



Bandweaver



Integrated Monitoring Platform

 **axView**



Monitored | Secured | Safe



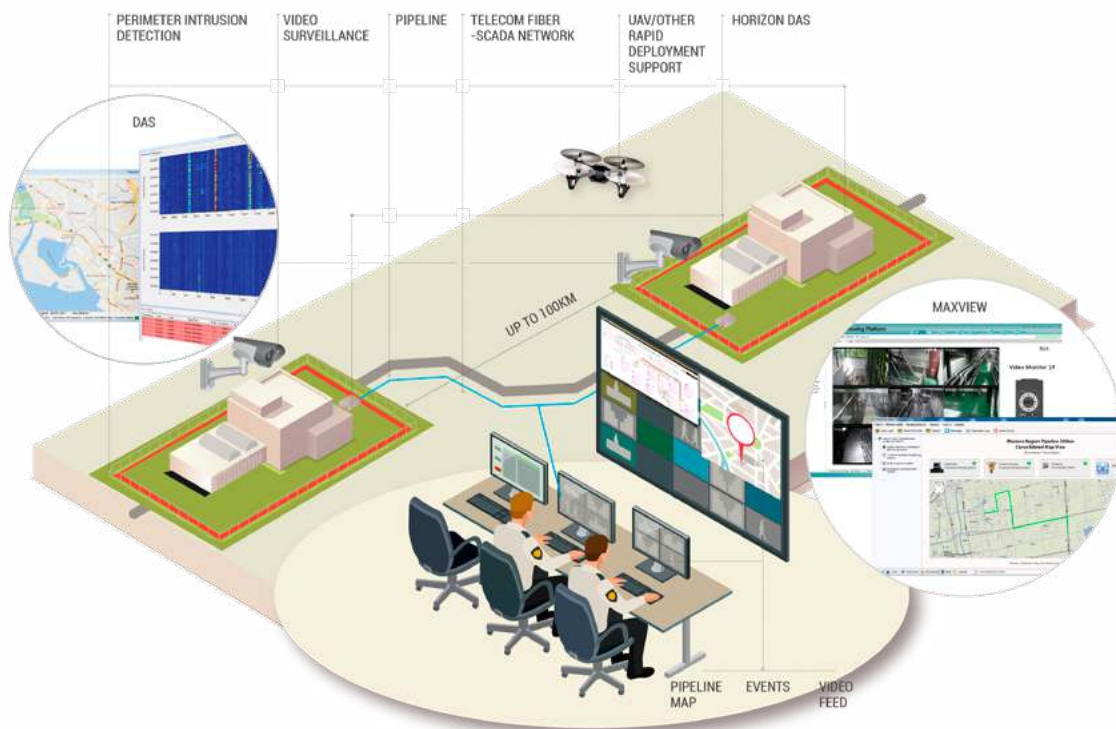
INTEGRATED MONITORING PLATFORM CUSTOMISED TO YOUR REQUIREMENTS

The MaxView integrated monitoring platform provides operators with a fully customisable system with advanced visualisation and analytics.

MaxView is a truly versatile solution and has been used in a wide range of industries including power utilities, structural health, processing, refining and pipeline monitoring.

As standard MaxView can interface with standard SCADA, DCS, CCTV, PSIM, VMS... protocols and also with a number of proprietary 3rd party systems.

MaxView is an ideal compliment for existing PSIM, VMS, building management systems, SCADA and DCS systems or can be a standalone system on it's own providing you with the information you need the way you want it.



INTELLIGENT INSIGHTS

Improved Efficiency

Advanced visualisation creates situational awareness at all points in your infrastructure at all times Quick response time so effective decision making can reduce risks and improve efficiency

Easy to Deploy

Low cost of ownership – easy to deploy within multi site organisation. Users can access through cloud with web browser interface. No software or hardware installation necessary.

