idox transport
an idox solution

Argonaut Strategic Command and Control

Commercial in Confidence

Second Floor, 1310 Waterside, Arlington Business Park, Theale, Reading, RG7 4SA **T** +44 (0)870 333 7101 **F** +44 (0)870 333 7131
E transport@idoxgroup.com www.transport.idoxgroup.com www.idoxgroup.com

Contents

Detailed Service Description

Strategy Manager

The Idox Transport Strategy Manager allows the Authority to effectively manage the transport and traffic network through complete automation, semi automation and manually. The strategy manager implements certain actions when a number of conditions or situations have been met. These conditions comprise a number of business objectives and processes and the subsequent actions relate to those mitigations, such as instructing Juno to adjust timings or changing algorithms as well as the usual actions such as setting VMS, alerting transport and traffic operators and maintainers by email or SMS. All responses are stored in the Database.

Adaptive Signal Control

Argonaut offers the opportunity to completely turn around the way traffic signal control happens currently in the market place. Essentially, the vision is to allow engineers a “platform” to enable the management and control of traffic using open protocols and open systems. The Juno platform, as part of Argonaut, allows algorithms to be written and uploaded, then downloaded as required and delivered to junctions in order to make the best decisions based on the most available information.

For example, if lower journey times along a critical link is the objective then the algorithm will utilise all available data to achieve this objective and will continually monitor the performance of the set criteria, “learning” how adjustments to the network can close in on the required objective. It may never achieve the objective but will optimise the network to get as close as possible to the desired solution.

Idox Transport’s vision for Juno is not to be constrained by the extremely localised data used by traditional systems. Instead, the solution is fully integrated with the vast array of different data sources available through the traffic management solution which is harnessed to inform the Juno system on a network wide basis.

Signal Priority

Vehicle or signal priority is an integral part of managing the competing demands of different vehicles across the network. Traditional systems typically involved supplier lock in solutions with radio communications between the vehicle and the signal and either local control or control via the traffic control system. Idox Transport’s vision is not merely focused on the narrow focus of public transport, but also takes in to account all types of vehicles. Taxis, Ambulances, Fire Tenders and even gritters all use the network and to varying degrees need some level of priority at signalised junctions. Because of these competing demands of normal vehicular flow versus it is important to manage decisions properly, get the decisions right and do what is best for the overall network.

A simple example of this which has been in place for a number of years in the public transport domain is using lateness to decide whether vehicles should get priority. It is worth remembering what happens when a vehicle requests priority. The traffic signal algorithm then decides to either cycle through the junction plan to very quickly reach the requested stage or extends the stage if it is already active. In signal circles this is known as “crashing the signals” and causes mayhem to the timings. Depending on the severity of the congestion, cycling the signals back to their previous “business as normal” condition can take more than 15 minutes. Clearly for busy city centre junctions with many buses using a junction over a very short period of time the benefits of priority are quickly cancelled out by the disruption caused on the network as a whole. This is the main reason that Idox Transport feels there is a better way to manage signal priority, using the whole network data and taking more subtle decisions at different points in the life cycle of a junction.

Strategic Control

Incident Management

An excellent source of data is local radio stations and other partner organisations who are constantly called with information regarding traffic conditions by members of the public. As standard, the Argonaut incident page is licensed for use by any Client staff. This option is to license the incident manager to third parties so that (local radio stations, districts, etc.) can add incidents and view all other reported incidents. These may be approved or disapproved by an 'Operator in the Loop'. These incidents will then be visible to all Argonaut users and Voyager. Strategies may also be triggered within Argonaut's Strategy manager. When an event occurs that meets these criteria, the Operator user is sent an email as shown below. This notifies the user of the issue BUT also allows them to click on a link to automatically create and incident from that issue.

Incident Management; Police Adaptor

Since the Police are often the first to the scene of an incident many Authorities would like them to have the ability to input incidents, road closures etc. directly into the system in order to help the Traffic Managers to manage the traffic.

However, the Police are generally too busy with their own procedures to bother to notify the County about any incidents. In Dorset, UK and elsewhere, Idox Transport has overcome this by integrating the existing Police Incident Reporting system into Traffic Management system.

