

**Enterprise  
Singapore**

Growing Enterprises <sup>SG</sup>

# Smart Cities Solution Providers

Advanced Manufacturing Division



# Overview of AM Smart Solution Providers

Sensors / Analytics	System Integrators	Robotics
Communication	Automotive	Industry 4.0
Advanced Materials	Others	

# Advanced Manufacturing Company Profile

List of companies is not exhaustive

# Sensors / Analytics



Founded in 2003, Nextan specialises in crafting turnkey solutions for both public and private firms in IoT sensors, video and image analytics and indoor and outdoor tracking. There is a strong focus on R&D to pursue new areas of technology innovation in the transport, healthcare, and surveillance industry.

Market Presence: Singapore, China, Philippines, India, Malaysia, and Indonesia

## Solution Description

Nextan IoT platform consists of networked devices, application software, mobile apps, cloud-based web applications, and big data analytics engine. Its range of smart cities solutions include the Nextan elder care system (elderly motion sensory and response system), E-monitoring and surveillance system, train fault detection system, and traffic management systems.





Whizpace is a spinoff from Singapore's national research organisation, A\*STAR. It specializes in developing products using TVWS technology where the wireless solutions can reach very long distance and penetrate through obstacles. With these characteristics, many applications which were previously challenging are now made possible.

## Solution Description

Telecommunication Network using TV white space (TWS): Whizpace provides communication solutions to harness underutilized spectrum in an opportunistic manner using intelligent technologies to enable better utilization of spectrum.

### Features:

- Up to 10KM connectivity range with the use of an external antenna
- No Line-of-Sight (LoS) needed in most instances but LoS preferred
- Non weather dependent
- Abundant spectrum available



WhizRange: for long range communication, rural data communication, long range cellular & Wi-Fi extension, video surveillance and secured private networks

# XR Vision

<http://www.xrvision.com/>

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Founded in 2015, XR Vision is a computer vision and IoT startup with an AI-based video analytic for uncontrolled, crowded and in-motion environments and wearable platform and mobile IoT security and productivity devices.

## Solution Description

Enabling a new breed of security by leveraging cutting edge IoT and computer vision patented technologies backed by deep domain expertise to offer disruptive IoT access control solution for stationary and moveable assets operated by enterprises and government customers.

OIC: Val



Founded in December 2013 in Singapore, Xjera Labs Pte Ltd focuses on developing Artificial Intelligence (AI) based Image and Video Analytics (VA) solutions for various commercial applications, with proven accuracy, high-level customization and robust security. Xjera Labs has been collaborating with Nvidia and IMDA Singapore to use GPU for deploying Deep Learning techniques to enhance the accuracy and performance of video analytics.

## Solution Description

Xjera Lab's capabilities include:

- **XIntelligence:** An application that detects, locks, and is able to count the number of people passing through a line using face recognition. The solution is able to achieve 88% accuracy of the scenes and 95% accuracy after reconfiguration.
- **XHound:** Technology that allows person of interest (POI) and vehicle of interest (VOI) tracking. It applies revolutionary heterogeneous deep neural networks to analyze the extracted edge features from an image to identify the person of vehicle.
- **XTransport:** An advanced intelligent analysis system for monitoring vehicle flow. The system can count the number of vehicles and provide information on vehicle type, speed, and direction.



# Vital Xense

<http://www.vitalxense.com>

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Singapore



Vital Xense is an IOT solutions and platform manufacturer who specializes in helping businesses to monetize IOT and its capabilities to save cost and create new value for businesses.

Their cloud ready solutions and platforms enables fast and scalable IOT deployments for industrial and commercial applications which enable companies to build and expand domain expertise with a technological advantage.

## Solution Description

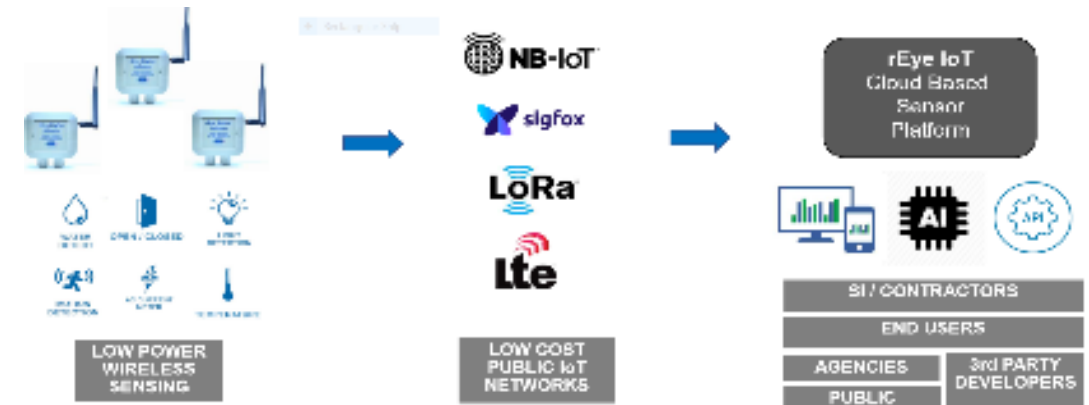
Vital Xense specializes in developing sensor hub platforms to support up to 50,000 sensors, with minimal infrastructural alterations on each platform.



SpaceAge Labs is a deep-tech startup headquartered in Singapore, supported by NUS Enterprise, with a focus on serving clients in the Asia-Pacific markets. We provide an end to end IoT platform – sensors, low power wireless connectivity, cloud and applications – that enables quick and easy deployment of IoT solutions for smart cities, buildings, telecoms, utilities, heavy industry and agriculture. It specializes in delivering solutions based on LPWAN technologies such as Sigfox, NB-IoT & LoRa.

## Solution Description

Specialises in low power wireless LPWAN technology for remote monitoring applications. Its core strengths lie in hardware development, cloud management, IoT platform development and API interfaces.





Ascent Solutions is a Singaporean based IoT company that specialises in cargo security and track and trace for smart logistics. It has deep domain knowledge in technologies such as NB-IoT, Satcom, GPRS, Active and Passive RFID. Through harnessing the power of each, Ascent is able to provide innovation solutions to clients with supply chain and logistics issues related to security tracking.

## Solution Description

Fleet Management System to increase fleet utilisation and increase overall efficiency.

“iSPOT” is a well trusted patented solution perfect for ensuring the security and visibility of containers, trucks and other assets in transit at all times. In high risk environments where cargo is prone to pilferage and theft Ascent’s solution is capable of empowering Ascent’s clients to receive real-time alerts when cargo is tampered.



