HUB.NODE
MULTI FUNCTION TECHNOLOGY NODE. MAKING SMART CITIES REAL

WI-FI
4G/5G
ENViro. SENSOR
TRAVEL CARD READER
DATA
BICYCLE HIRE
HELP
MICROPHONE
P
EVC
BANNER
BEACON
CCTV
SPEAKER
LED
Multi Function Technology NODE (MFTN) for Smart Cities

The HUB.NODE is a beautifully designed, modular and scalable product system. The HUB.NODE is a 'beginning to end' product system for smart cities. It will grow and adapt to current and future smart functions. The HUB.NODE is available in two versions, HUB.NODE 4G discretely accommodates 4G / 5G technology, while HUB.NODE does not accommodate this technology.

Both versions invisibly accommodate the following functions:

- Wi-Fi
- Data-Capture,
- Smart Wireless LED Street, Roadway, Area lighting as well as Floodlights / Spotlights
- Banner arms
- Decorative beacon (RBG light)
- CCTV
- Speakers and Community Messaging
- EV Charging and Parking Management
- GPOs / Events Power Outlets and traditional smart pole functions like signage, traffic and lighting.
- Capacity for future functions

Local and State Governments embrace the HUB.NODE because:
1. It reduces street clutter
2. It is well designed
3. It invisibly accommodates all of the Smart City functions converging on our public spaces
4. It can accommodate all current smart city technologies
5. Its modular design allows for new public domain technologies that may be required in the future. (Driverless cars)

TELECOMMUNICATIONS

The HUB.NODE 4G invisibly accommodates all 4G, 5G and Wi-Fi equipment which makes the HUB.NODE 4G an effective and discrete addition to any telecommunications network. Importantly, the antennae are mounted at a height that ensures optimal performance (7 - 11m).

The HUB.NODE 4G, is a replacement for the traditional street light and when deployed in cities, results in a high density of small cell and Wi-Fi locations, thereby ensuring the best coverage and capacity for any telecommunications network.

4G, 5G AND WI-FI EQUIPMENT ACCOMODATED:

- 4 x Nokia Flexizone (4G) with external antenna’s (including splitters and combiners)
- Nokia Flexizone with integrated Wi-Fi supported
- Commscope Tri-Sector Monopole Antenna 3X-V65S-G-3XR
- Cisco Aironet 1570 Series Outdoor Access Point
- Cisco Aironet Dual-Band Omnidirectional Antenna (AIR-ANT2547V-N) mounted within module in the upper HUB.NODE
- Multiband Combiner
- Multi-vendor support for antenna’s
- All antennae are encased by an RF transparent cover

LED LIGHTING

The HUB.NODE by ENE.HUB incorporates the latest in LED lighting. The integrated minimal design of the HUB.NODE is maintained by having all LED Lights housed within the circumference of the node – NO OUTREACHES! Any lighting application can be accommodated by the HUB.NODE. The lighting output can be adjusted to meet any international standard for lighting.
**RGB BEACON**

The RGB beacon light position at the top of the pole consists of an opalescent tubular lens which is designed to fit over a range of communication antennas. The lens mechanically fixes to a cast aluminium part fitted to the upper pole aluminium extrusion. Within the cast aluminium beacon base is housed a 'halo' of small package coloured LEDs designed to shine upwards between the shell of the antenna and the opalescent lens. The beacon light output offers a soft glow that is achieved by a shielded LED light source (LEDs mounted to a circular ring MPCB) mounted within the cast aluminium beacon base shining up into the tubular lens.

**4G / 5G**

There are up to 4 areas to install multiple 4G / 5G compatible small cells in the base of the HUB.NODE to provide high bandwidth and fast data communications services. Communities increasingly require reliable and high speed data connections in their urban centres. ENE.HUB can bring these services into town centres in an unobtrusive manner. The antenna is located within the beacon light at the top of the pole. (PATENT No. 2016902940)

**WI-FI**

The Wi-Fi module is discretely integrated into the HUB.NODE structure. ENE.HUB digitally connects town centres and communities with access to high speed Wi-Fi in an unobtrusive manner.