The Police IT Departments remove any data fields that are sensitive and not required for Traffic Management purposes. Upon receipt of a new incident from the feed Idox Transport populates the Traffic Management system and output this to Argonaut and Voyager. Any strategies configured to automatically change messages on roadside signs, traffic signal phasings, diversion routes etc. may also be implemented immediately. Upon receipt of an "incident cleared" message from the Police then the actions carried out are reversed and the incident is removed from the system.

Incident Management; Automatic Detection

In recent years exponential increases have occurred in the amount of data and information available to those charged with managing increasingly congested transport networks. This is particularly true in Bristol, UK where the Common Database may hold national agency speed and flow data, detector and link speed data, Police journey time data, real time bus movement data etc. However, these advances in data access present a new challenge to Network Managers who need to deliver benefits from these systems with increasingly reduced resources.

In response to this challenge, Idox Transport has developed an integrated, intelligent and automatic response to the Incident Management Process. At the most basic level, Incidents can be characterised by sudden changes in traffic speeds and/or flows.

Advanced techniques such as data mining, pattern matching and the use of Artificial Neural Network models. This enables the system to not only detect but also predict and actively respond to incidents in real time.

The Idox Transport automatic incident management system enables comprehensive use and analysis of all available data sources to provide an accurate picture of the network both historically, in real time and the future based on predictions. It is constantly evaluating and adapting to automatically detect and respond to incidents on the network. The product provides a user friendly and cost effective solution that helps manages the network and minimise overall congestion and delays.

Incident Management; Cameras

Idox Transport is able to link the incident data directly through the strategy manager and the closed circuit television control system. With this connections, when information is received from incidents, cameras can be commanded to point the camera directly towards the incident location. The key benefit of this feature is that incidents are automatically recorded through the control system supplied as part of the overall solution.

Winter Maintenance

A number of features are available as part of a wider set of modules to deal with the management of the highways specifically throughout the winter period.

Winter Maintenance; Gritters

Argonaut is able to have a mapping layer for viewing gritting routes and gritting vehicles in real time. An interface to any existing gritter tracking system may be implemented or Idox Transport's vehicle tracking solution can be implemented instead where gritters are unequipped.

Winter Maintenance; Passable Routes

A page may be made available to show in extreme weather if a road is passable. Initially, all roads are shown as being in an "unknown" state but as roads are cleared or better information becomes available individual road links (or pre-configured routes) can be quickly be shown as "impassable" or "passable" giving the public and hauliers a live view of the network at a time when demand for information is at a premium.

Pre-configure and save routes such as "A35 from Jct x to Jct y" that then can be set to one of the aforementioned route statuses. Any number of pre-configured routes may be set up and saved at any time. Users can also draw their own routes and highlight these as passable / impassable / unknown etc.

Team Working

Idox Transport offers a number of options around team working. The basic principles behind these modules is to enable closer cooperation between multiple parties.

Team Working; Inter Authority Data Sharing

Idox Transport is rolling out another first for the industry, namely Cross Boundary strategic control. The Idox Transport Cross Boundary Strategic Management Module provides the facility to enable control to be shared across multiple authorities. Thus, a fully manned web based Virtual Control Room can be implemented 24/7.

Team Working; White Board

The solution may provide a centralised task manager/ white board facility to enable multi users to log, assign, monitor and comment on traffic management based tasks. Any registered user of Argonaut can gain access to the white board facility. The screen below illustrates the level of information that can be searched and viewed from one screen and include: view tasks by priority, view task by person assigned, search on current tasks, search on historic tasks now closed & tasks by due date.

Team Working; Control Room Log

Idox Transport provides an addition to Argonaut that allows all user actions and those initiated by the Strategy Manager to be recorded in a “Control Room Log” feature. In addition users may manually add other events/incidents/actions taken as they see fit so that all control room activities are recorded in one non-erasable log. Easy to use drop down filters allow all events or sub-sets of events to be displayed. The Control Room Log includes all the features of the Idox Transport’s “Non Erasable Audit Trail” together with the manual entry of notable events and additional filters.