SensorFlow is a Singapore-based energy management startup founded in 2016. SensorFlow offers full-stack energy management solution with special focus on the hospitality industry. It aims to help hotels and resorts conserve energy using IoT system that can be installed within 15 minutes without the need for a downtime or operational disruptions.

## Solution Description

Provides smart wireless IoT solution that monitors, analyses and automates hotel room management that:

- Improves energy efficiency
- extracts real-time data and insights
- monitors performance and obtain immediate maintenance alerts to minimize unforeseen equipment failures.

The full stack energy management solution platform includes energy meter, operational dashboard that provides real-time data, preventative maintenance and occupancy and door sensors that adjust the thermostat fan and air conditioning. Sensors are battery powered, lasts up to 3 years and can be retrofitted using existing wiring.

# STYL Solution

<https://styl.com.sg/>



STYL Solution infuses Fintech IoT into daily applications to create smart and efficient environments.

Core strengths: IoT and payments

## Solution Description

STYL Solution's products include:

- Transit Payment IoT
- Retail, F&B, eWallet, Payment Management Platform
- Vending / Self-service Management Platform
- IoT Device Management and Analytics Platform
- NFC, RFID, IoT Reader
- Payment IoT Wearable
- Payment IoT Kiosk

## Case Study

Collaborated with POSB and NETS to roll out POSB Smart Buddy, a cashless payment and savings programme that was implemented in over 35 schools.



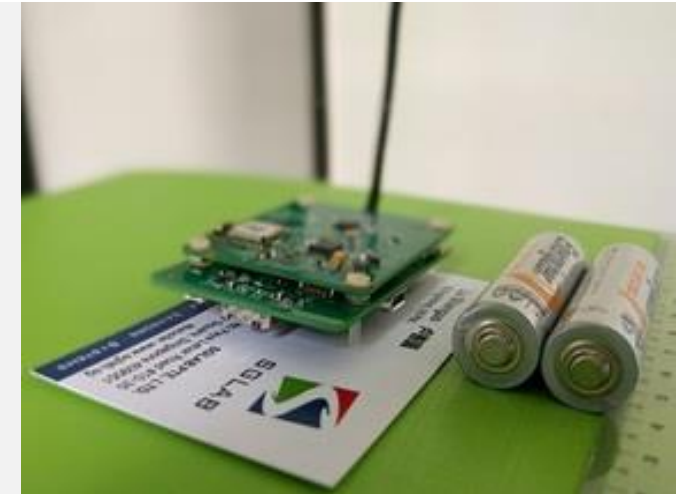


Established in 2015, SGLab specializes in the development of power-optimized and long-range wireless mesh network that consumes power much lower than commercial grade wireless networks like ZigBee and Bluetooth Low-energy. Technology enables easy deployment of wide area remote surveillance. Other core competencies include development of smart sensor controllers and data analytics solutions.

## Solution Description

SGLab offers the following products:

- **SGMesh**: wide coverage, low power, low cost private secured wireless network that supports implementation of IoTs in areas under-served by commercial wireless communication providers
- **SGSense**: IoT Platform built-upon SGMesh. Provides measurement in: air temperature, humidity, rain fall, vibration and sound, soil parameters, magnetic



## SmartClean

Singapore-based IoT and AI company that brings intelligence to facilities with connected sensors and intelligent algorithms, enabling data-driven cleaning operations for increased productivity and improved service quality.

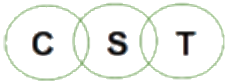
## Solution Description

Virtual Cleaning Supervisor is a Cleanliness Monitoring System that provides real-time monitoring of toilet facilities via sensors installed around toilet.

- Sensors that provides air quality monitoring, wetness detection, usage pattern, feedback modules with emergency response buttons
- Cleaning company dashboard for cleaner management system, real-time monitoring, automated task logging, analytics and insights
- Cleaner app for automated attendance, task logging and receiving of alerts and emergency cleaning requests
- Facility Management Dashboard that provides one click monitoring and analytics based on sensor data, feedback and report generation

# Convergent Smart Technologies

<http://smarttechnologies.sg/>



Singapore SME that holds the Smart Toilet System license by A\*STAR

## Solution Description

The Smart Toilet System is a maintenance free technology that consists of People Density Counter and Ammonia Sensor. The data collected with analytics provide predictive cleaning and inventory usage to improve productivity of cleaning companies. It is designed to be maintenance free, cost-effective and has a scalable sensor network system.

The system comprises of:

- Hardware with ultra low power passive infrared sensor
- Algorithms
- Gateway
- Server
- Interface software that performs mesh data collection, data storage and mining, data exploration and visualisation

The system is implemented in many buildings in Singapore such as Our Tampines Hub, Fullerton Bay Hotel, JTC Corporation, Capital Tower, Sentosa Island, NCS, Pathlight School, P&G @ The Metropolis

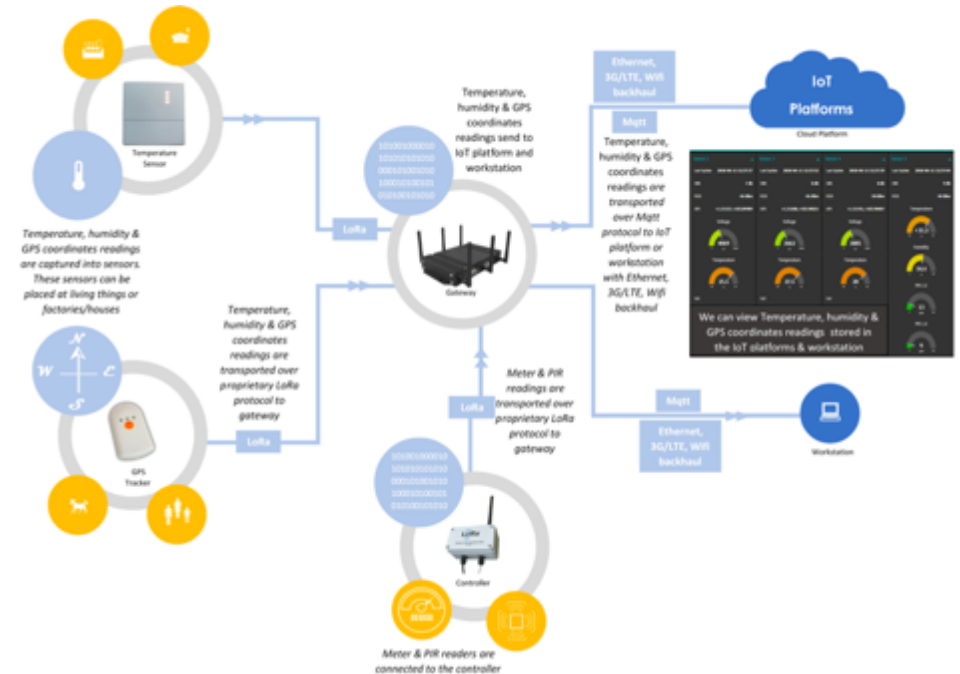




Solekia Singapore is a subsidiary of Solekia Japan which was established in September 1958 in Japan. Solekia expanded to Singapore in March 1998. It provides system integration services for IoT solutions, import and export of components, and design and sales of software and hardware devices.

