Combined Service Descriptions Parking Guidance and Parking Management Solutions

G-Cloud 15 LOT 3

About Us

M4 has a reputation for delivering highly accurate and reliable parking guidance solutions

The SenseIQ parking guidance management and wayfinding signage solutions are cost effective and highly flexible systems designed to handle complexity at scale.

The solution utilises state of the art magnetic resonance, laser and/or infrared and/or camera bay sensing technologies combined with the SenseIQ management system & flexible customised car park LED and backlit wayfinding signage. M4 uses a combination of these parking guidance system key components along with years of experience to deliver one of the best and most affordable parking guidance systems in the market, providing a high level of accuracy, extensive reporting, system flexibility and value for money.

We specialise in Parking Guidance System customisation and LED sign customisation for use in both indoor and outdoor applications for both car park and loading dock solutions.

The SenseIQ management system is able to automatically report any system fault to our maintenance team and issue scheduled e-mail based reports of car park occupancy and parking activity directly to car park managers or the M4 maintenance team to maximise reliable operation and accuracy.

GDPR & Cyber Assurance Certifications

Since the introduction of The General Data Protection Regulation (GDPR) (EU) M4 have grasped and implemented a responsive, dynamic approach to the handling of personal data to ensure compliance with the regulation and to have the ethos of the principles and rights at the core of our business operations.

For our full privacy policy, please see our website.

M4 are also accredited with;
Cyber Essentials Plus Certification
IASME Level 1.

“M4 can bring our experience in delivering processes to support Clients' adherence to GDPR and NCSC IT Security principles”

Parking Guidance and Parking Management Solutions

Our engineering and development teams offer significant ICT industry and parking industry experience. We create agile proprietary, technology solutions designed to solve parking challenges. These solutions provide a user-friendly parking experience, better management of facilities, industry leading at bay reservation systems and optimised resource management for car park operators

Service Features

- Leading parking guidance solution
- Superior wayfinding signage
- Fast installation with minimal facility disruption.
- Reduction of local traffic congestion and delivery of valuable data.
- Parking bay sensors: Infrared, LiDAR, Camera, Ultrasonic, Magnetic Resonance
- Highly accurate sensors integrated into one management system
- Management system covers a range of environments and preferences.
- Real time portal/dashboard status reporting of parking facility
- Area and passage count controllers for all scenarios
- Multiple options for accurate data capture of vehicle movements

Service Benefits

- Smart real-time data sent to dynamic wayfinding digital signage
- Bespoke wayfinding signage solutions: “any size, any message, any where”
- Signage content updates communicated cabled, WiFi, LoRa, 4G and 5G
- Function rich/infinitely configurable “SenseIQ”, cloud-based management system
- Highly resilient/scalable, Microsoft architecture (SQL, IIS, .NET, ASP)
- Online parking facility area or bay reservation capability
- Management system capable of facilitating permanent/visitor/employee parkers,
- Management system also allocates specialty bays including EV/DDA
- Extensive integration capabilities using various standards Modbus, XML/JSON API’s
- Seamless integration with access control, building management, business intelligence

Parking Guidance System (PGS) Overview

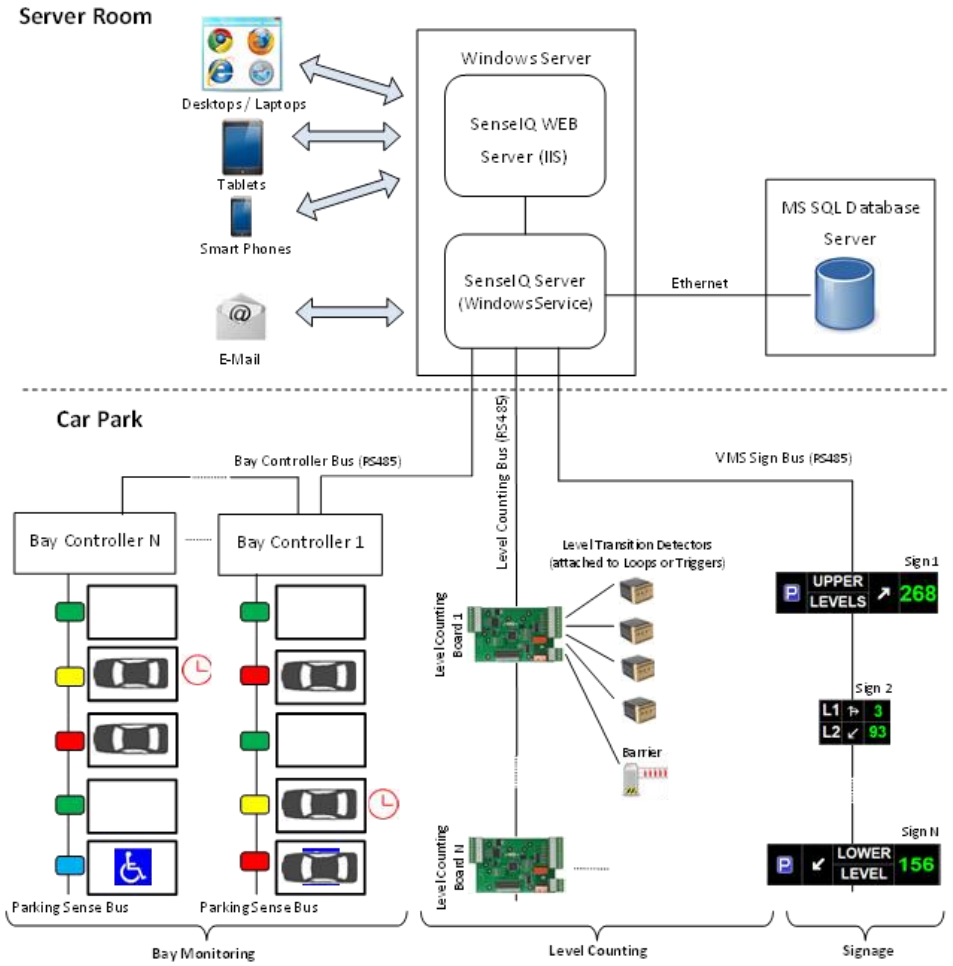
Overview

This overview is intended to give the reader a brief guide to the components that make up our Parking Guidance System (PGS). As shown in the Solution & Network diagram below, the core components of our Parking Guidance Solution (PGS) are:

