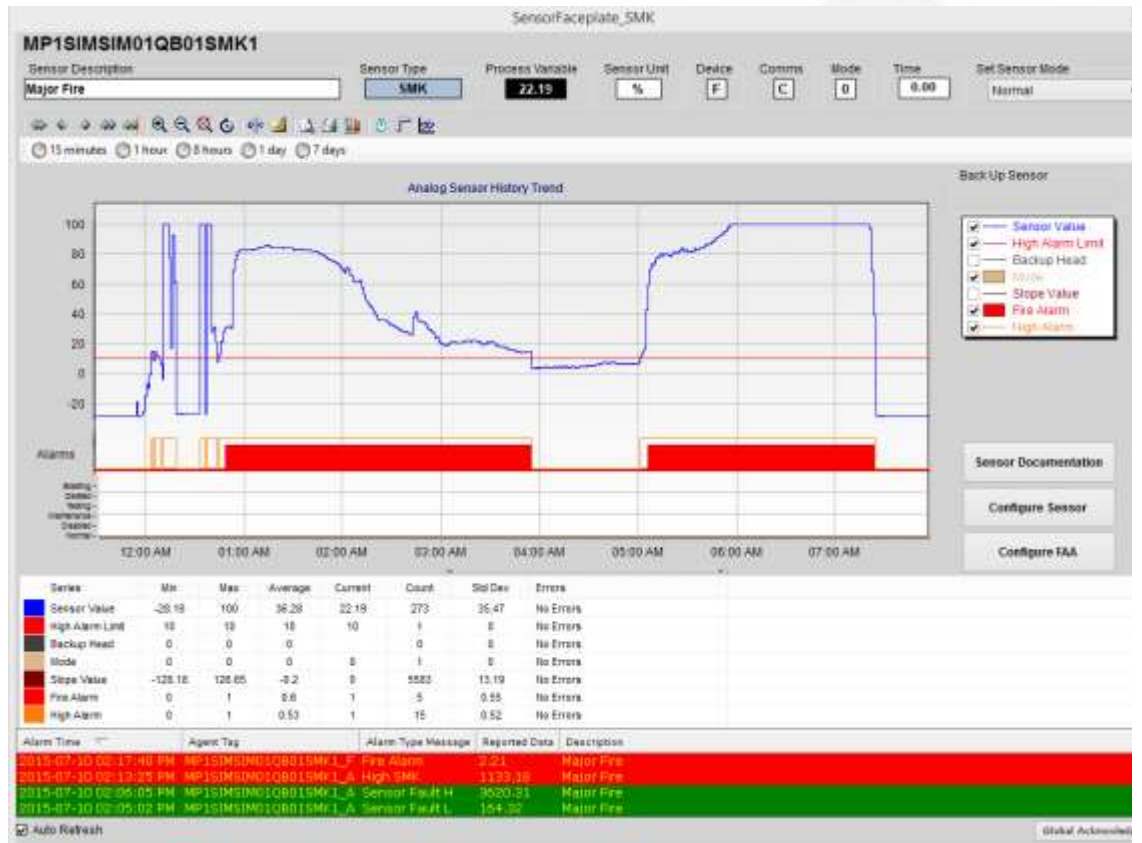


## Adroit Environmental Monitoring System

Another recent success story involving the Adroit product suite is the creation of an object-based framework for Environmental Monitoring. AEMS – Adroit Environmental Monitoring System – is a framework that integrates SCADA, Alarm Management & Reporting, and Data Warehousing Intelligence into a unified application designed for ease of configuration from a single user interface