Bespoke to clients needs and requirements

Higher engagement and improved decision making. Highly adaptable user interface. Operator can easily configure the GUI to their needs



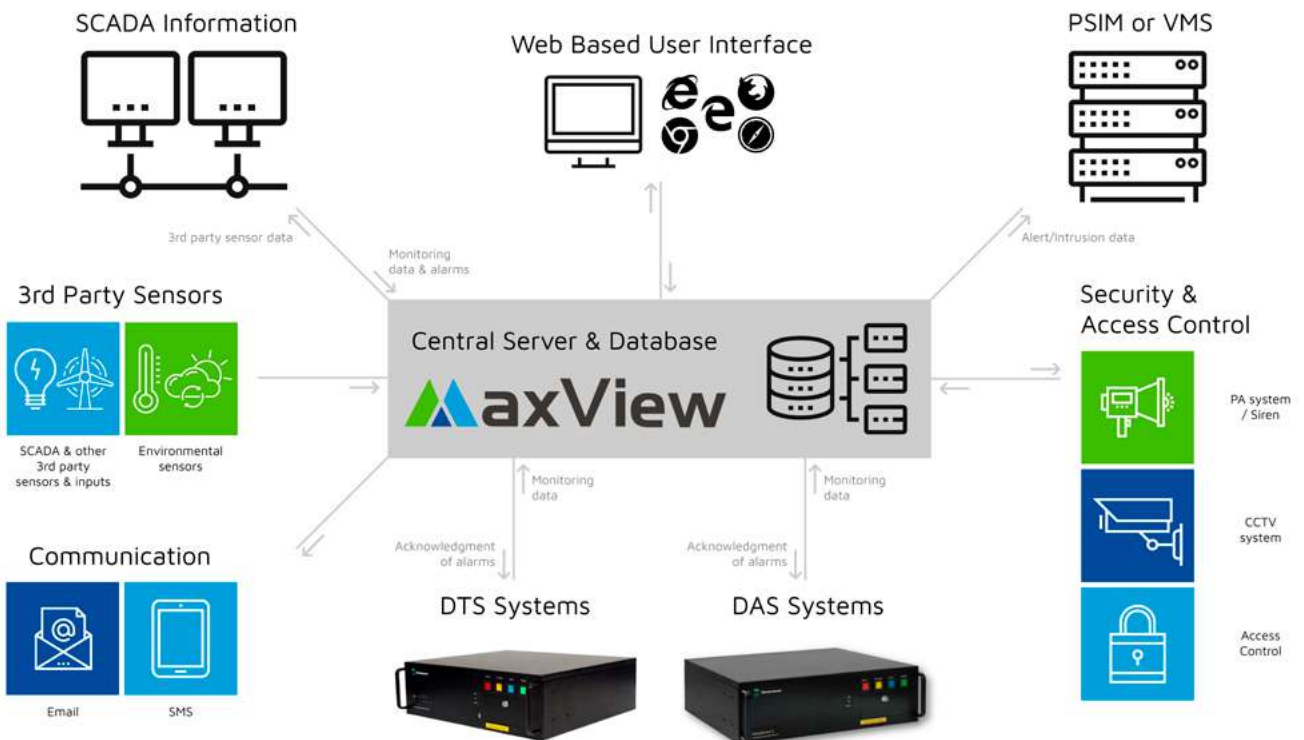
MAXIMUM FLEXIBILITY SUITS BOTH SMALL AND LARGE OPERATORS

MaxView can integrate multiple data feeds (analog, digital, distributed data....) from multiple sites into one centralised database. This can then be accessed by users across the network through a simple web browser interface. Thus minimising IT infrastructure and overheads.

MaxView's user configurable interface is extremely powerful and allows users to customise to their own requirements, which could include GIS maps, site schematics, P&ID diagrams, electrical network diagrams or 3D structural representations.