## Solution Description

- Temperature / Humidity sensor
- GPS Trackers
- LoRaWAN gateway
- IoT Cloud platform





Trevis Technology is a system integrator and engineering consultancy for Technology and Software Solutions within the domains of Real-time Connectivity, Alarm Management, Process Control Asset Effectiveness, Energy Management & Savings technology, Environmental technology, Operational & Business Intelligence for the Chemical Process industry in the South-East Asia region.

## Solution Description

- Trevis Traffic Intelligence (TTI) solution is one of IOT solutions offered by Trevis to scan for Wi-fi signals emitting from smart device
- Green Building Intelligent Solution (GBIS) that is designed to seamlessly agglomerate data from multiple and geographically dispersed building locations. This solution result in timely submission of building data that is both accurate and with full data integrity.
- Smart Waste Collection



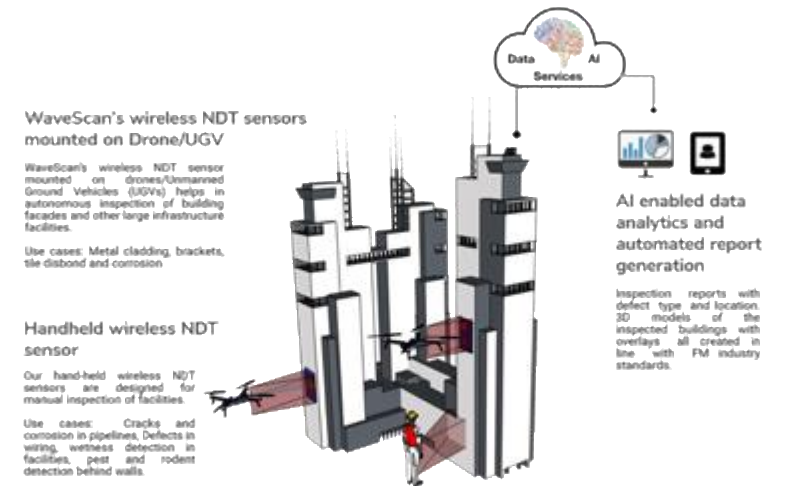


WaveScan Technologies Pte. Ltd. is an A\*STAR spinoff specializing in microwave & mm-Wave NDT sensor systems. Our technology builds upon nearly a decade-long R&D on microwave & mm-wave NDT sensors at Institute for Infocomm Research, A\*STAR, Singapore.

## Solution Description

Provides an end to end cloud based AI-enabled inspection solution, together through the partnership with autonomous vehicle companies. Smart IoT sensors, deployed on autonomous vehicles, along with a centralized cloud-based AI-enabled analytics solution is the future of predictive maintenance systems for tomorrow's Smart Cities. At WaveScan, it is our mission to introduce such automated electromagnetics (EM) sensor-based NDT solutions towards safer liveable cities.

Currently developing mmWave and microwave contactless Non-destructive testing (NDT) sensors





Hertzwell is a graduate from Entrepreneur First programme. The company develops radar vision that can precisely determine the location and speed of all objects on the road for autonomous vehicles to provide high resolution 3D maps. This is done using a proprietary beam steering technique.

## Solution Description

Develops high resolution 3D imaging radar vision systems for autonomous vehicles. This allows for high resolution imaging of up to 250m. Using active beam steering, 3D profiles of obstacles, pedestrians and other vehicles can be created. The high resolution radar uses aerospace grade technology and intelligent signal processing algorithms to allow its radars to see in all weather conditions.

Besides developing the hardware, Hertzwell will also provide the necessary software stack APIs required for machine learning applications. Each smartphone-sized hardware sensor will have 120 degrees field of view. Ideally, 4 of these sensors will be fitted around a vehicle for full vision coverage.

# Meridian Innovation

<https://www.meridianinno.com/>

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Meridian Innovation is a fabless start-up with operations in Hong Kong, Singapore, USA and UK. They are developing cost effective and high performance Thermal Imaging Sensor based solutions for commercial applications which will enable safer and better living.

## Solution Description

Provides low cost infrared sensors that enables energy efficiency in lighting control, smarter digital appliances, people counting, temperature monitoring, heating and air conditioner. Thermal sensors can be embedded in vehicles to serve as trigger mechanism for recording activities or be integrated with present visual security camera. Lastly, thermal sensors can augment various sensors to authenticate Proof-of-life in a transaction.

Product: SenXor™ - Patented CMOS Hybrid thermal sensing architecture & proprietary Wafer Level Vacuum Package (WLVP)

# Rain Tree Photonics

<http://www.raintreephotonics.com/>

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Rain Tree Photonics is a Silicon Photonics fab-less chip maker spun out from IME. The company has patent protected platform technology covering key aspects of the Si-Ph manufacturing cycle, enabling high performance and high manufacturing scalability.

Market Presence: Singapore, Shanghai

## Solution Description

Product-oriented Silicon Photonics Platform which has 3 attributes:

1. Yield oriented device library (high yield, compact size and best in-class performance)
2. Smart testing (high throughput, in-line erasable KGD test)
3. Self-aligned packaging (automated, wafer level)

Application areas:

- Data centre / Telecom
- LiDAR (AV / Robot)
- Medtech

Established in 2018, Frontier Photonics develops active silicon photonic products and provides consultation services. The start-up has jointly developed an OPA based LiDAR sensor with IME and is developing biosensors for baby monitoring and high power lasers for cosmetic applications. Frontier aims to provide expertise and services in Active Devices wafer fabrication to integrate assembly of silicon photonics packaging solutions for scalable production.