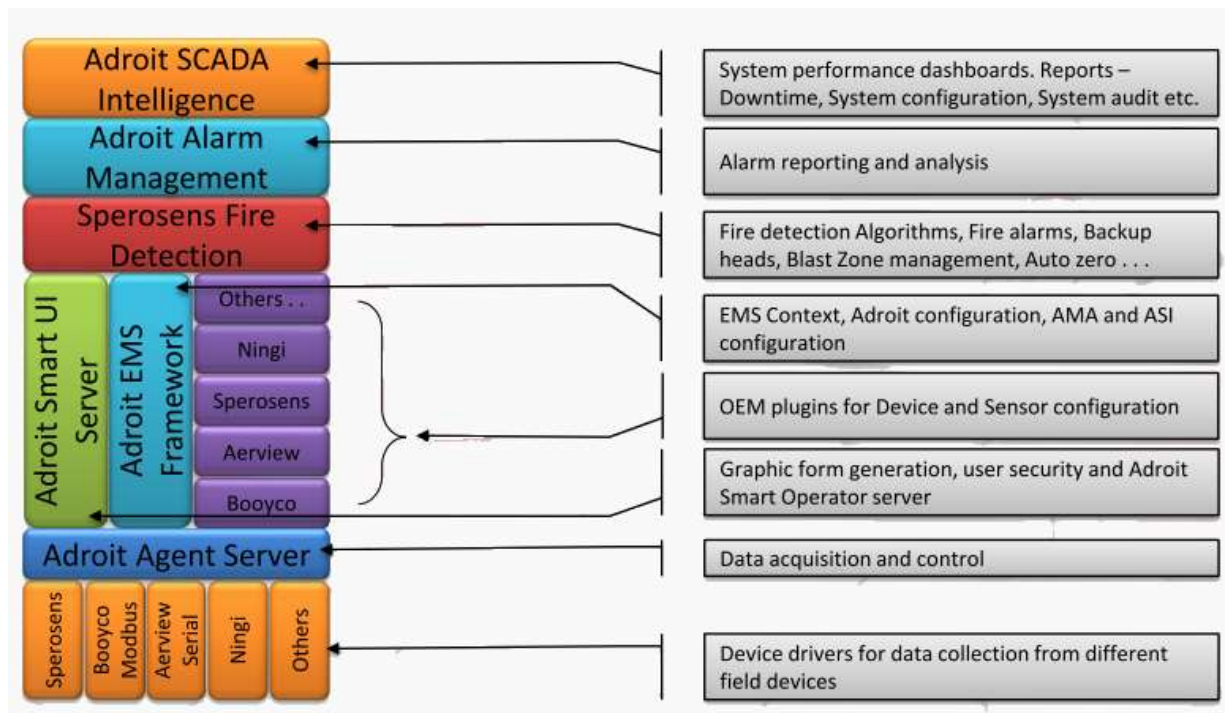


Instead of *tags*, users work with *sensors*. Different sensor interfaces can readily be included for overall management. This is ideal for OEM sensor manufacturers who are able to leverage the AEMS framework in a very beneficial and efficient manner.

Regardless of the sensor type, or sensor manufacturer, AEMS provides a common 'look and feel' for system users, and is designed to allow OEM suppliers and sensor manufacturers to implement their own 'plugins' which work within the framework.

AEMS is equally suited to large, static systems with lots of the same type of equipment as it is to dynamic systems with equipment from different manufacturers that is frequently added, relocated, or removed.

The diagram below shows how the various components stack up in the implementation of a Fire Detection system provided for a number of underground mining environments in South Africa



## Sensor Wizards and Faceplates in Adroit Smart UI

Each different sensor type has a standard Sensor Wizard and Sensor Faceplate that are used when graphic forms are automatically generated. Some sensor wizard instances are shown below...

Alarms Graphics Help System My Trends						
Major Fire	SMK	22.19	%	F	C	2
Stone Blasting Sim	SMK	-4.07	%	F	C	0
Below Threshold Fire Alarm	SMK	0.13	%	F	C	0

These are created using standard features of the Adroit Smart UI, meaning that they can easily be adapted to varying end-user requirements. All status information and process variable values pertaining to a given sensor are depicted on the sensor wizard, which also includes navigation to the Sensor Faceplate and Device Faceplate of the device the sensor is connected to.

The Sensor Faceplate, shown on the main diagram on page 1, includes:

- Real time trends with data summary
- Sensor status information
- Sensor alarm list

Users are able to configure Sensor Modes, Model Selection, Backup Head, Alarm Limit, Alarm Delay, Fire Algorithm, as well as Sensor Documentation including Standard Operating Procedures, General Notes, etc.