- SenseIQ Management Server,
- Controllers & Bay Sensors / Indicators,
- Internal Wayfinding Signs, and
- External Wayfinding Signs,

The installation method & mounting system is also a critical component of the PGS solution.
Each of the above components is explained in more detail in the following sections.
Other components and options such as cloud based SenseIQ Sign Server and precinct signage plus APIs and point interfaces may become relevant technologies to clients and as required can be incorporated easily to meet new site requirements.

Solution & Network Overview Diagram



SenseIQ Management System

The SenseIQ Management System has been built from the ground up, by a highly skilled and experienced development team and has evolved considerably over the last several years.

The development team is continuously working on new features and functionality and integrates each project back into the master code branch following automated regression testing with deployment on a weekly or fortnightly basis using a well establish CI/CD tool chain; hence, SenseIQ is continually evolving in a safe, modern and efficient manner.

The SenseIQ management system is built upon the Microsoft stack thus .NET and SQL database technologies are core components and mature technologies with significant capability to handle high transaction volumes at scale. For this reason, we can say that there are no limitations on the number of car park facilities, sensors / indicators, count points or signs that we can configure within the management system. System configurations are saved and can be updated as required allowing expansion and change management with relative ease. For example; new sensors / indicators can be easily added and configured on the management system under existing or new areas. Likewise, bay categories can be changed easily for example from 'casual' to 'parents with pram' bays. This aspect will have particular relevance to many shopping centre operators, providing the flexibility to change bay categories over time.

SenseIQ Management System cont.

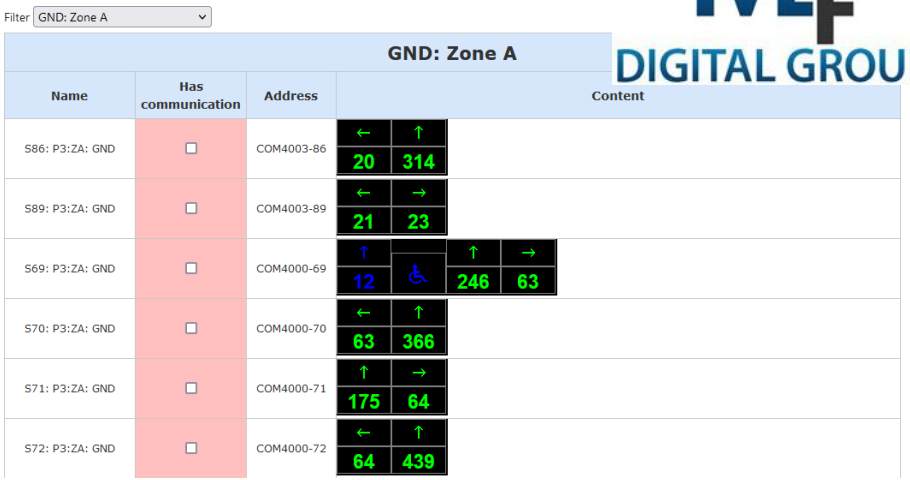
The SenseIQ management system can and has been virtualised. Typically, a virtualised server will be 4 vCPU, 8 GB RAM and sufficient storage to suit requirements but generally a 200 GB hard drive will be provisioned which will be more than sufficient. SenseIQ will store historical system data for a configurable number of days, this can be defined by the end client (the more days required the more storage capacity required). Historical data can be kept for extremely long periods (>10 years), database projections and requirements can be calculated using the formula below.

*Database size after N years = Nyears * 365d * 300bytes * (daily number of arrivals)
*Example for 5 years and 20,000 daily arrivals:
*Database size after 5 years = 5 * 365 * 300 * 20,000 = 10GByte (System HDD = 200GB)

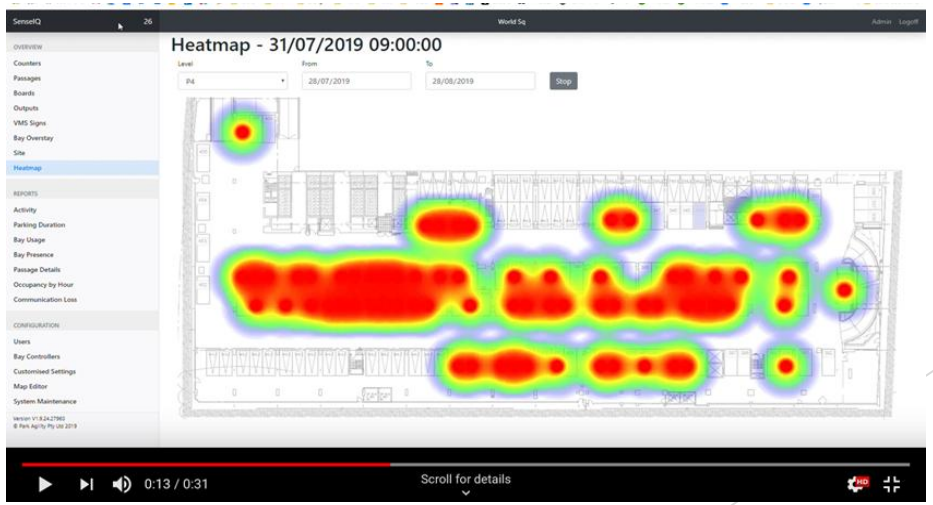
SenseIQ has a web-based user interface which enables remote access for authorised users via any internet capable device, no special software is required. Authorisation is verified by username & password. The Graphic User Interfaces (GUIs) has been designed to be simple to use and allow quick evaluation of the status of parking bays within the car park or a specific car park level.]