## Solution Description

Key activities include: active photonic devices, wafer-epi design, device integration packaging and assembly of PIC-EIC, product reliability engineering process.

- Optical phased array (OPA) based LiDAR sensor using silicon photonics: provides non-mechanical scanning in a compact form factor and enables sophisticated beamforming like simultaneous scanning, pointing, and tracking of multiple objects or direct line of sight communications.
  - Application: Use of LiDAR sensor to detect civilians who exceed speed limit of Personal Mobility Device (PMD)
- Silicon photonics based chip/sensor for biomedical applications like detecting heartbeat and breathing of a baby.



Established in 2013, Optic2Connect is a spin-off company from A\*STAR IHPC that aims to provide a one-stop solution for photonics device development. Proprietary products include: AccuMap and AccuSpeed. Solutions are designed to shorten product time-to-market and development costs of photonics devices.

The company is focused in serving web communication market and has received interest from Google and Amazon.

Market Presence: US, Canada, Japan

## Solution Description

Provides a one-stop solution that offers: modulator analysis, optimization of performance, hardware and software prototyping and design for manufacturability.

Proprietary Simulation Products: AccuMap and AccuSpeed. These products help with the R&D and manufacturing of high speed silicon photonic devices to allow acceleration and increase of bandwidth of optical chips.

O2C's capabilities include:

- accurate modelling simulation capable of accurately mapping simulations from one domain to the other (eg. electrical to optical)
- modulation formats that are capable of handling complex analog and digital modulation schemes
- high speed modelling
- platform independent with other simulation formats
- both cloud-based and standalone software solutions to help customers better manage peak surges and computing resources





IGaN's holding company is Innovative Global Solutions & Services (IGSS) Ventures. IGSS GaN (IGaN) provides a one-stop solution for gallium nitride on silicon (GaN-on-Si) wafer fabrication for both power and radio frequency (RF) devices. They manufacture GaN-on-Si epitaxial wafers and offer proprietary wafer fabrication services on CMOS compatible Fab.

The company has exclusive Gallium Nitride on Silicon (GaN-on-Si) Disruptive Technologies licenses from Singapore premier Research Institutions.

## Solution Description

Together with our GaN fabrication process technologies, we can deliver superior, customizable GaN-on-Si solutions for customers. IGaN develops 6 and 8 inch GaN wafers. These wafers are passed on to foundry partner in Malaysia for tape-out (Silterra).

GaN-on-Si has the following features:

- Excellent crystal quality
- Uniform layer thickness and composition
- High wafer to wafer consistency
- Low leakage current
- Superior 2DEG characteristic



Founded in 2004, JM Vistec is a machine vision specialist that aims to provide customers with solutions that are competitive in quality, performance driven and offers service assurance. The company is shifting from being a distributor of machine vision components like cameras, lenses and sensors, to becoming a solution provider in vision system integration.

Market Presence: Singapore, Taiwan, Thailand, China. 40% of businesses are overseas.

## Solution Description

Provides complete end-to-end innovative solutions for complex business complications that include customization of vision products and user training with the latest vision technologies.

# Communication



SkyLab Holding consists of three operating subsidiaries: SkyLab Networks, SkyLab Services, and SkyLab Innogram. SkyLab offers enterprises access to integrated operations control, real-time performance insights, advanced networks and data logistics cloud across devices and controllers, with a goal to gain insights and drive proactive actions on assets optimization and resource management

## Solution Description

SkyLab Networks designs, builds, maintains, and operates / leases advanced network solutions for customers. SkyLab partners with local telco operators to deploy unique connectivity to enterprises by supporting their IoT / WiFi / Cellular wireless / Backhaul infrastructure with our unique cloud and infrastructure as a service offering.

They developed their own proprietary SkyLab Transport Acceleration Protocol (STAP) that accelerates traffic by analyzing traffic & routing conditions in real time to find the very fastest route between the data source and the destination even on 2G/3G/4G, satellite and many types of IoT radio networks. Advanced congestion control helps to control the amount of data being sent, avoiding bottlenecks and ensuring the smooth transfer of data.

# TNS Asia Pacific

<https://www.tns.com.sg/>

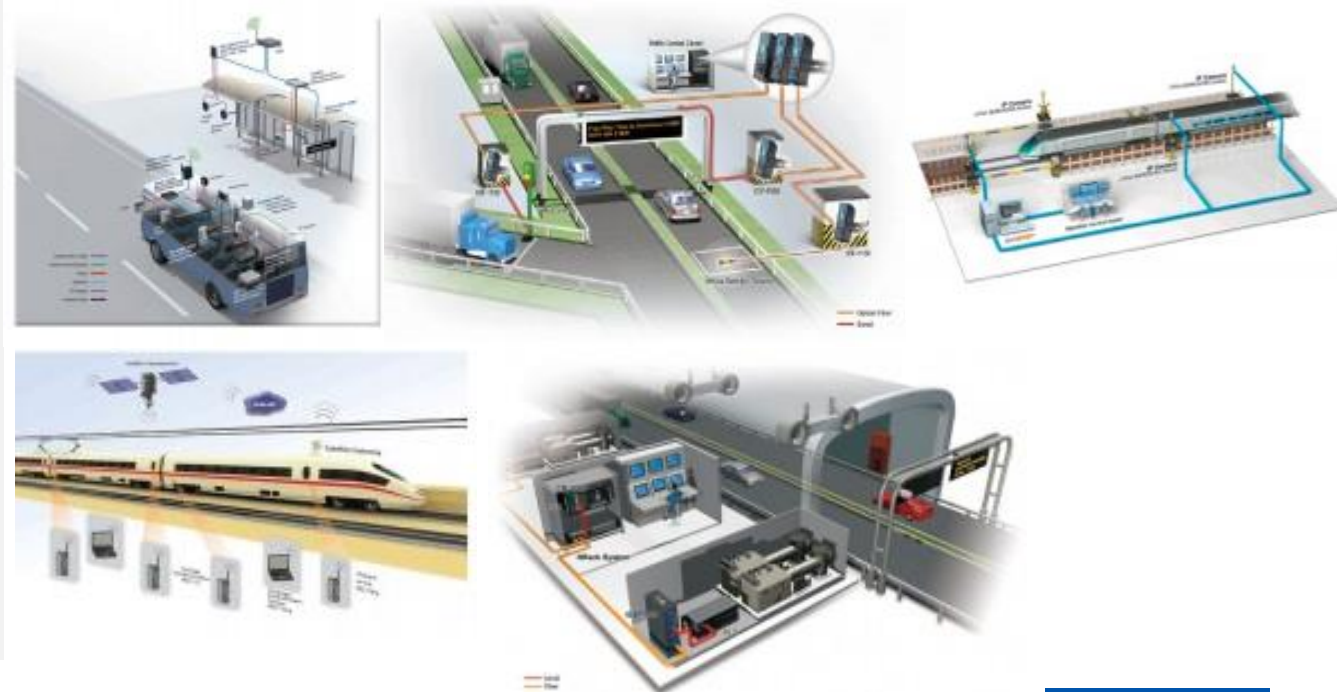


Based in Singapore, TNS Asia Pacific Pte Ltd is a B2B distributor of industrial networking and computing equipment for mission critical applications. TNS has strong technical expertise to support customers in the design of legacy and modern systems.