Team Working; Dashboard

Dashboard allows the user to configure a range of valuable data values in one place with descriptive text. The dashboard message can contain data from one or more tables allowing the user quick access to this data without having to access more than one link in Argonaut. Examples of dashboard settings:

- To show the current car park spaces and the current VMS message on the sign approaching the car park to ensure that the correct information is being delivered to drivers.
- To show all current travel times into the city centre and any major roadworks and incidents on those routes.
- To show all current travel times on important links and show the current plan for a set of traffic signals on that route.

Team Working; Document Manager

Using the Argonaut Document Manager a user can select any asset and choose to upload or download documents pertinent to it. Such documents can optionally be made available to the public via Voyager depending upon whether the user tags the document as public or private. The user has then chosen to view documents relevant to this roadwork. By selecting a document the user can download the document. Note that as Argonaut is web based the documents can be uploaded and downloaded by anyone (with appropriate user permissions) from anywhere at any time. The Argonaut Document Manager can be used for any asset at all including ANPR, CCTV, Traffic Signals and so on. It is also available via the optional mobile device version of Argonaut. Any type of document can be used with the Document Manager.

Speed Amelioration

In Swindon, UK, Idox Transport is linking up a number of different data sources to help reduce the instances of speeding within the urban environment. By linking with very accurate speed detectors, a vehicles velocity is measured and at the same time the number plate is read by a nearby camera. If the vehicle is not on a “white list” of vehicles permitted to exceed the limit (police, ambulance etc.) then Argonaut sends a command automatically to a signalised junction downstream from the detection point. This command automatically turns the signal to red for the speeding vehicle’s approach and the vehicle is stopped from initially speeding through the town centre. Options for setting lower and upper limits on this action is easily and simply configurable by the engineer as required by the local situation.

Crowd Management

The events management functions are an extension of Idox Transport's existing product. This includes a whole range of capabilities which extend well beyond standard traffic functions. The system was used extensively through the Dorset Olympics Sailing Event to manage car parks, crowd management of beaches and cliff tops as well as integration with the UK's Police Silver and Gold command processes used throughout the event.

Abnormal Loads

Idox Transport is able to help manage abnormal loads in a number of key areas. Engagement Idox Transport may provide a package to assist with point to point route plans for freight. We have delivered to Traffic Wales a freight specific portal which allows freight operators access to all information available on Voyager, but particularly focused on the needs of freight users. Features available to freight include: bespoke news and events, bespoke branding and community engagement, low bridge, narrow lanes, weight restrictions mapped & bespoke dashboard on journey times and disruptions on a per route basis.

Once a route is approved a freight user can then apply (or notify if no permission is required) to run a load along the approved route at a specific date and time. This would allow automatic generation of alerts, events, strategies and all other standard functionality within the system as a result of the planned load run. In addition, routes can be printed for the escort and load vehicles to have in their cab to aid navigation whilst on the route.

Data Management

Idox Transport's Argonaut strategic control system provides a highly flexible adaptor architecture for the specific purpose of integrating as many diverse external systems and data sources as simply and effortlessly as possible, without significant development time or overhead.

This has been achieved by implementing an adaptor architecture that is layered throughout the system. The system works by using core adaptor code that can be customised for each object type. End points are then developed and integrated in to the system to deal with the specific connection formats that different suppliers have. Below is a summary of some adaptors available, but is by no means exhaustive.

Argonaut can provide or receive information to/from one or more of these sub-Systems at the same time for strategic planning. It is possible to subscribe to more than one application for the same information. Operators may add, remove and edit the subscription of sub-systems.

Access Control

Idox Transport is able to interface and control highways systems which control access to traffic. These access control points include bridges, tunnels, railway crossings, bollards and other street furniture. As an example, Poole Borough Council part of their traffic management wanted to control their two bridges covering a large estuary. Idox Transport delivered this through a dedicated operator interface within the Argonaut system that only gives access to the functions of directly controlling the variable directional signing and the traffic signals.

Once the operations staff have entered the system they are presented with the main operational screen that would allow them to lift / lower bridge(s), investigate faults on the system and manually control the sequence of traffic signalling and signs, should the need arise. When one of the bridges needs to be lifted the bridge operator would click on the appropriate button to set the signals and signs to be set accordingly, for lifting either of the bridges or both.