The key focus for our developers has been to ensure that the parking bay transactional data (occupancy / vacancy) is captured in real time, very efficiently. Our system's performance is second to none and it is possible to see real time displays of sign read outs on the SenseIQ system from your mobile device that match the display on the actual sign in the car park.

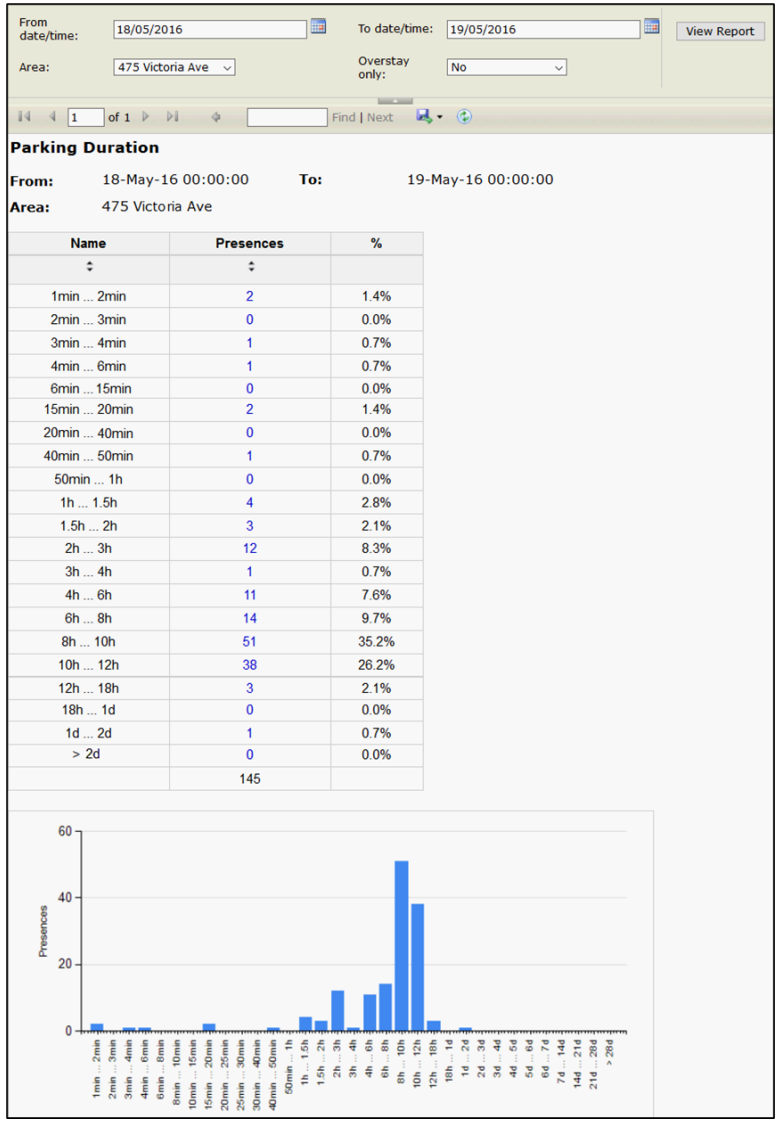
example screen shots below



The same applies to our state map and heat map capabilities where the state map on our system will display status change within 10 seconds of a live bay status change within the car park. Our heat map capabilities can also be used to go back in time and review the status change of occupation levels in a car park over days, weeks and months or even display for specific day of week and time ranges to visually see and analyse occupation trends. The two screen shots below demonstrate visually the occupation levels of the same car park at different times of the same day in history



API capability to push data in various formats as required including xml and Json formats. Several customers currently push data through the API to their preferred Business Intelligence/Reporting tool for example: Tableau.



Name	Presences	%
1min ... 2min	2	1.4%
2min ... 3min	0	0.0%
3min ... 4min	1	0.7%
4min ... 6min	1	0.7%
6min ... 15min	0	0.0%
15min ... 20min	2	1.4%
20min ... 40min	0	0.0%
40min ... 50min	1	0.7%
50min ... 1h	0	0.0%
1h ... 1.5h	4	2.8%
1.5h ... 2h	3	2.1%
2h ... 3h	12	8.3%
3h ... 4h	1	0.7%
4h ... 6h	11	7.6%
6h ... 8h	14	9.7%
8h ... 10h	51	35.2%
10h ... 12h	38	26.2%
12h ... 18h	3	2.1%
18h ... 1d	0	0.0%
1d ... 2d	1	0.7%
> 2d	0	0.0%
	145	

SenseIQ Management System cont.

The core functions of the SenseIQ Management system include:

- Data collection from bay sensors and count points with MS SQL Server database.
- Real time analysis of area, bays, sign group statuses and update of VMS signs.
- Reporting of movement and occupancy history down to single bay level.
- Web based user interface. Access by means of standard WEB browsers (including tablets and Smart phones) allowing a user to review status of levels, areas, signs and more.
- Web based reporting including export to XML, CSV, PDF, EXCEL and Word.
- User management.
- Fully configurable car park layout with unlimited number of nested levels, areas or zones.
- Real-time control of an unlimited number of VMS signs (text to be displayed can be based on freely configurable conditions).
- Manual VMS sign text override or adjustment of counter values by level.
- Optional automatic occupancy reset at a configurable time (configurable by level).
- E-Mail interface for system statistical / analysis reports and/or service reports (for example system component failure).