Typical MaxView user requirements include:

- > Operators with advanced visualisation requirements (e.g. control data, instrument feeds overlaid on a site schematic)
- > Users who have an existing PSIM/SCADA/DCS System but which is not able to effectively manage or visualise distributed data
- > Requirement to consolidate data across multiple sites into one coherent interface
- > Requirement for complex analysis and intelligent alarming of data which can then be utilised within the existing SCADA/DCS or PSIM, building management system



SMART MONITORING



MaxView: Smart

SMART INDUSTRIAL MONITORING SOLUTIONS

MaxView's versatile architecture allows it to be used across a number of different industrial monitoring solutions. With the ability to import multiple sensors and data streams, it can be an effective platform for integrating multiple systems and software packages.

Some of the applications include:



Smart Cities

Deployed in multiple metropolitan areas (e.g. digital utility tunnels) MaxView combines environmental monitoring, access control and security into a single user friendly interface



Railway

Incorporating Bandweaver's Horizon DAS, MaxView visualises the entire rail network with the ability to monitor rockfall, line intrusion, train location and rail/wheel condition monitoring



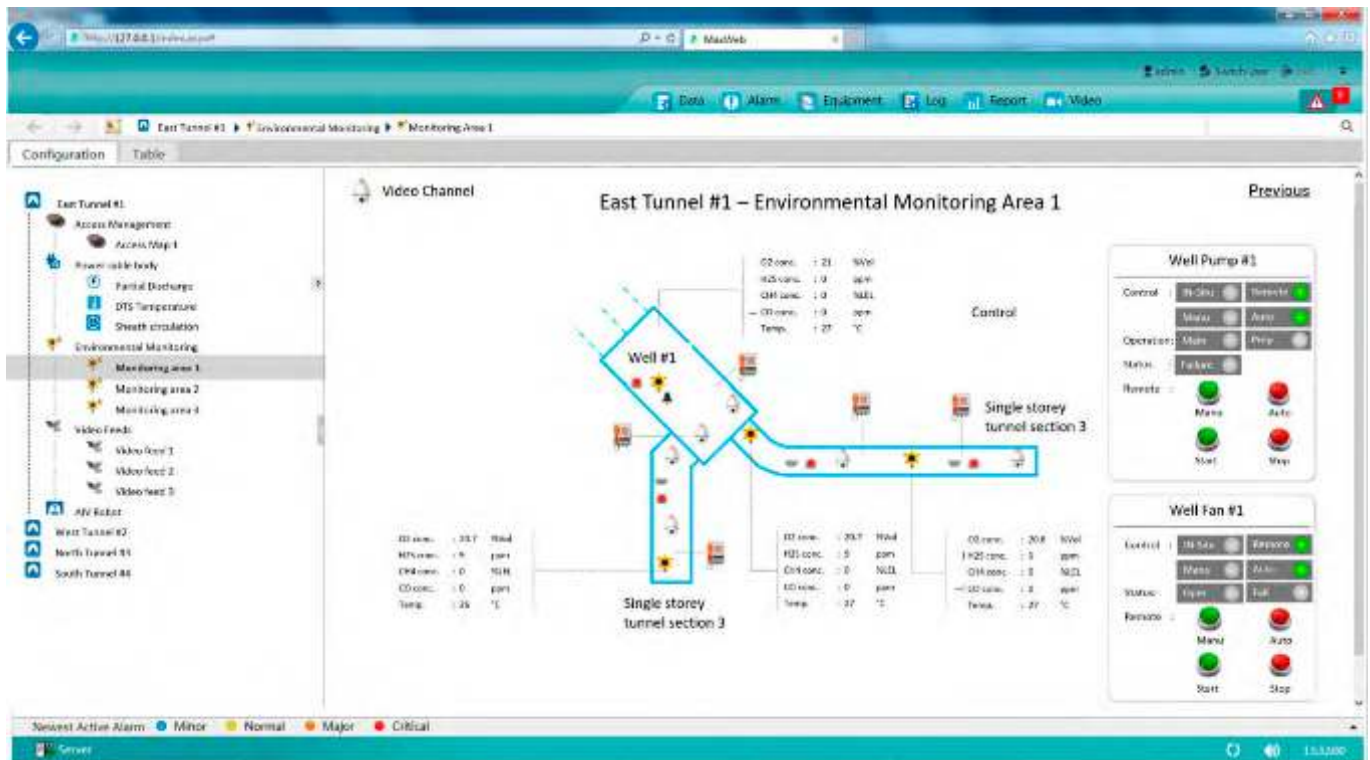
Conveyor belts

Incorporating both DTS and DAS solutions MaxView can combine both Fire detection functionality and condition monitoring into a single interface