Once all the settings have been performed the system will indicate that the traffic management steps are in place and the bridge is ready for lifting. The appropriate button the operator pressed would have its text replaced with 'Bridge 'x' Lowered'.

Air Quality

Idox Transport is able to deliver a solution for air quality monitoring in a number of key areas. With static monitoring, Idox Transport can integrate with any 3rd party monitoring system whether it is standards compliant or not. We can interface at the road side using our open platform out station unit (same platform we drive displays and signal control from), back at the in station either via a data feed from the 3rd party equipment or through a system to system interface. All options are possible through our simple adaptor architecture which dramatically speeds up and simplifies the integration with 3rd party systems.

Where With dynamic monitoring, where Pollution Monitors do not exist, Idox Transport can use its skills in deep integration to gain similar information from all of the information available in our data model. The algorithm uses all automatic number plate data, Bluetooth, adaptive control, detectors, automatic vehicle location and journey times information.

Using both the static and dynamic data in the model, the system is then able to estimate the likely pollution at every point within the network and allow engineers to base strategies, generate reports and send out alerts to the public. All of the parameters used for these calculations will be available to the engineer so they are able to adjust how much of each parameter is used when generating the overall picture. This feature is similar to how the journey times engine works when basing its journey time on data from ANPR, traffic signals and vehicle locations.

Car Parks

Idox Transport is able to interface directly with the Car Park detectors and signs with middleware also an option for integration with as required. Idox Transport provides a fully functional and feature rich Car Park Manager Module for Argonaut, which is fully configurable, based on the exact requirements of the customer. The Operator is able to view car park information graphically and in a tabular format. Functionality examples include: car park locations and status, current car park occupancies, absolute occupancy and maximum capacity per car parks, historic percentage occupancy of individual car parks by date/time of day and queuing after a defined point.

The car park manager can manage an almost unlimited number of car parks and forecasts are configurable by 5 minute intervals between current and 3 hours hence. The system is capable of displaying Occupancy messages which are all fully configurable.

Argonaut has a timetable which can be associated to one or more days of the week or which recognises day type entries. It is possible to specify one-off, continuous and recurring events by date and time.

Car Parks; Automatic Number Plate Recognition

ANPR is now being integrated in to car park payment systems using on site cameras integrated with ticket machines. Idox Transport is able to integrate with these ANPR cameras to get additional benefits over and above the standard car parking solutions.

Idox Transport will integrate cameras using industry standard protocol or other 3rd party interfaces as required. The system will store the configuration of each camera and associate it with an entrance or exit. Each car park is able to have as many entry and exit cameras as required for the physical installation. The vehicle registration mark (VRM) will be read from the camera in either a encrypted or hashed token or as the raw format. The VRM may be of any European, North American or Middle East denomination. With the new source of VRM data, Idox Transport is able to leverage this in three key areas: current occupancy, duration, guidance, origin and destination

Note, it makes no difference to Idox Transport if the car park is on street, off street, barrier controlled or any other type or configuration, our solution will work for all. In addition, partial reads and miss reads will also be stored and used to try and gain as much matching information as possible. All data from the site and the central system can be secured using at least 128bit encryption as required.

Closed Circuit Television

Idox Transport has successfully integrated Argonaut with a number of CCTV systems and has adopted a successful methodology for achieving this integration with manufacturers that have a wide variety of interfaces (either IP or serial) such as Traffic Wales and the Highways Agency's TIH network. Where the CCTV system does not have a defined open protocol we look to work closely in a partnering environment with all parties to agree an approach and implementation that would provide the most effective solution for the requirements of the users.

The Idox Transport solution incorporates a CCTV module that allows images to be captured at a variable rate that may be changed from 10 seconds to 5 minutes. In addition the system is configurable so that these images may either be transferred instantaneously to the Database, overwriting the previously stored image, if required, or stored for future reference and play back. This data transfer is achieved at a rate that maximises operational efficiency in the most economic manner possible.

The Argonaut system allows users to view current CCTV images captured from external systems via the map icons and the tabular entries. Before transmission to Argonaut, the contextual image is electronically stamped with the following information; date, time & camera location/node identifier (important for mobile CCTV).