There is no ongoing software licensing cost. remove Software Licensing is provided as a once-off cost. However, there is a software maintenance and support component that is charged at a "per bay, per month" rate which in addition to remote software support and configuration management, entitles the customer to software updates and upgrades also enabling customers to access our software team for one-on-one support in accordance with the M4 software terms and conditions. Maintenance and support ensures the superb accuracy and reliability of your PGS.

Bay Sensor / Indicator System

We focus on delivery of individual bay sensors and indicator lights for a superior parking guidance experience for the end customer and greater accuracy of overall solution. Our core individual bay sensors use either laser or infrared technologies, which are highly reliable, stable and steady state technology platforms which when combined with our implementation methodology deliver a highly reliable solution for detecting the occupation status of car parking bays.

Individual parking bay monitoring using infrared technology is achieved with the use of a surface mounted infrared transmitter on the car park floor surface and an overhead infrared receiver integrated into the LED bay indicator lamps suspended overhead. This method uses two devices to establish a 'line of sight' between infrared transmitter and sensor. The transmitter sends a specific pulse signature with a pulse every six (6) seconds that lasts for only 20 milliseconds. As transmitted pulses are constantly received at the Sensor (10 per minute), for an unoccupied or available parking bay, the associated indicator light status will continue showing green (or alternate colours as applicable e.g. blue, amber, pink etc). When the 'line of sight' is broken (pulse signal blocked and not received for two pulse cycles), then the parking bay is deemed to be in an occupied state, and the indicator light will show red.

Individual parking bay monitoring using laser technology whilst slightly more expensive, combines the transmitter and receiver in a single overhead mounted device that is also integrated with the indicator lamps. The laser-based technology provides a constantly emitted laser beam also in the infrared spectrum so invisible to the human eye. The Time of Flight (ToF) of the returned laser signal is constantly measured and used to accurately determine distance. Calculations involving the distance differences between occupied and unoccupied bays allows high solution accuracy.

Bay Sensor / Indicator System cont.

The combination of our methods and technologies ensures greater than 99.9x% reliability and accuracy. The methods also guarantee that with M4 you will never see a 'Green' indicator light over an occupied parking bay; the most frustrating PGS error experienced. This error occurs frequently with various other parking guidance technology' where vehicle detection relies upon less reliable technologies and reflective methods e.g. ultrasonic and camera solutions under poor lighting conditions.

The sensor / indicator infrastructure runs on the proprietary Parking Sense 24V Bus (Fig8) network which is connected to Zone Controllers, these controllers are then networked back to the central management system using RS485 bus technology.

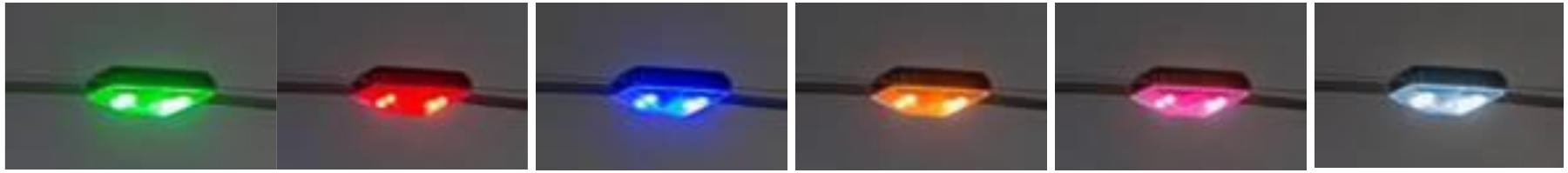
Bay indicators report their occupancy status back to the local communications control boxes (Zone Controllers) located around the carpark. These controllers supply both power and communications to the bay indicators via a single figure eight cable neatly fixed to the catenary mounting system. Each controller is capable of powering and communicating with a maximum of 100 sensors / indicators.

Zone Controllers use RS485 communications to report bay indicator status back to the central SenseIQ management system. The use of RS485 communications to the server, allows the controllers to be located anywhere within 1000m of the server location. Alternatively, controllers can be connected to existing Ethernet networks via RS485 to Ethernet converters where required.

When installed as per installation specifications the sensor solution runs at the highest possible level of accuracy (≥99.9%). There are no known conditions that compromise accuracy. Accuracy Level will be 99.9% or closest, with no error resulting from vehicle colour, vehicle shape or size, ambient lighting conditions or changing lighting conditions.

Bay Sensor / Indicator System cont.

We use individual bay sensors / indicators which are completely independent from one another (1 x Sensor / Indicator per bay), no other sensors / indicators are affected if a fault occurs in an individual Sensor / Indicator. This includes communication back to the management system (i.e. a faulty Sensor / Indicator cannot affect the communication with other Sensor / Indicator due to the specific design of the 24V (Fig8) Bus technology).



Individual Bay Sensors / Indicators will be installed in each bay. Indicators are viewable from 360 degrees and will be clearly visible under all lighting conditions from a distance of 50m plus along the aisle and also easily viewable from other aisles across the car park facility. The LED parking bay indicators will normally display a GREEN condition (Standard Parking Bay) when a space is available and a RED condition when the spaces are occupied; other colour indicator options are available; some typical examples are listed below.

Standard Bay :	Green = Available, Red = Occupied
Disabled Bay :	Blue = Available, Red = Occupied
Reserved Bay :	Amber = Available, Red = Occupied
Parents with Prams Bay:	Pink = Available, Red = Occupied
Overstay:	Changes to White on Overstay activation

Each 100 x Indicators / Sensors are polled constantly by their parent Zone Controller; therefore, if an occupied bay has just been polled before the car arrives it will be picked up by the system and sign updated in the next polling (<10 seconds). Alternatively, if a car occupies the bay just before the Indicator / Sensor is polled (say, one second) it will be picked up by the system in one second and sign updated in one second. Average update time is five to six seconds.
All indicators also have the ability to be programmed to show an “Overstay Status” where the bay indicator changes to White colour and an email can be sent to car park staff reporting the bay number and overstay.