Refinery and process plants

3D visualisation of plants to provide thermal profiles and condition monitoring of equipment and assets



POWER



MaxView: Power

INTELLIGENT CONDITION MONITORING

Bandweaver has worked together with customers and technology partners for more than 10 years to develop condition monitoring solutions for the intelligent grid which have mainly been based on Real Time Thermal Rating (RTTR) systems utilising DTS to achieve the temperature profile.

When used alongside a proactive maintenance approach, our state of the art sensing systems and intelligent software provide the operator with the right information at the right time to make decisions that help you to reduce planned and unplanned maintenance, to avoid catastrophic failure and to effectively manage your risk.

MaxView adds another dimension for integrating, managing and visualising RTTR solutions.

Some of the key benefits include:

- > Single centralised control point for monitoring all of the RTTR systems across the whole network
- > Multiple users can access from a desktop web browser (or mobile device) to quickly obtain critical data to make key decisions
- > Visualisation of cable route, with fully zoomable map which can clearly locate and identify any potential bottlenecks or areas of interest
- > Schematics or 3D modelling of specific areas of interest. Examples have included cable joints, gas insulated conductors
- > Integration with other 3rd party systems. For example this has included examples such as partial discharge monitoring, access control, environmental monitoring and tunnel CCTV

Browser: http://127.0.0.1/index.aspx

MaxWeb

Navigation: Data, Alarm, Equipment, Log, Report, Video

Configuration | Table

Subsea DAS cable Management

- Map and alert information
- Consolidated View
- Cable 1 - route
- Cable 2 - route
- Cable 3 - route

Partial discharge

- FD monitoring cable 1
- FD monitoring cable 2
- FD monitoring cable 3

Consolidated Map View

Consolidated Subsea cable Alarm Data

Index	Type	Level	Start Time	End Time	Zone	Alert type	Start Point	End Point	Start Zone	End Zone
1	Temp	Alert	2012/05/01 12:00	2012/05/01 12:00	1	TEMP	1000	1000	01	01
2	Temp	Alert	2012/05/01 12:00	2012/05/01 12:00	1	TEMP	1000	1000	01	01
3	Temp	Alert	2012/05/01 12:00	2012/05/01 12:00	1	TEMP	1000	1000	01	01
4	Temp	Alert	2012/05/01 12:00	2012/05/01 12:00	1	TEMP	1000	1000	01	01
5	Temp	Alert	2012/05/01 12:00	2012/05/01 12:00	1	TEMP	1000	1000	01	01
6	Temp	Alert	2012/05/01 12:00	2012/05/01 12:00	1	TEMP	1000	1000	01	01
7	Temp	Alert	2012/05/01 12:00	2012/05/01 12:00	1	TEMP	1000	1000	01	01

Navigation: Newest Active Alarm, Minor, Normal, Major, Critical

Browser: http://127.0.0.1/index.aspx

MaxWeb

Navigation: Data, Alarm, Equipment, Log, Report, Video

Configuration | Table

City West Sector- Distributed Temperature Monitoring of 220kV Line

West Sector #1

- Access Management
- Access Map 1
- Power cable body
- Partial Discharge
- DTS Temperature
- Sheath circulation
- RTR