Areas of speciality are industrial Ethernet, wireless, serial communications, fieldbus, industrial computing, remote I/O and video surveillance technologies.

## Solution Description

Products in Intelligent Transport:  
Intelligent e-bus, Intelligent Traffic  
Management System, IP Video  
Surveillance for Wayside environment,  
Onboard WIFI for trains, Ventilation  
Control in tunnels *(from top left)*





Established in 2015, CLOP Tech aims to provide Gigabit wireless to everywhere, for everyone

## Solution Description

Develops 60GHz baseband chipsets for wireless backhaul and wireless video surveillance applications to support business and consumer mobility applications like real time analysis for video content for surveillance monitoring

Up to 4.6Gbps peak data rate, it is suitable for applications like real-time uncompressed HD video streaming, Sync and Go, and high speed file transfer – 10x faster than today's WiFi.

# Transcelestial

<https://transcelestial.com/>



Founded in 2016, Transcelestial is a Singapore-based space tech startup that aims to develop a constellation of nano satellites that use lasers to transfer and relay data for ground, satellite and deep space applications. This could provide a fast, long-distance, point-to-point wireless communication network of up to 100 gigabits per second, said the startup.

## Solution Description

Provides laser-based high speed Internet connectivity.

Transcelestial aims to develop constellation of nano satellites that use lasers to transfer and relay data for ground, satellite and deep space applications. Enables provision of fast, long distance, point to point wireless communication network of up to 100 gigabits per second



TransferFi is currently developing the world's first long-range, safe and efficient Wireless Power Network (WPN). It will be used to power Industrial IoT sensors to reduce wiring complexity and high-power applications that will provide easy access to primary sources of energy such as remote and offshore renewables. All this is done through patented signal optimization and beamforming algorithms that will extend the range of Wireless Power Transfer (WPT) to 100 meters and beyond.

## Solution Description

Uses radio frequencies to provide long range, safe and efficient Wireless Power Network (WPN) to power IIoT sensors in markets like renewable energy, smart cities and space





# XY Connect

<https://xy-connect.com/en/>



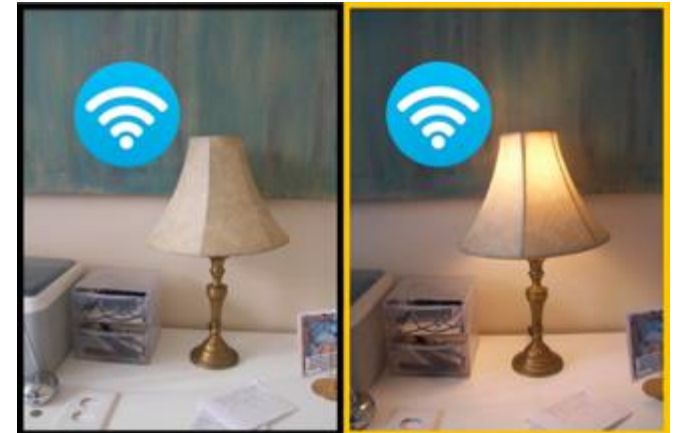
XYConnect develops lights to help individuals enjoy WiFi in the space of your choice. Our technology takes advantage of existing lighting socket and wiring structures that are widely distributed across the world.

## Solution Description

Develops patented power-line communication technologies to achieve seamless WiFi experience.

Features:

- Control lighting brightness via mobile app
- WiFi connection even without illumination
- Replaceable LED
- Seamless WiFi roaming on the move



# Robotics



Aerolion is a spin-off from the Unmanned Systems Research Group of NUS. ALT was incorporated in Nov 2014. The company focuses on developing unmanned aerial vehicles (UAVs) with advanced autonomous capabilities like GPS-denied navigation swarm of micro-UAVs, vision-based object tracking and landing, other real-time image or video analytics.

In short, the firm produces unmanned aerial vehicles, or drones, which can carry sensors and cameras.

## Solution Description

ALT's integrated survey solution uses industry grade LIDAR, GPS and Camera hardware mounted on their flagship platform.

Offers indoor and outdoor UAV solutions for inspection and surveillance – from city survey mapping to tunnel inspection. Commercial applications include:

- aerial surveillance and crowd monitoring
- search and rescue
- power line inspection
- mining and agriculture
- transport and logistics
- filming and entertainment

ALT has received interests, sales and project contracts from government agencies, industrial corporations, educational institutions.





Avetics Global is a drone solutions company based in Singapore and Malaysia serving Southeast-Asia. We provide end-to-end drone services with a key focus in the industrial space using our customised drones.

## Solution Description

Offers customized UAV solutions for:

- Visual inspection
- Thermal inspection
- Confine space inspection
- Building/façade inspection



# Garuda Robotics

<https://garuda.io>

Enterprise  
Singapore



Garuda Robotics is a leading developer of enterprise-grade drone and drone data solutions for enterprises, governments, and professional drone operators. Its products and services are deployed in the agriculture, infrastructure, security, and logistics industries throughout Asia to capture, analyze and leverage aerial data at scale. Its in-house expertise includes robotics hardware and sensors, enterprise software and distributed systems, drone data analytics and machine learning, geospatial business intelligence, and operational deployments.

## Solution Description

The Garuda Robotics M400 UAV is a general-purpose, industrial-grade four-rotor unmanned Aerial Vehicle platform designed for industrial inspections.

Garuda Robotics also offers Garuda Plex, a complete software platform that can facilitate a range of drone operations from routine inspections to real-time surveillance.