Installation Method & Mounting System

We have designed a unique PGS installation method which, when coupled with the reliable RS485 communications network, ensures a faster and less disruptive installation over all others. The solution is aesthetically pleasing and ensures the parking customer has a quick and seamless parking experience.

The bay indicator system is a flexible, low-cost system that can be adapted to any undercover parking environment. Sensors are suspended by a stainless-steel catenary wire system fixed approximately every 6 to 7 meters, to either the ceiling, car park support pillars and in some situations both, depending on car park design. The flexibility and modular design make for a fast, low risk installation, causing minimal disruption to car park operation during installation.

Each individual bay sensor / indicator will be located at the front of the bay (Bay Entry Point), so they are easily visible to the parking customer & identify each individual parking bay. Single bay identification eliminates any confusion for the customer (1 x GREEN INDICATOR = 1 PARKING BAY).

Our PGS does not use uni-strut or metal channels. The installation method uses 2 x 3mm catenary wire which runs the length of the traffic aisle and is supported from the ceiling or from columns by stainless steel ceiling or column mount brackets and tensioned utilising the Gripple load rated catenary system. Gripple support & bracing systems are used extensively in electrical, mechanical & seismic bracing applications.

Installation Method & Mounting System cont.

Our low profile installation method enables flexibility to mount the indicators at optimum viewing position (around 2.4 m to 2.6 m height), the fact that the lights are mounted in such a way naturally attracts the parking customers eye focus to the LED bay indicator unlike many competitors where focus is often drawn to the bulky surrounding infrastructure such as uni-strut or metal channel held up by threaded rod.

With our system, each indicator is connected to a Bus cable (24V Fig8 cable) which connects back to a Zone Controller. The 24V Bus cable runs along the low-profile catenary wire and is protected and covered by a corrugated plastic conduit (normally "grey" in colour). All Fig8 Bus cabling is connected to each indicator / sensor via a purpose-built splice connector meaning that the 24V Bus cable does not need to be cut or stripped so the system has no bare power or data wires at the sensor connection point.

The PGS sensor network uses a combined power / communication 2 wire bus (24V) to communicate to a zone controller (concentrator). Up to 100 sensors per zone controller. The zone controllers then communicate by means of an RS485 network (2 wire bus that allows distances of up to 1000m without repeaters) to the "SenseIQ Management Server". The "Management Server" is a Windows based server which becomes the centralised hub or interface between the RS485 Dynamic sign network and the RS485 PGS controller network.

Uncovered / Outdoor Bay Sensing

The highly reliable and cost-effective parking bay sensor technology that we rely upon for the majority of our Parking Guidance Solution (PGS) applications in "covered" parking bays is the Infrared or Laser Sensors described above. However, these sensor are not designed for use in "uncovered" areas. To meet the additional requirements of outdoor sensing, we have designed and developed multiple control boards and integrated several alternative sensor technologies. In each case, developing our own firmware and backend software to ensure complete control and the sensitivity and configurability to ensure 99+% accuracy in capture of bay occupation and vehicle transit events given any circumstance or conditions.

Our offering, is well recognised, for the accuracy and reliability of our count point solutions and capabilities using various configurations of Magnetic Loop and Laser Beam based sensor technologies which have been deployed in multiple sites across the Country. For uncovered / outdoor individual bay applications, in the past we have integrated magnetic resonance sensors which rely upon wireless communication, achieving measurable accuracy of upto 99%. However, such solutions require significant wireless communications infrastructure and have been prone to frequency interference, with car parks often being particularly 'noisy' environments.

During early 2019, a key initiative of the Research & Development team was the design and development of a hard wired uncovered / outdoor, individual bay count solution, capable of achieving accuracy of greater than 99.5%. The solution that we have chosen, is a Laser device capable of accurately measuring distance based upon the Time of Flight (ToF) for the light signals' reflection off surfaces, both reference or other. This solution can be deployed as WiFi, LoRa or wired and can deployed in several configurations. These solutions become just another sensor and part of the RS485 PGS Network, delivering a highly reliable solution.

Integration & Counting Accuracy

It is one thing to source and have an accurate sensor, it is quite another to then establish the business rules and logic to accurately determine, in real time, bay occupation or vehicle transit events under different conditions and with multiple variables involved, including ambient light and pedestrian movement, our highly experienced development and electrical engineering team have been able to address these variables. As demanded by our reputation for control and accuracy, we has developed the control board, the firmware and the backend business logic to ensure count accuracy with the Laser based sensor technology. We have also developed the integration to the SenseIQ Management System to enable the seamless uncovered / outdoor bay level reporting and signage management that customers have come to expect from us. Our latest laser sensor solution, for individual uncovered / outdoor bays, has been deployed in a number of sites and has achieved excellent results. M4 is highly confident in this solution's capabilities for application in accurately sensing bay occupation in uncovered / outdoor parking bays.

Installation & Deployment

Our uncovered / outdoor sensor can be installed / deployed in a number of ways, the two most commonly used installation methods for individual uncovered / outdoor bay application are:

1. Heavy Duty Rubber Wheel-stop which houses the Laser device. Generally, Rooftop / Uncovered areas are directly above undercover parking areas where our undercover PGS is deployed therefore cabling and network infrastructure exists and a small hole can be drilled under each Wheel-stop, connecting the sensor to the RS485 Network Infrastructure. If there is no undercover area, we will cut a small saw cut line along the Wheel-stop line of bays inserting the cable (similar process to Sub-Surface Magnetic Loop cutting).