Idox Transport may integrate MJPEG & MPEG4 IP based codecs with support for up to 4CIF resolution at 25 or 30 frames per second in to on line video streaming capabilities to enable real time viewing of CCTV pictures. This will give users a much clear idea on traffic flows and congestion than a simple still refreshed once in a while. Idox Transport are able to integrate with the existing codec system and stream still or video images.

Detectors

Individual counters will appear on the map display showing a spot speed for that location along with the current occupancy level as a measure of congestion traffic count, vehicle speed, congestion and other information. Data will be reported continuously without interruption other than the specified poll and data supply rates.

Journey Times Links

Journey Times Links are gathered from all data sources and fed in to our journey times engine (more on this later). It is this rich source of information which can help the real time adjustments of signal timings based on the chosen open algorithm.

Journey Times; ANPR

The ANPR adaptor takes in the raw number plate information from the cameras, processing this in real time and putting it the Journey Times Engine and database.

Journey Times; Bluetooth

Idox Transport is able to take the raw feed for each of the installed Bluetooth nodes. Using the raw feed, the Bluetooth MAC addresses (like a serial number) will be used to calculate speed and other derived data suitable for the detector data object. Since Idox Transport interfaces directly with the detectors, the Journey Times Engine is required. Argonaut provides convenient tools for the visualisation of the prevailing traffic flow conditions reported by the outstation(s) and is able to differentiate between static, very slow, slow, moderately free flowing and free flowing traffic and well as occupancy for each speed category.

Bluetooth differentiates between traffic that is static in a queue and traffic that is very slow moving but passing through a queue. Hence Bluetooth monitors traffic flow through heavily congested junctions and will show actual journey time even when other sensors just report a queue.

BlueTooth heads are easily installed and powered on existing infrastructure configured as either a standalone head or as an integral part of a group of outstations. A group of heads can represent a complete road, a particular section of road or multiple sections of different roads configured as a route. Groups typically include multiple complex junctions and their interconnecting road sections.

Journey Times; Automatic Vehicle Location

AVL or automatic vehicle location is fully integrated in to the Idox Transport system. Whether an ambulance, bus, gritter or yellow light vehicle is connected in to the system, we are able to take this data, together with key status information and integrate it in to our systems. We can achieve this in one of three distinct ways. 1) Idox Transport's on vehicle telematics solution. The Black Box 1000 is a bespoke designed, compact and fully integrated device, one box solution measuring a trifle 104 x 85 x 23mm (yes pocket sized). It has very low idle power consumption, virtually zero battery drain on a parked vehicle at less than 50uA. There is an inbuilt internal back-up battery with 5 hrs of live. The enclosure is rated to IP67 weather-proof, comes complete with 3 axis MEMS based accelerometer for driver behaviour reporting + motion detection. 2) Server Link – through the adaptor architecture enables us to integrate with any server based AVL feed. Be it ambulance control systems, fire pump management systems, SIRI vehicle centric feeds or even a direct link to Tom Tom, all of the data can be processed and used within the system in the same way as if our own Black Box 1000 was delivered. Please refer to Gritters section for more information.

Journey Times; Smart phone

Smartphone applications exist which include a journey data collection option by which users volunteer to contribute their GPS data for the purpose of contributing to journey times. Each record is anonymous and consists of a unique ID, latitude, longitude, course (heading), speed and GPS accuracy rating. Currently, data is captured every 4-5 miles and records are sent from user handsets upon connection to a Wi-Fi network (i.e. not live). Records are stored in the supplier's FTP server and may collected on an hourly basis by Argonaut. Records are provided in a .CSV format.

The data gives us a speed at a certain point as shown in the example below, so in essence, it is a snapshot in time and not a real time representation of the speed as generated by induction loops/ANPR cameras etc.

Journey Times; Engine

Idox Transport's unique Journey Times Engine calculates the road speeds for ALL roads within the network by breaking them down on a node by node basis. No operator defined parameters are required. The dynamic mapping engine then produces the maps based on these system wide values. The algorithm, will take the Journey Time relating to ANPR, SCOOT, detectors, Bluetooth, TIH, Historical Files and any other relevant feed including RTI bus AVL journey times and calculates the complete route journey time and average speed. All of this data can then be disseminated or used in the Strategy Manager.