QUANTIFY



MAP



RAPID RESPONSE



ROUTINE INSPECTIONS



INTELLIGENT MONITORING



OIC: Kang Min

# Performance Rotors

<https://performance-rotors.com>

Enterprise  
Singapore



Performance Rotors is an Unmanned Aerial Solutions provider based in Singapore with deep roots in Drone Racing and Drone Acrobatics.

## Solution Description

- **Tree Inspection:** TIM is a lightweight and low risk micro unmanned aerial system platform which helps to make tree inspections safer, more efficient and friendlier to both users and the public. Its unique ducted propeller guard design balances aerodynamic performance while protecting the propellers from tree leaves and debris and the drone moves deep into the canopy.
- **Confined Space Inspection:** for GPS-denied environment, ships, tunnels, and indoor environment.



OIC: Kang Min

# Red Dot Robotics

<http://www.reddotrobotics.com/>

Enterprise  
Singapore



Red Dot Robotics develops autonomous software to automate driving and mundane tasks, creating centrally-controlled robots that cooperate jointly to create productivity.

## Solution Description

Engineers robotic solutions and provides software for autonomous and machine visioning capabilities for remote surveillance, inspection, and indoor navigation



OIC: Lejon

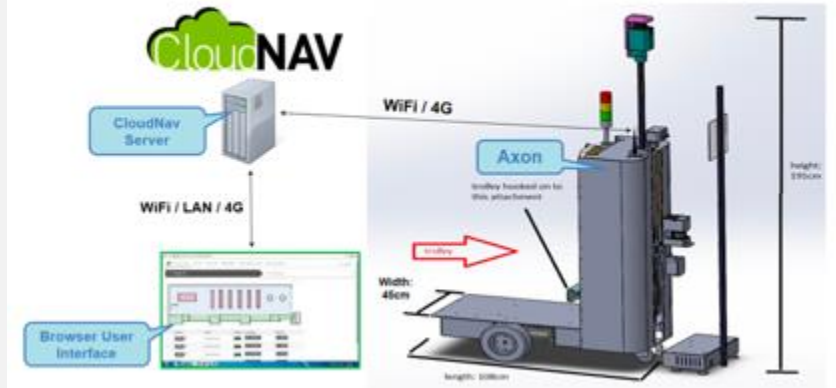


CtrlWorks is a robotic engineering start-up specialising in the development of cloud-based autonomous guided robotic systems for the logistics industry.

## Solution Description

AXON is used for custom material handling applications and payloads and includes a self-navigation software for planned routes in the workplace. CloudNAV is the patented cloud engine that allows Axon to navigate autonomously without any additional hardware overheads, nor structural changes to the building environment.

Application: Construction, Hospital, Manufacturing, Research, Cleaning, Warehouse







Established in 2006, HOPE Technik is a Singapore engineering company with expertise in mechanical, electrical, electronics and software engineering. They are supported by an in-house suite of manufacturing and industrial design capabilities.

## Solution Description

HOPE Technik operates across industries like aerospace, defense and security, transport and logistics systems. The following are some of their projects:

- Firefighting robot
- Casualty relay system
- Unmanned Aerial Vehicle System
- Electric Vehicle charging station
- Unmanned Ground Vehicle



# Movel AI

<http://movel.ai/>



Movel AI builds solutions for robot navigation based on advanced computer vision and sensor fusion. They enable robot to operate at many challenging areas, including huge airports, crowded shopping malls, and highly dynamic factories.

## Solution Description

Develops software that makes existing robots even smarter in understanding and navigating surroundings by using machine vision from cameras to identify environment



LionsBot is a Singaporean robotics company producing cleaning robots as a service for commercial, industrial and public spaces.

## Solution Description

World's smallest professional cleaning robot with the following features:

- Advanced sensors
- Smart algorithms to avoid humans and objects and adjust speed according to distance from people or object
- Emergency stop button and clear lights and sounds to avoid collisions with people
- Advanced battery management systems to protect from damage
- Encrypted communication to prevent hacking





B-Robotics is a spin-off from SHADO Group.

It is an autonomous vehicle design, development and engineering company that designs autonomous solutions for people, goods and services. Using state-of-the-art power trains, rapid charging batteries, and product design, B-Robotics provides complete infrastructure, autonomous software, command & control cloud applications and vehicles.

## Solution Description

Autonomous People Mover (APM) which is branded as Atlas EV is a mini-bus designed to accommodate up to 12 passengers in a single trip. APM is designed with in-house motors and patented infinitely variable transmission (IVT) to manoeuvre outdoors including uneven and hilly terrains of up to 18 degrees without damaging motors. It can also double up as a service and surveillance robot through the QiQ platform. APM can clock a distance of 18KM with less than 10 min of charging time.

# Advanced Materials

# Nico Steel Holdings

<http://www.nicosteel.com>

Enterprise  
Singapore

Nico Steel Holdings Limited specialises in customising technologically game-changing metal alloys under its own proprietary “NICO” brand for the 5G mobile communications, aeronautics, consumer electronics, industrial and automotive sectors.

The Group’s manufacturing facilities are located in Suzhou, China and Thailand, whilst the Singapore headquarter acts as an R&D centre and corporate office.



## Solution Description

Specialises in developing material solutions for smart products, digital technology and electric vehicle.

- Provides customised metallurgical solutions to component and contract manufacturers.
- Cultivates demand from brand owners and clients for its NICO brand of specialised metal alloy materials that will meet the evolving and stringent requirements of new digital devices.
- Research, development & deployment of patented production technology

OIC: Si Qian



Singapore Asahi Chemical & Solder Industries Pte Ltd is a privately held company since 1977 with an established regional manufacturing hub based in Singapore, and manufacturing operations in Asia region of Malaysia, Indonesia and China.

Singapore Asahi research, design and produce solder and chemical products offering value add interconnect material engineered solutions, distinctively reliable and cost value efficient.

Singapore Asahi is strategically positioned more than ever as a vertically integrated manufacturer with initiatives to support trending and future technologies in interconnects solutions with continuous development and R&D, a hallmark of Singapore Asahi's commitment in producing quality and innovative solutions.

## Solution Description

Develops and manufactures patent-protected functional materials (copper and silver nanowires, etc.) to be printed on polymeric materials for use in automotive industry. Eg. touchscreens and flexible hybrid electronics

# Salus Nano

<https://salusnano.com/>



Founded in 2015, Salus Nanotechnologies produces customised coating solutions for cotton-based textiles which make them antimicrobial, odour-resistant, fast-drying, stain-resistant, and water repellent. The solutions are useful for cotton-based textiles used in healthcare, sports, for the elderly, as coating on accessories, leather, and on industrial surfaces.