2. Another installation / deployment method where uncovered / outdoor bays are along a wall, is to mount the Lasers along the wall in front of the parking bays. Each Laser is housed in a purpose built weatherproof housing (See Fig 1 Below).

Fig 1: Outdoor Sensor

Directional Wayfinding Signage

Our signage refrain is: any size, any location, any message. Our LED Signage is fully dynamic with the ability to display bay availability numbers, directional arrows and any parking category icon as well as variable messaging, managed from the SenseIQ management system. Via Integrations, pre-programmed messages can also be event triggered from other systems such as a building management system.
We have the advantage of having developed our own sign control software and firmware. This provides us with incredible control and flexibility over the size and number of logical windows of content that can be displayed on a physical sign's LED array. Display windows can also be changed over time, both as an automated function (e.g. based upon time of day) or manually (e.g. car park closed for maintenance).
With our solution, sign content can be any icon, graphic or text and of multiple fonts or colours. Example signs with dynamic readouts are shown below.

Importantly, we have also developed the interface capabilities to take sign messages from all major access control providers in the market. This is a demonstrated capability especially evident in our Darling Harbour precinct signage solutions where SenseIQ interfaces with five (5) different access control systems. We are very confident that whichever ticketless access control equipment is selected, our solution will interface with it seamlessly.

Directional Wayfinding Signage cont.

We can deliver signs of any physical size and/or multiple sizes to suit any sites' specific requirements. It also guarantees our delivery of well-priced, high quality LED signage much faster than our competitors, many of whom import 100% of their signs and are constrained by supplier lead times and functionality.

We utilise fully flexible, LED array signage for all internal dynamic VMS signs. These signs will provide high visibility with clear and concise wayfinding information including: all images, icon's, arrows and bay availability information required. Message components will be visible and readable from a distance of at least 50 metres. It is important to note that with our overall system design, update times for dynamic signage is fast by comparison to others with updates ranging between 1 and 10 seconds with an average update time of 5 seconds. The customisation ability of the SenseIQ management system and flexibility of the LED signage makes it a leading solution in the parking guidance market with all solutions customised and supported by a highly experienced team.

Our Dynamic Signs run from a 5V switch mode power supply with 240V mains feed isolated at each sign, LED sign panels, controllers and any backlighting run via the same switch mode power supply. Data cabling to Dynamic Signage is supplied via RS485 (4 core cable). RS485 and can be daisy chained up to 1000 metres away from the server allowing signs to connect upstream directly to the SenseIQ management system which is in constant communication with every sign throughout the facility. Signs are available in a number of different sizes and versions to handle messaging requirements as well as indoor and outdoor requirements.

External Signage

We also provides reliable weather resistant sign panels and technology packages to install into external static signs. We partner with professional sign builders to provide a variety of arrangements from freestanding monolith signs through to custom counter lever and wall mounting signs.

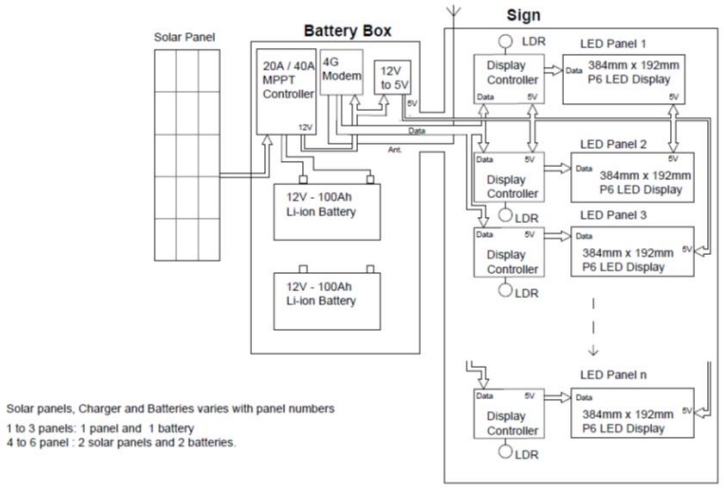
Precinct Signage

Remote precinct signage has been provided to a number of councils and shopping precincts displaying car park bay availability and general car park information. These signs communicate with the cloud-based sign server infrastructure providing "Live" car park information in remote locations.

Solar Powered Solution

In addition to mains powered signage, M4 is able to offer solar powered solutions.

While solar powered is a greener solution and seems convenient at first glance, several factors need to be considered when assessing the feasibility of solar. As one example, surrounding obstructions such as trees and buildings can limit power generation leading to early battery deterioration. The requirements of each solar powered sign need to be individually assessed and designed, taking into consideration the number of LED Panels and other technology for average power consumption plus the overall operating time required. In some cases, a solar powered solution will not be feasible or cost effective due to lack of available sunlight to support the power consumption requirements. However, where feasible, solar is a great option to consider and a solution of which M4 is highly supportive. The Solar powered solution uses a MPPT solar charger controller to maximise battery life and efficiency. To further increase efficiency we also use DC to DC voltage conversion (12v to 5V).



Count Point Technologies – Area or Zone Counting

We also provide area and zone counting as a critical competency. Area and zone counting often comes into play with parking guidance solution design as a great many parking facilities have at-grade or uncovered areas forming a significant percentage of overall parking bays that also need to be counted. These sensor solutions are often used in Loading dock monitoring requirements as well. We have established a substantial competency in this area, having designed and developed our own control boards, firmware and count software as well as having integrated several different technologies to handle specific 'count' requirements, including: PE beams, Laser and of course induction loops.
Sub-surface induction loops are perhaps the most widely used technology in the traffic management and parking industries for triggering counters and arming barrier gates and the like. That said they have generally had a 'bad rap' when used in at-grade area or zone counting applications. This is not due to any specific problems with the reliability of induction loops but rather the lack of understanding and sophistication across many of the solution implementations, with most problems coming down to either:

A) The size and layout of the loop vs the physical lane / aisle structure
B) The interface hardware that is connected to the loop detector; and/or
C) The software capabilities and sensitivity to calculate what has happened when the loop signals are detected / transmitted.