Argonaut can provide or receive information to/from one or more of these sub-systems at the same time for strategic planning. It is possible to subscribe to more than one application for the same information. Operators may add, remove and edit the subscription of sub-systems. On Argonaut a user may draw on the map the corridors they would like to be monitored and the system will use whatever information it has available based on all of the data sources available or only the monitored quality corridors. Scripts are not required.

Each transport route creates a journey time and speed for each full route. The example above is of a corridor drawn in Dorset along the Olympic Route. This corridor amalgamates data from adaptive control, Real Time Bus information and automatic number plate recognition data.

Each route is made up of many links, these links are created from one node to the next on the route and the node data is from the GIS vector data for use in the existing Argonaut system. For each node to node link the current speed and journey time can be viewed in Argonaut.

Meteorological

Argonaut will provide an interface to multiple Ice Detection Systems so that the temperature and ice data is in the Argonaut database at all times. Using the Strategy Manager, Argonaut will be able to set the associated VMS with appropriate warning messages automatically. Data available from the Ice Detection System relating to Ice Incidents can be inserted, updated and expired in the common database. Argonaut will provide an interface to the Ice Detection system so that the following data is in the Argonaut database at all times: Ice warning predictions at different locations & Current temperatures at different locations. In addition, the following information may also be held in the Common Database if available: the status information for the detection equipment & fault information.

Streetworks

The Argonaut strategic control system will take an automatic feed from the existing Street works system so that we have a copy of all street works in our database. From there Idox Transport is able to automatically publish the street works to either the Voyager web outputs or to a page that looks/feels like your existing page; this requires no manual intervention. Since much of this data (i.e. for traffic jams in Cambridgeshire or skips on footways) could prove irrelevant to users in the Authority, Idox Transport's 'intelligent' filtering adaptor ensures that only the most significant roadworks in terms of influence on traffic flow are published. The icon is colour coded to show the severity of the effect on traffic speeds to allow quick and easy dissemination of information.

The configuration is created from the Idox Transport Roadworks Adaptor Configurator with easily understood drop down lists, radio selection buttons and other user friendly interfaces. Features of the filter include: Only show street works of a certain severity or allow the user to choose which street works he views, provide a calendar which defaults to "today", automatically start and stop roadworks in line with the planned start and end and many more.

Streetworks; Traffic Sensitive Routes

Highways Network Management may designate certain routes as 'traffic sensitive'. A Traffic Sensitive Street is one on which any work will create unacceptable delays and disruption at specified times. The Authority may impose working times and conditions on anyone working on the Highway, so as to direct and co-ordinate works effectively. These restrictions can be at certain times of the day, days of the week or days of the year. Using modern technology sensors such as automatic number plates, Bluetooth, buses, satellite navigation feeds etc. data Traffic Sensitive Streets maps can be generated automatically. Using the data from all available sensors (both live and historical data) maps can be built that will indicate Traffic Sensitive Streets with users being able to set the threshold at which a route is considered to be sensitive or not. Weekday peak time sensitive routes highlighted in red:

Having automatically generated Traffic Sensitive Streets based upon the live and historical data sources a user will be able to edit these as required, or create a completely new Traffic Sensitive Streets if there is a lack of sensor data for example to create the Traffic Sensitive Streets automatically.

Streetworks; Resurfacing Notices

The Idox Transport resurfacing notices solution brings together the outputs of the street works information available within Argonaut together with resurfacing information. This provides both the public and contractors with

visibility of notices, diversion routes and road works all in one unified and complete portal – Voyager. All notices currently deployed and planned are available on one screen, providing time savings when processing and planning work as Authorities and contractors are able to see any potential conflicts and make amendments online. Routes can be automatically imported from third party systems if the data describing the route is held in a suitable electronic format. Any number of routes can be shown simultaneously; colours and labels are configurable to the user's preference.