Environmental Monitoring

- Monitoring area 1
- Monitoring area 2
- Monitoring area 3

Video Feeds

- Video feed 1
- Video feed 2
- Video feed 3

AIV Robot

- East Sector #2
- North Sector #3
- South Sector #4

Map View

Map Type

- Schematic < 10km
- GIS Map > 10km

Mouse hover over cable shows max temp of zone

Hover mouse over alarm location provides info on alarm

Zone information

Phase	Zone A	Joint bay 1	Road crossing no. 1	Joint bay 2
A	12.8°C	19.8°C	20.8°C	16.8°C
B	11.8°C	18.6°C	17.4°C	15.3°C
C	14.8°C	17.4°C	17.4°C	16.1°C

Zone temp states Tmax & Tpeak

RTR information

Load, Tcs, TCC, STPL

	Surface Temp	Cond Temp
A	23.4°C	42.5°C
B	25.0°C	45.0°C
C	23.4°C	44.5°C

Real time | 24H | 48H | 72H

DTS trace dependent on data feed Can be on separate page

Alarm Event Log

Time	DTS	Type	Channel	Zone	Position(s)	Value
18/11/2009 ...	0751	Max	1	1	1000.00	23.2
18/11/2009 ...	0751	Max	1	2	1000.00	18.2
18/11/2009 ...	0751	Max	1	3	1000.00	18.2
18/11/2009 ...	0751	Max	1	4	1000.00	18.2
18/11/2009 ...	0751	Max	1	5	1000.00	18.2
18/11/2009 ...	0751	Max	1	6	1000.00	18.2
18/11/2009 ...	0751	Max	1	7	1000.00	18.2
18/11/2009 ...	0751	Max	1	8	1000.00	18.2
18/11/2009 ...	0751	Max	1	9	1000.00	18.2
18/11/2009 ...	0751	Max	1	10	1000.00	18.2
18/11/2009 ...	0751	Max	1	11	1000.00	18.2
18/11/2009 ...	0751	Max	1	12	1000.00	18.2
18/11/2009 ...	0751	Max	1	13	1000.00	18.2
18/11/2009 ...	0751	Max	1	14	1000.00	18.2
18/11/2009 ...	0751	Max	1	15	1000.00	18.2
18/11/2009 ...	0751	Max	1	16	1000.00	18.2
18/11/2009 ...	0751	Max	1	17	1000.00	18.2
18/11/2009 ...	0751	Max	1	18	1000.00	18.2
18/11/2009 ...	0751	Max	1	19	1000.00	18.2
18/11/2009 ...	0751	Max	1	20	1000.00	18.2
18/11/2009 ...	0751	Max	1	21	1000.00	18.2
18/11/2009 ...	0751	Max	1	22	1000.00	18.2
18/11/2009 ...	0751	Max	1	23	1000.00	18.2
18/11/2009 ...	0751	Max	1	24	1000.00	18.2
18/11/2009 ...	0751	Max	1	25	1000.00	18.2
18/11/2009 ...	0751	Max	1	26	1000.00	18.2
18/11/2009 ...	0751	Max	1	27	1000.00	18.2
18/11/2009 ...	0751	Max	1	28	1000.00	18.2
18/11/2009 ...	0751	Max	1	29	1000.00	18.2
18/11/2009 ...	0751	Max	1	30	1000.00	18.2

Navigation: Server, 15:32:00

SECURITY



MaxView: Security

PERIMETER INTRUSION DETECTION

Perimeter Intrusion Detection Systems (PIDS) are systems used in an external environment to detect the presence of an intruder attempting to breach a perimeter.

Fiber optic technology is fast becoming the technology of choice for those looking for a reliable, accurate solution with minimal infrastructure requirements.

Bandweaver's fiber optic intrusion detection can detect both vehicle and person movement, enabling swift deployment of security teams to multiple incidents.

The fiber can be attached to a fence or buried underground, enabling the solution to be utilised for a wide range of applications. The system is fully scalable for small sites through to perimeters and borders greater than 100km.

From the MaxView software platform operators can quickly be alerted of a potential perimeter breach and track in real time the progress of any intruders.

With accurate real time location information indicated on the dynamic map view together with audio and visual alerts MaxView is the ideal solution to protect your asset, no matter what the size.