Loop technology can be extremely reliable, it is installed at every set of traffic lights detecting millions of vehicles across the country on a daily basis. A critical factor is that the sub-surface induction loop size and positioning design needs to be thought through from a physical and operational perspective as well as a technical perspective. We have loop-based Zone Counting sites that are handling over 10,000 movements a day with >99% accuracy, the main contributor to this is good design, reliable purpose-built hardware and software. Another very important factor is that we generally always use Bi-Directional loop configuration, this means that a dual carriageway will always have 4 loops designed with consideration given to size and position (A&B Entry & A&B Exit). We can demonstrate working sites at any point.

Count Point Technologies – Area or Zone Counting cont.

The associated hardware monitoring the loops must be well built and designed to do the actual job. This hardware does not come off the shelf. With the benefit of a highly experienced electronics engineering team, we have designed and build our own control boards specifically to handle these complex counting requirements.

The software must also be designed with sufficient logic and sensitivity to understand what has happened based on loop detection and timing of different loop detection sequences. M4 have designed and developed our own software solution for such applications. We have also integrated PE beam and Laser based count applications. Accuracy on the current induction loop & laser zone counting installations is measurable and demonstrable at greater than 99%. Finally, our control boards are fully integrated into the overall PGS / SenseIQ management system ensuring that count information form vehicle transits across our count points is communicated at sub second levels with LED sign updates also occurring within 1-2 seconds.

In outdoor parking areas where Zone Counting is not suitable and individual bay detection is required, we utilise either Laser (Light Ranging) or VMS Ground Sensors (Magnetic) to monitor individual outdoor parking bays. The engineering team has designed and developed a Laser based sensor which is fully integrated into our controllers and SenseIQ Management System and works reliably with high degrees of accuracy.

Quality Management Statement

M4 Digital Group Limited was established in 2013.

M4 values its customers, consultants and staff.

We strive to provide our customers with services which meet and in turn exceed their expectations.

We are committed to continuous improvement and have established a Quality Management System which provides a framework for measuring and improving our performance.

We have the following systems and procedures in place to support us in our aim of total customer satisfaction and continuous improvement throughout our business:

- Gathering and monitoring of customer feedback
- Selection and performance monitoring of consultants
- Training and development for our employees and consultants
- Audits of internal processes
- Performance appraisal of all employees

Although the Managing Director has ultimate responsibility for "quality delivery", all employees have a responsibility within their own areas of work to ensure that the ethos of "quality delivery" is adhered to at all times.

Environmental Policy Statement

M4 believe that businesses are responsible for achieving good environmental practice and operating in a sustainable manner.

We are therefore committed to reducing our environmental impact and continually improving our environmental performance as an integral and fundamental part of our business strategy and operating methods.

It is our priority to encourage our customers, suppliers and all business associates to do the same. Not only is this sound commercial sense for all; it is also a matter of delivering on our duty of care towards future generations.

Principles

- Wholly support and comply with or exceed the requirements of current environmental legislation and codes of practice
- Minimise our waste and reuse or recycle as much of it as possible
- Minimise energy and water usage in our offices, vehicles and processes in order to conserve supplies, and minimise our consumption of natural resources, especially where they are non-renewable
- As far as possible purchase products and services that do the least damage to the environment and encourage others to do the same
- Assess the environmental impact of any new processes or products we intend to introduce in advance

Social Value: Fighting Climate Change

At M4 we're committed to making a real difference in the fight against climate change. Our core offerings aren't just about optimising logistics and transportation – they're powerful tools for reducing carbon emissions and creating a more sustainable future.

Here's how we're leading the charge:

- Smart Traffic Flow Management: Our innovative solutions help reduce congestion and idling times, leading to significant reductions in vehicle emissions.
- Driver Behaviour Optimisation: By promoting fuel-efficient driving practices, we empower drivers to minimise their environmental impact on the "last mile" of deliveries
- Data-Driven Sustainability Insights: We go beyond just tackling the problem – we provide actionable data that helps our partners track progress and refine their sustainability strategies

This isn't just marketing hype. We've invested heavily in research and authored insightful White Papers that explore the connection between our technology and measurable reductions in carbon footprint.

Social Value: Covid-19 Recovery

The global pandemic has fundamentally changed the way we work. M4 understands the challenges you face and is here to help your organisation navigate the path to a successful recovery. Here's how we support COVID-19 recovery efforts:

- Remote Working Enablement: We provide the technology and support (inclusive of employee wellbeing policies) needed for a secure and productive remote workforce. From cloud solutions to collaboration tools, we ensure seamless communication and efficient operations – no matter the location.
- Enhanced Cybersecurity: As the cyber threat landscape evolves, M4 strengthens your defences. We implement robust security protocols and offer ongoing monitoring to safeguard your data and systems in this increasingly digital world.
- Business Continuity Planning: M4 helps you develop a comprehensive business continuity plan to ensure your organisation can weather any future disruptions. We'll work with you to identify potential risks and create a plan for swift recovery.
- Digital Transformation Strategy: M4 can assess your current digital infrastructure and develop a strategic roadmap to optimise processes and workflows. This will not only help you recover but also position your organisation for future success in a digital-first environment.
- Our parking solutions support return to work behaviours by providing efficient management of scare resources and create increased user confidence by creating well managed, hygienic and safe working practices.

M4 is more than just a technology provider – we're your trusted partner in building resilience and achieving a stronger post-pandemic future.

