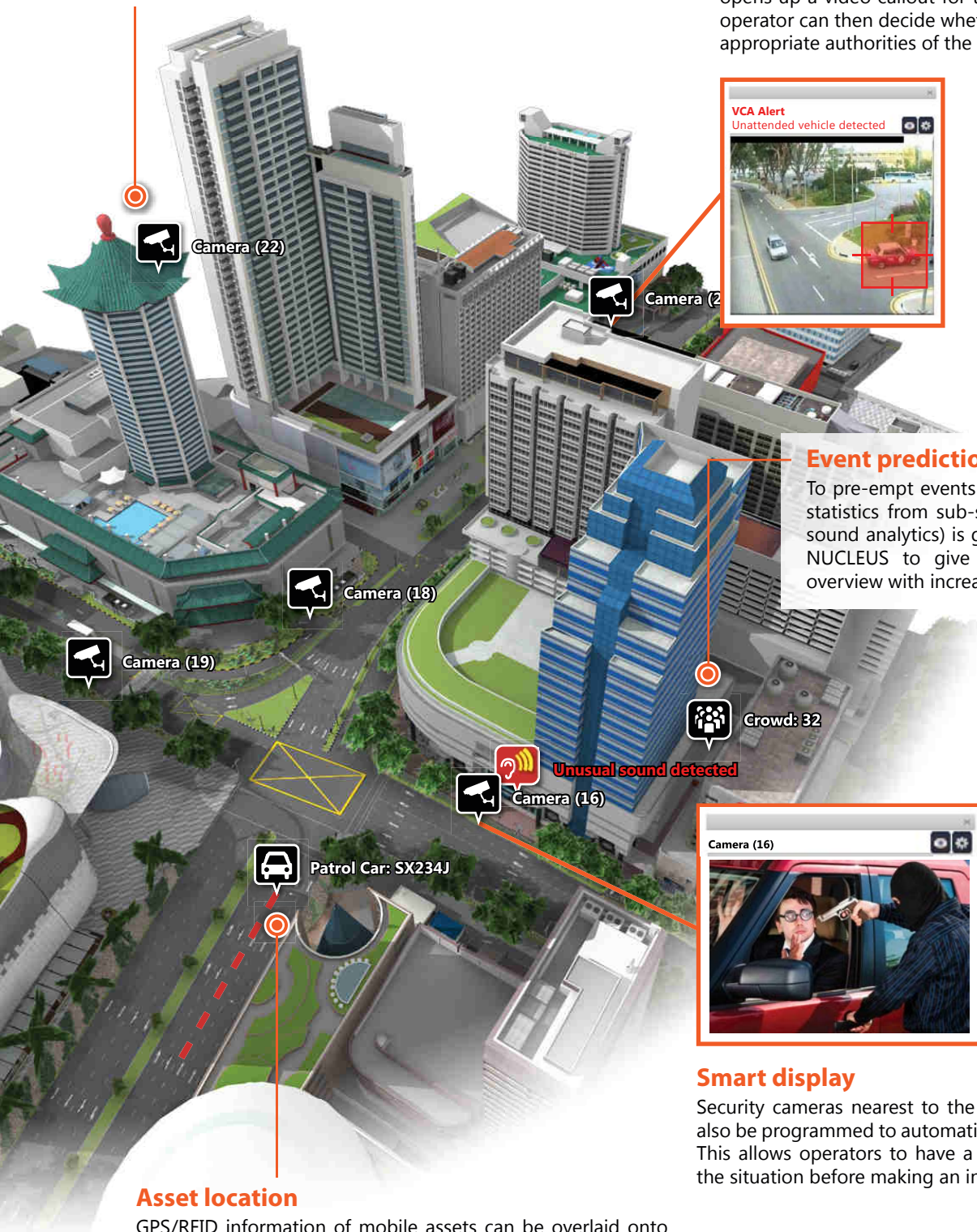
NUCLEUS for Security Management

Ensure public safety around the city premises

Consolidation and overlaying of information from security systems onto NUCLEUS allows operator to monitor remote areas of the city from the command center and keep up-to-date on various events taking place.

Video on demand with analytics and alerts

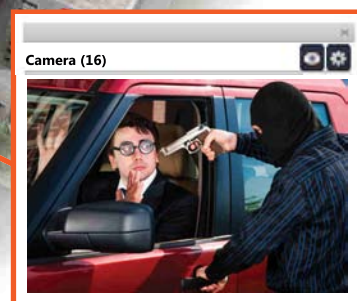
NUCLEUS homes into the location of analytics alert and opens up a video callout for the operator to review. The operator can then decide whether to inform the police or appropriate authorities of the detected situation.



Event prediction

To pre-empt events like overcrowding or riots, statistics from sub-systems (e.g. crowd count, sound analytics) is gathered and overlaid onto NUCLEUS to give operators an up-to-date overview with increased situational awareness.

Crowd: 32



Smart display

Security cameras nearest to the alert location can also be programmed to automatically display video. This allows operators to have a quick overview of the situation before making an informed decision.

Asset location

GPS/Rfid information of mobile assets can be overlaid onto NUCLEUS to provide real-time updates and tracking of asset location. This allows for more efficient dispatch of mobile assets to handle security events.