Multiple cameras can also be directly integrated into MaxView providing a secondary visual indication of a perimeter breach for ultimate operator confidence.

With the ability to seamlessly integrate to 3rd party software including PSIM, VMS, SMS, etc MaxView plays a key part in your centralised security monitoring software.

http://127.0.0.1/index.aspx# MaxWeb

admin Switch User Exit

Data Alarm Equipment Log Report Video

San Pacifica Airport Perimeter DAS sensing North Perimeter

Configuration Table

International Airport

- Map and alert information
 - Cable 1 - route
 - Cable 2 - route
 - Cable 3 - route
- Video Feeds
 - Video feed 1
 - Video feed 2
 - Video feed 3
 - Video feed 4
 - Video feed 5
 - Video feed 6
 - Video feed 7
 - Video feed 8
 - Video feed 9

Newest Active Alarm Minor Normal Major Critical

Server 13:32:00

http://127.0.0.1/index.aspx# MaxWeb

admin Switch User Exit

Data Alarm Equipment Log Report Video

East Tunnel #1 Video Feeds Video Feed 1

Configuration Table

East Tunnel #1

- Access Management
 - Access Map 1
- Power cable body
 - Partial Discharge
 - DTS Temperature
 - Sheath circulation
- Environmental Monitoring
 - Monitoring area 1
 - Monitoring area 2
 - Monitoring area 3
- Video Feeds
 - Video feed 1
 - Video feed 2
 - Video feed 3
- AIV Robot
- West Tunnel #2
- North Tunnel #3
- South Tunnel #4

Seq	Type	Level	Start Time	End Time	Path
1	M_Sig	Low	12/12/2019 12:04	12/12/2019 12:06	1
2	Veh	Med	12/12/2019 12:06	12/12/2019 12:09	1
3	Veh	High	14/12/2019 12:04	14/12/2019 12:06	1
4	M_Sig	Low	16/12/2019 11:02	16/12/2019 11:05	1
5	Veh	Med	16/12/2019 10:00	16/12/2019 10:00	1
6	Veh	High	20/12/2019 08:36	20/12/2019 08:37	1
7	M_Sig	Low	22/12/2019 07:36	22/12/2019 07:36	1

Previous

Rotation

Speed

Presets

Settings

Jump

Lens adjust

Focus

Zoom

Apert

Next

Newest Active Alarm Minor Normal Major Critical

Server 13:32:00

PIPELINE



MaxView: Pipeline

MONITORING AND TPI PREVENTION

To protect vital infrastructure that is particularly vulnerable to disruption, it is critical to keep assets such as pipelines secure. Whether the threats arise from accidental damage such as from 3rd party construction or deliberate interference, including terrorism, tapping or other malicious attack, there is a need to deploy a reliable and accurate solution.

Such solutions also aid the reduction of environmental pollution or maximisation of uptime through smart maintenance programs. Whether it is a remote long distance pipeline, an inner city pipe at risk of accidental damage or a process facility with condition monitoring requirements, Bandweaver's unique and versatile range of systems can help.

Our pipeline protection solutions includes both condition monitoring and leak detection systems based on Distributed Temperature Sensing (DTS) and Distributed Acoustic Sensing (DAS) systems, providing Third Party Interference (TPI) prevention.

MaxView can bring together both DTS and DAS and provide the following key benefits:

- › Consolidation of all of the different sections of cables along the pipeline route to provide one coherent map view. This has full zoom functionality and all events are shown on the map. Pinpointing to within 5m so that action can be taken in a timely manner
- › Integration of both DTS and DAS to provide both intruder based alarms and detection of leaks anywhere along the length of the pipeline
- › Integration with 3rd party SCADA and PSIM systems so that data can be exported in the format that provides maximum benefit to the user and rapid decisions can be made