## Solution Description

Anti-staining and easy cleaning coating on external surfaces of automotive for reduced maintenance



# Automotive



Smart parking app developed by Singapore-based startup Innovation of Thingz, SurePark partners with NUS Enterprise and Infocomm Development Authority of Singapore (IMDA) to deliver the solution

## Solution Description

Develops Smart Parking technology for public car parks that is able to identify available or occupied spaces before directing drivers to the right IoT. The SurePark management dashboard equips car park operators with useful analytics enabling them to make more effective management decisions.

It has the following features:

- Indoor Navigation
- Smart routing
- Parking timer
- Car-locator
- Voice search
- Reserve parking

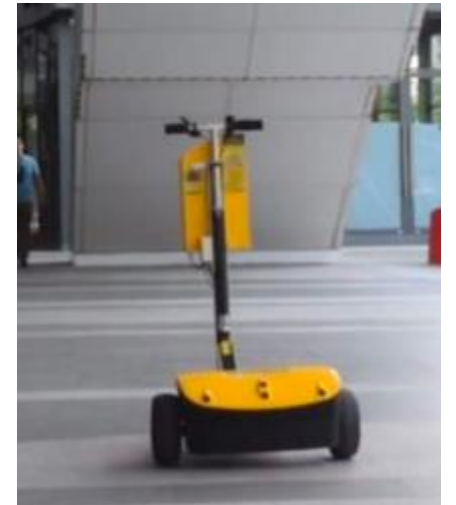


Scootbee is a startup spin-off from CtrlWorks. It has developed an autonomous e-scooter that has capability to execute mapping information and self-manoeuvre / self dock.

## Solution Description

Scootbee's autonomous e-scooter has the following features:

- on-demand availability via mobile app
- dockless
- economical price point
- efficient urban mobility achieved through higher per unit utilization through efficient distribution



# Vanda Electrics

<http://vandaelectrics.com/>



Develops electric transportation solutions to capitalize on the global shift towards electric mobility. Under the Vanda umbrella, a suite of electric mobility products and battery storage technologies will be made available to the market, with a focus on three key segments, Hyper Luxury, Consumer and Industrials.

Market Presence: UK, US and Asia

## Solution Description

Develops electric transportation solutions with a suite of electric mobility products and battery storage technologies. Key segments include Hyper Luxury, Consumer and Industrial



# Eurosports

<http://www.xjeralabs.com>

## EUROSPORTS

Eurosports Technologies is a subsidiary of listed motor group EuroSports Global. It aims to manufacture electric motorbike for the SEA region.

## Solution Description

Singapore startup that develops next generation electric motorcycles



# Industry 4.0

# iPLAST 4.0

<https://iplast40.com/>



iPlast 4.0 helps companies to implement Innovation Centres and Model Factory Cells (MFC) that are microcosms of Industry 4.0 concepts. To ensure successful adoption by clients, these implementations combine readiness check, consulting, training, hardware and software in the fields of Scientific Moulding, Smart Maintenance, Smart Automation and Smart Manufacturing. Company also provides basic consultancy services for existing facility upgrade and greenfield startup (factory design and layout, equipment selection, workflow optimisation, mould design standards, equipment and mould maintenance standards.)

Market Presence: Singapore, China, India, Taiwan, Malaysia

## Solution Description

Company provides the following range of Industry 4.0 services:

1. Creating awareness through i4.0 senior management development programme, driver licence programme, i4.0 readiness check and design digital transformation roadmap for companies
2. Implementation via Model Factory Cell (create advanced production cell as a testbed for newly deployed technologies and techniques), Business class (smart building and new machines), Innovation Centres (experience centres where machines are connected)
3. Knowledge Transfer:
  1. training programmes for both younger generations and the existing workforce on scientific moulding, scientific maintenance, smart automation, smart manufacturing.
  2. Technical Vocational Education and Training industry model: data are collected from various model factory cells implemented in actual production.

## M8M

Based in Singapore, M8M's core activity is to provide solutions and products used in Intra-logistics. Their key mission is to assist clients in transporting material efficiently via automation within their premises.

### Solution Description

1. Baggage Handling System
2. eCommerce Logistics System
3. Material Handling System (eg Order fulfilment system, oil drum handling system, pallet conveyor system, lifter safety door)
4. Mechanised carpark system
5. Solar energy monitoring system





# Pack Leader / System Integrators

# V3 Smart Technologies

<https://www.v3smarttech.com>

Enterprise  
Singapore



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V3 is a the leading innovative mobility solutions and technology provider in the region specializing in Fleet and Asset Tracking, Mobile Workforce Applications and Transport Optimization and Scheduling Applications and Intelligent Transport Systems.

Market Presence: Asia, and is currently expanding to other parts of the World including Europe, Brazil, Australia, India and Middle East.

## Solution Description

1. Transport Planning Application supports point-to-point, consolidation, distribution, or a combination of all three modes, to enable logistics transportation companies to control and manage the trucking and distribution operations via a mobile app.
2. Cloud Robotics technology that turns any type of vehicle into a robot by simply attaching a compact command unit onto the vehicle.



Fleet Management System

Division:  
ICM



Information and Communications Technology (ICT) and communications engineering service provider across Asia Pacific region.

## Solution Description

IntelliSURF is an agile, modular platform with an ecosystem of Smart City applications that enhances situational awareness and operational efficiency all through a single, intuitive dashboard of the future.

Developed Singapore's next-generation Electronic Road Pricing (ERP) System with island-wide coverage and distance-based fee



Global technology, defence and engineering group specialising in the aerospace, electronics, land systems and marine sectors. The Group employs about 22,000 people across offices in Asia, the Americas, Europe and the Middle East, serving customers in more than 100 countries. Its employees bring innovation and technology together to create smart engineering solutions for customers in the defence, government and commercial segments. With more than 500 smart city projects across 70 cities in its track record, the Group continues to help transform cities through its suite of Smart Mobility, Smart Security and Smart Environment solutions.

Market Presence: Brazil, Botswana, Canada, Chile, China, Hong Kong, India, Israel, Indonesia, Kazakhstan, Malaysia, Mauritius, New Zealand, Oman, Philippines, Saudi Arabia, Sri Lanka, Singapore, Sweden, Taiwan, Thailand, Turkey, Qatar, UAE, USA, UK, Vietnam

## Solution Description

CitySense is its integrated Smart City solutions suite aimed at addressing the mega-trend of mass urbanisation and targeting city planners. It addresses issues like addresses issues such as city congestion, lack of physical and cybersecurity, energy inefficiencies and utility wastages.