**360° LED AREA LIGHT**

- >45% Reduction in energy consumption
- >55% Reduction in maintenance
- Significantly reduced carbon emissions

Full compliance to Australian Lighting Standards

The LED lighting portfolio that ENE.HUB offers is innovative and designed for Australian standards. It is beautiful, functional and robust. (PATENT No. 2015258211)

**FLOODLIGHT / SPOT LIGHT**

Incorporated with the HUB.NODE is the provision for dedicated precise accent lights. The majority of applications will be up lighting tree canopies, however the Floodlight / Spot Light can be utilised to illuminate and external features including building facades. The Floodlight / Spot Light is available in white or coloured versions.

**CCTV CAMERA**

CCTV Camera and data gathering are driven by the explosion of the internet of things coupled with increasing requirements for security at a streetscape level. The connection to power and telecommunication makes the deployment of closed circuit television through HUB.NODE fast and seamless compared to alternatives. HUB.NODE surveillance is supported by various cameras, and complies with Australian and International standards. As sensors become more sophisticated and their application become broader - to include the monitoring of environment and traffic management, the HUB.NODE enables the efficient capture of information for the use by the operator as they become smart cities of the future.
**BANNER ARMS**
The HUB.NODE can incorporate a 4.5m x 1.5m Vertical Banner. Smaller Banners can be accommodated and provide a valuable canvas for marketing and advertising activities.

**SPEAKER**
Integrated into the design is a public speaker capable of broadcasting community messages. This can be linked to event announcements in town centres, and can be integrated into an emergency broadcast system.

**ENVIRONMENT SENSOR**
This integrated environment sensor can measure and track humidity, temperature, air quality and pollution levels and also transmits real-time reports. In combination with the integrated Wi-Fi, the collected data can be issued to the public or any facility in which the information can be further processed.

**WAY-FINDING**
The Wayfinding Module offers 3 separate sign blade mounting collars fixed to the HUB.NODE. Each collar offers 360 degree sign orientation adjustment. Robust aluminium sign blades with adhesive vinyl graphics are available in single collar height (174mm) & double collar height (364).

**EVENTS POWER OUTLET**
More and more street festivals, events and concerts are brought in to the public space. The Event Power Outlet, integrated into the base of the HUB.NODE, provides quick and easy access to power right where it is needed without adding cables and clutter to our public spaces.

**ELECTRIC VEHICLE CHARGER POINT**
Electrical motor vehicles are 30% more efficient in their cost to operate than traditional petrol or diesel powered vehicles. They are more environmentally sustainable. However, their adoption has been constrained by the lack of charging infrastructure. ENE.HUB addresses this limitation and the HUB.NODE provides electric vehicle charging and enables the growth in the use of electric motor vehicles.

**HELP BUTTON WITH MICROPHONE**
The Help Button is an important safety feature, which seamlessly integrates into the design of the HUB.NODE. The Help Button with its ‘two way communication feature’ demonstrates safety, provides easy access to immediate help and emergency services and lets authorities react quickly in case of an incident or public safety hazards.
Royal Botanic Garden

CLIENT: Royal Botanic Garden & Domain Trust Sydney

- 40 HUB.NODEs
- Smart Lighting System
- 4G / 5G Network
- Public Wi-Fi

ONGOING:
From September 2016 till April 2017

SMART CITY FUNCTIONS:
- Telecommunications 4G
- RBG Beacon Light
- Wi-Fi
- LED Street and roadway lighting
- Community messaging
- Parking management
- Data capture
- Surveillance
- Electric vehicle car charging
- Traditional smart pole functions (signage, traffic and lighting)
Bay Run - City of Canada Bay Council

CLIENT: City of Canada Bay Council

- 10 HUB.NODEs
- Smart Lighting System

COMPLETED: November 2016

SMART CITY FUNCTIONS:
- RBG Beacon Light
- LED Street and Roadway Lighting
- Banner arms
- Way finding
- Future proof modules
Sydney Airport

LOCATION: Kingsford Smith Airport

- 18 HUB.NODEs
- Surveillance and Wi-Fi Network

COMPLETED: November 2016

SMART CITY FUNCTIONS:
- LED Lighting
- CCTV
- Speakers
- Wi-Fi
- Emergency Lighting
- Strobe Light
- GPOs
- RBG Beacon Light
HUB.NODE
Multi-Function Technology Node for Smart Cities
Winner of the category: Product Design, Hardware and Building