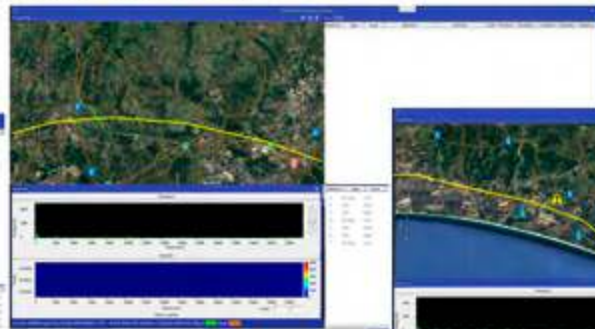
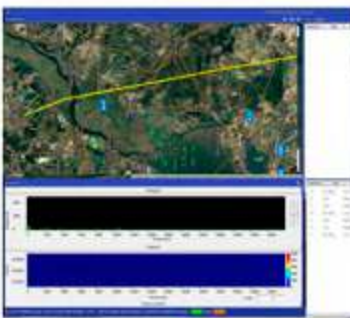
MaxView Software at Central Control Station

The screenshot displays the MaxView Software interface. On the left is a 'Root menu navigation' tree with categories like 'Asset Management', 'Asset Map 1', 'Asset Map 2', 'Asset Map 3', 'Asset Map 4', 'Asset Map 5', 'Asset Map 6', 'Asset Map 7', 'Asset Map 8', 'Asset Map 9', 'Asset Map 10', 'Asset Map 11', 'Asset Map 12', 'Asset Map 13', 'Asset Map 14', 'Asset Map 15', 'Asset Map 16', 'Asset Map 17', 'Asset Map 18', 'Asset Map 19', 'Asset Map 20'. The main area shows a 'Consolidated map view' of a geographic region with a yellow line and various markers. Below the map is an 'Alarm status screen' displaying 'Consolidated Pipeline Alarm Data' in a table.

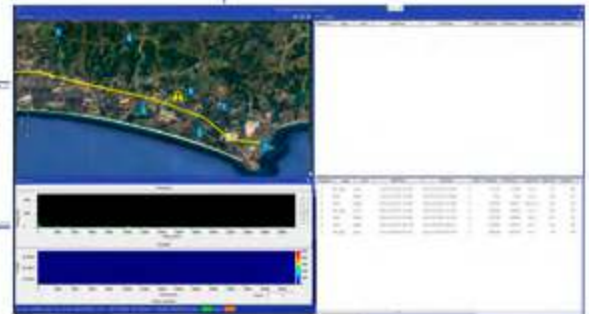
ID	Type	Asset	Start Time	End Time	Path	Start pos	End pos	Asset Name	Asset ID	Asset Type
1	High	Asset 1	2012/01/01 00:00	2012/01/01 00:00	1	1000	1000	Asset 1	1	High
2	High	Asset 2	2012/01/01 00:00	2012/01/01 00:00	2	1000	1000	Asset 2	2	High
3	High	Asset 3	2012/01/01 00:00	2012/01/01 00:00	3	1000	1000	Asset 3	3	High
4	High	Asset 4	2012/01/01 00:00	2012/01/01 00:00	4	1000	1000	Asset 4	4	High
5	High	Asset 5	2012/01/01 00:00	2012/01/01 00:00	5	1000	1000	Asset 5	5	High
6	High	Asset 6	2012/01/01 00:00	2012/01/01 00:00	6	1000	1000	Asset 6	6	High
7	High	Asset 7	2012/01/01 00:00	2012/01/01 00:00	7	1000	1000	Asset 7	7	High
8	High	Asset 8	2012/01/01 00:00	2012/01/01 00:00	8	1000	1000	Asset 8	8	High
9	High	Asset 9	2012/01/01 00:00	2012/01/01 00:00	9	1000	1000	Asset 9	9	High
10	High	Asset 10	2012/01/01 00:00	2012/01/01 00:00	10	1000	1000	Asset 10	10	High

Horizon DAS 2 Software

Horizon DAS 1 Software



Horizon DAS 3 Software





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