Latest developments include its Memorandum of Signing (MOU) with Keppel Urban Solutions to design and execute Smart City Masterplans in cities across Asia. The Group also signed a MOU with JTC to design, build and deploy customised Smart City solutions on an Open Digital Platform for Punggol Digital District, a 50-hectare District landmarked as a key element of Singapore's Smart Nation vision.



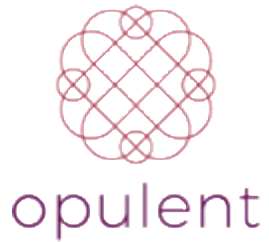
Aztech is a dynamic international group with key activities in Electronics Design & Manufacturing, LED Lighting, Materials Supply, Marine Logistics and Food Supply. Aztech has developed its complete line of 'Kyla' smart home products that are customisable and scalable to respective owners, in which they can choose to purchase add-ons anytime they would like to.

Market Presence: China, Germany, Hong Kong, Philippines, Singapore.

## Solution Description

AZ e-lite:

Provides Intelligent Smart Lighting Control System that has the ability to manage multiple buildings and sites concurrently. Applications include public housing blocks, multi-storey /open space car park lighting and walkway lighting. It also has an intelligent control gateway that communicates with all networked lighting and sensor devices and can be managed remotely using the Internet or mobile devices anytime and anywhere.



Founded in 2002, Opulent's core capabilities lie in design for manufacture (DFM) and research and development (R&D) in electronic engineering. Opulent has 536 employees worldwide.

R&D Centre: thermal design, optics design, mechanical design, industrial

Manufacturing capabilities: testing capabilities, comprehensive product traceability system (parts, product and resting & shipment traceability)

## Solution Description

- Smart carpark
- Smart lighting solutions – built lights for lampposts in Malaysia
- Smart warehouse solutions that utilizes LoRa to store and analyse data

# Others

# ActiV Technology

<http://activ.com.sg/>

Enterprise  
Singapore



Founded in 2006, ActiV Technology (Rev: NA; Emp: 400) provided enterprise IT solutions in Singapore before expanding downstream and upstream in the last decade to build extensive ICT and digital capabilities spanning from network infrastructure works to digital applications development.

Core strength: telecommunications services, providing end-to-end support from cable laying, fibre deployment, network monitoring and after sales support.

Market Presence: HK, Shanghai, Malaysia, ISA and Japan.

## Solution Description

Has a line of autonomous drones and smart surveillance products:

- **Energy efficient Smart Tower** that also functions like social beacon to provide reliable Internet access, alerts authorities of imminent threats and allows wide surveillance scope. Tower has sensors that detect local temperature, humidity, atmospheric pressure and CO2
- **O-R3**: Autonomous security drones with surveillance and facial recognition capabilities. It can be programmed to patrol specific route and alert security units should it detect anomaly.
- **Double**: Autonomous mobile conferencing drone that is fitted with a screen for video conferencing. It can be programmed to navigate through an office and set up multi-party conferences.



OIC: N.A.





Wei Long Electronics is a medium-sized Singapore company founded in 1998. They specialize in making electronic payment devices with a focus in electronic parking and displays.

Wei Long is an established market player in Singapore for cashless/electronic parking systems, armed with more than 10 years of technical expertise, with at least 60 employees. Their system is implemented in many shopping centres and other commercial outlets in Singapore.

## Solution Description

The company mainly specialises in contactless Smart Card and Readers for banking, ticketing and parking control, laser speed detector for vehicles, and LED product for traffic light and information display. Some products are as follows:

- Electronic Parking System
- Parking Guidance System
- Payment Kiosk



## PLUNIFY

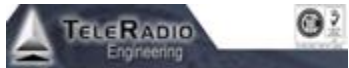
Plunify was started in 2009 by two passionate engineers with the sole purpose of optimizing chip design performance, starting with FPGA applications.

Market Presence: Singapore, China, Malaysia, Japan

## Solution Description

InTime is an expert software that optimizes FPGA design performance to enable shorter time-to-market, better design processes and predictable outcomes. It runs on top of major FPGA tools. It is the first commercial application of machine learning that enables chip design companies to significantly accelerate product time-to-market and reduce development costs.

Hardware and software developers can focus on delivering their FPGA-based applications without worrying about infrastructure and tools.



TeleRadio Engineering Pte Ltd is the leading developer and manufacturer of Under Vehicle Surveillance Systems. The UV™ series of under vehicle surveillance system UV™1, UV™2 and UV™3 are best noted for their high speed and precision undercarriage screening capability.

Main market presence Middle East

## Solution Description

Products: Vehicle License Plate Recognition, In Vehicle Surveillance System, Under Vehicle Surveillance System

Undercarriage images are no longer colourless with UV@Colour. The customized software at the receiving station supports an user friendly interface with zooming and other image control features. Additional features include Automatic Licence Plate Recognition and Driver Facial Capturing Camera to provide a comprehensive surveillance solution.





Technolite was founded in 1991, distributing many world's leading lighting brands from Italy, Germany, UK, USA, Canada, Australia, Korea and Japan. The company is well-established in the lighting industry today with a team of technical staff, working very closely with renowned manufacturers, architects, lighting designers as well as developers across the world to bring a new dimension in lighting experiences.

## Solution Description

Integrated Smart IoT Pole: By incorporating the i-Core technology, devices and communications equipment can be housed internally, thus eliminating unsightly fixtures outside the pole. This also has the additional benefit of not exposing critical surveillance devices and live electrical wires outside the pole.

## Case Study

Technolite is currently supported under Gov-PACT to co-develop a IoT lighting solution for Sentosa. The project will involve the trial of 2 Smart IOT Pole units to be deployed at Sentosa's Palawan Green area.

The system architecture includes:

- Light control and sensors
- Security camera
- People counting capabilities
- Noise detection monitoring
- Environmental sensors
- Communication networks





Oaxis is a consumer electronics company that is a subsidiary of Gajah International, an ESG SEEDS-invested Singaporean company. They specialise in two main products: wearables and e-ink display panels.

## Solution Description

Oaxis provides e-ink digital signage that can be updated and controlled from main server.

Use case: hospital patient queue number and displaying names of doctors, bus panels, schools.



**Enterprise  
Singapore**

# Thank You

[www.enterprisesg.gov.sg](http://www.enterprisesg.gov.sg)