Streetworks; Road Closures & Diversion Routes

Users are able to create, name and draw a road closure. The user clicks on each road segment to build the closed road link. Any number of links can be added. If an incorrect link is chosen then it may be removed in isolation from the others and individual ESU may also be removed. The road closure will be coloured red by default but other colours can be chosen. Attributes can be assigned to each closure such as name, description, points of contact, notes, required sign inventory etc.

For a road closure, a user is able to create, name and draw a diversion route relative to a road closure. The user will click on each road link to build the diversion route. The diversion are coloured blue by default but other colours can be chosen. Attributes can be assigned to each diversion such as name, description, points of contact, notes, required sign inventory etc.

Streetworks; Road Space Booking Clash

There are occasions on which road space has been booked on routes which are pre-defined diversions any such clashes may be highlighted to an Argonaut operator. Users need to draw diversions for roadworks (where applicable) with the time periods for which the diversions are valid. When the notices come in Argonaut checks to see if any of the notices clash with a pre-defined diversion, equally, when a diversion is drawn, the system checks if there are any pre-booked notices for the period of diversion. In the event of a clash, an alarm is generated and presented to the user.

Streetworks; Inspectors Record and Fixed Penalty Notice Module

Inspectors may have the ability to record issues against individual streetworks sites, this may be to say that the signage is wrong, that it is poorly /wrongly located, that it has blown over etc. etc. Adding an Issue A 'Log an Issue' option may added in then Roadworks page to add an issue to particular set of roadworks. This will take the form of a drop down list of common issues and a free text box. The fields for time and date, northings and eastings etc. will be automatically populated. A facility is provided for the Inspector/Engineer to upload a photograph as part of their issue. Ability to process Fixed Penalty Notices Once an Inspector/ Engineer has recorded an issue then the inspector can record and print a Fixed Penalty Notice. This may use all of the data logged previously and also that drawn from Confirm.

Traffic Signals

Idox Transport has an adaptor to most adaptive control solutions and systems, including SCOOT & SCATS. Information regarding road speeds can be gathered using loops, other fixed traffic counters and Real Time systems. Idox Transport is highly experienced in taking in these disparate information feeds and integrating them in to a single location. In addition to extensive work on bus based AVL systems, we have experience in breaking down a road network in to different road segments and building up an accurate data model.

Argonaut will communicate at the frequency required with controlled traffic signal junctions, pedestrian crossings and others included within adaptive control as well as remote sites via the remote monitoring system in order to establish the status and current settings of those installations by way of transmissions using compliant data transfer formats.

Traffic Signals; Portable Signals

The portable signals module offers a means of allowing contractors, Local Authority staff and the public to submit Temporary Traffic Regulation Order applications on line electronically through the public facing website. This facility replaces existing paper/fax based processes to offer a much faster application/approval cycle with each application requiring less time to process and therefore also offers cost savings. Applications are submitted fully electronically online via Voyager using a simple wizard based process. All entered data is quality checked to ensure all mandatory fields are populated with valid data. Use of radio buttons and drop downs further improve data quality. The information is instantly emailed with new applications and can approve or reject simply by clicking links provided in the email.

Variable Message Signs

Idox Transport is able to supply an adaptor to link to the Variable message signs. When an icon is selected for a particular sign a display box for the associated sign is displayed showing the real time status of the display. Multiple displays can be selected and positioned to allow the operator to monitor the performance of the system. In addition the system will request the information from the sign and confirm it is the same data as in the database. In Argonaut, when selecting a VMS sign (or any other object) the bottom half of the screen is replaced with further detailed information. A mini-map is shown and scrolling further down the latest dynamic, commands, faults, configuration and other object related data is shown.

The Argonaut system may automatically determine the appropriate legends to display on any operator station, or free-text VMS based on the conditions defined in this document and command the VMS to display the appropriate information. A dynamic image library such as that depicted below is linked in to Argonaut and the user is able to test messages and legends before committing them to the system and or the sign.

Variable message signs may be set and unset on the Argonaut frontend using pre-determined or free text legends in accordance with agreed rules utilising data held in the Common Database or in accordance with operator input. The Argonaut system allows an operator permits an operator to schedule an override of status of the signs. Any override is reported in the daily log.

Idox Transport supports full matrix, text, overhead gantries, all types of car park guidance displays as well as mobile installations.