Social Value: Tackling economic inequality

M4 is committed to fostering a more equitable digital landscape. We believe in the power of technology to empower individuals and communities, and we're taking action to tackle economic inequality through local hiring initiatives. Here's how we're making a difference:

- A Local Talent Pipeline: M4 prioritises hiring from the local communities we serve. This injects valuable skills and perspectives into our workforce, while also creating high-quality job opportunities for local residents.
- Upskilling & Development: We invest in our employees' growth by providing comprehensive training programmes. This equips individuals with the necessary digital skills to thrive in our industry, regardless of their background.
- Mentorship & Support: M4 fosters a supportive work environment, offering mentorship opportunities and career development programmes. This empowers local talent to reach their full potential and build successful careers in the tech sector.

By focusing on local hiring and skills development, M4 contributes to:

- Economic Growth: Investing in local talent strengthens the communities we operate in, creating a ripple effect that stimulates economic growth.
- Diversity & Inclusion: A diverse workforce fosters innovation and creativity. Local hiring broadens our talent pool and brings valuable new perspectives to the table.
- Building a Future-Ready Workforce: By upskilling our local workforce, we equip them with the tools they need to succeed in the ever-evolving digital economy.

Social Value: Equal Opportunities Statement

M4 is committed to providing equal opportunities for employees and team members, with us eliminating any potential discrimination from our internal/external working practices, as per our Equality, Diversity & Inclusion (EDI) Policy. The values of our policy are reflected in our inclusive recruitment processes (e.g., assessing technical and professional capabilities/competencies only, and using gender neutral language in our job descriptions), alongside the daily practice of providing a working environment where all members of the team are treated with dignity and respect..

This policy's purpose is to:

1. Provide equality, fairness, and respect for all in our employment or involved in our project teams, whether temporary, part-time or full-time.

2. Not unlawfully discriminate because of the Equality Act 2010 protected characteristics of:

- Age
- Disability
- Gender reassignment
- Marriage or civil partnership
- Pregnancy and maternity
- Race (including colour, nationality, and ethnic or national origin)
- Religion or belief
- Sex
- Sexual orientation

Social Value: Equal Opportunities Statement continued

3. Oppose and avoid all forms of unlawful discrimination. This includes in:

- Pay and benefits
- Terms and conditions of employment
- Dealing with grievances and discipline
- Dismissal
- Redundancy
- Leave for parents
- Requests for flexible working
- Selection for employment, promotion, training or other development opportunities

All members of staff are responsible for supporting the aims and spirit of the policy. Our approach to equal opportunities is disseminated to staff during their induction process upon joining the company and with refresher training conducted yearly. All training is monitored by the Company Directors, with training logged on our internal training matrix.

The success of our EDI Policy commitment as part of our recruitment process is monitored through anonymised surveys included at the end of our job application forms. This ensures we continue to advertise positions to a diverse range of candidates, including young people not in education, employment, or training (NEET).

Social Value: Wellbeing Statement

M4 work with staff and team members to integrate health and wellbeing into day-to-day activities, which enable us to create a positive and healthy working environment. This is achieved through wellbeing initiatives, employee support mechanisms, joint working with staff and their representatives, and our local partners to identify and address areas for improvement.

We will work with employees to ensure any issues which may impact negatively on staff health are identified and addressed. We guarantee that managers have the key skills, knowledge, and ability to support employees to improve their health and wellbeing (e.g., encouraging training to first aid and mental health first aid). We will also increase the awareness of our employees as to what is important in ensuring their own health and wellbeing (e.g., via NHS best practice, referrals to wider support/interventions nationally).

There are several effective policies and procedures already in place to support employee health and wellbeing, including our Mental Health and Wellbeing Strategy which outlines how we will strive to improve mental health within our organisation (e.g., flexible working, taking effective breaks, maintaining an open-door policy etc.). We will continue to regularly review these annually to ensure that they support this strategy effectively and constantly enhance/improve our focus on wellbeing. M4 also support wellbeing in the wider community through our charity work and commitment to corporate social responsibility. Supported schemes include:

- A team member undertaking the Jurassic Coast Challenge in aid of Breast Cancer Now, raising £1030.
- Sponsorship of Swansea Schools Rugby Union Under 15's.
- M4 has regularly entered a team to run the Royal Parks Half Marathon in aid of Pancreatic Cancer UK In 2023 we raised a total of £13,673

Slavery and Human Trafficking Statement

This statement is made pursuant to section 54 of the Modern Slavery Act 2015.

It constitutes M4 Digital Group Limited slavery and human trafficking statement.

Although we do not meet the requirements in the Act, we have chosen to voluntarily produce a 'slavery and human trafficking statement' to provide a level of assurance to our clients.

Our Organisation

Our permanent staff are directly employed and are not in any category which is generally seen to be vulnerable to modern slavery in this country, so our focus is to ensure there are policies and procedures in place for our consultants and suppliers.

What we are doing

Raising awareness of modern-day slavery both within our business and our supply chains is important to us.

- M4 is committed to continuously improving its practices to identify and eliminate any slavery and human trafficking in its business and supply chains, and to acting ethically and with integrity in all its business relationships.
- M4 uses a range of suppliers who supply goods, services and support our operations. When selecting suppliers, we assess the potential human rights risks of the supply chain by considering the country of origin where we are sourcing products and the type of labour that might be involved in the manufacture of those products.
- We know that identifying potential and actual cases requires upskilling colleagues and suppliers to understand the drivers of modern slavery as well as the possible indicators.
- We make available the Gov.UK guidance documentation relating to the Modern Slavery Act through our shared document drive.
- Over the course of the year we will continue to monitor our procedures to help us identify, prevent and mitigate any risks of modern slavery or human trafficking in relation to new and existing suppliers.