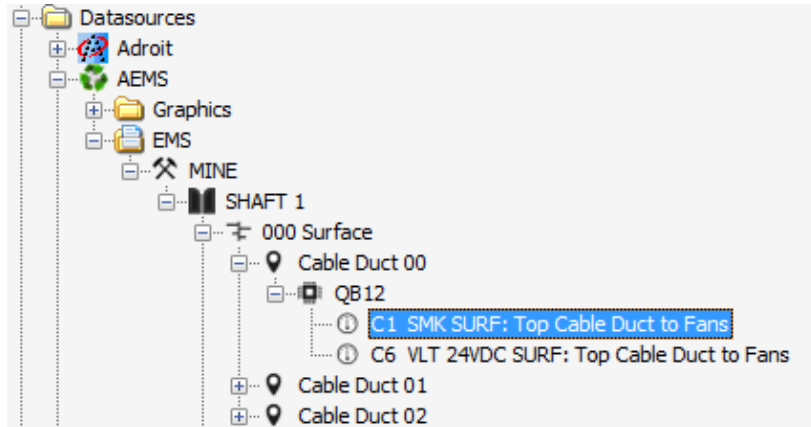
## AEMS Configuration

Engineering and configuration is done via Smart UI Designer:

New locations such as mines, shafts, levels, etc. are simply added to the EMS context model.

Controllers can be added at any location.

Sensors can be added to a controller.



Sensor management includes the ability to modify sensor device address, delete and restore sensors, etc.

## Graphics Configuration

AEMS ships with standard sensor wizards and faceplates, but the framework also allows the creation of custom wizards and faceplates. Graphic forms can be auto-generated using a Graphic Form wizard based on selected locations, selected sensor types, and/or selected sensor attributes. In addition custom graphic forms can be created, either from first principles or by using sensor wizards

## I/O Server Configuration

At the heart of any Adroit deployment, including AEMS, is an object-based I/O Server known as the *Agent Server*. In standard SCADA applications, configuration of the agent server is done manually (usually via MS Excel or some such tool). But within the AEMS framework, the user simply has to add sensors from the AEMS Context Model and this automatically configures the agent server, as follows:

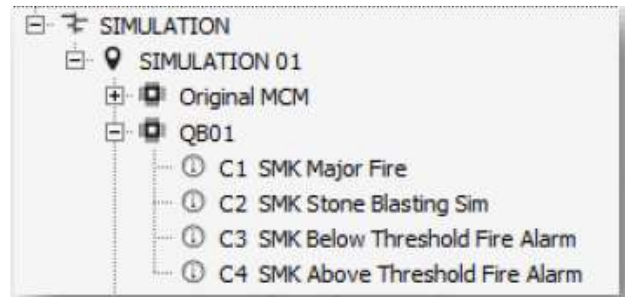
- Device creation
- Tag creation including device scanning
- Logging configuration
- Auditing configuration – important user actions are logged to SQL database
- User security configuration
- Basic alarming configuration
- EEMUA 191 Alarm Management configuration
- Data warehousing configuration (Adroit SCADA Intelligence)

## Sensor Simulation

An EMS OPC Simulator allows users to create CSV files of desired test scenarios, or scenarios recorded during actual incidents.

These simulation inputs can then be added to a Simulation section.

The simulation sensors can be used to validate the EMS capability and also to evaluate different alarm and algorithm settings



## AEMS Alarm Management and Reporting

Using EEMUA 191 as guideline, AEMS essentially measures Alarm acceptability criteria

- For steady-state operation – average alarm rate
- For plant upset – maximum alarm rate (burst rate)

Performance improvement is an iterative process, and there are defined performance levels from overloaded through to predictive.

Alarm reporting allows alarm system performance to be measured and thereby improved by analysing historical alarms, highlighting unwanted/unnecessary alarms and identifying problem areas in the plant.

Adroit SCADA Intelligence is a data warehousing solution that collects and processes data from different data sources, making the resulting information available on a common platform to enable decision making. It is built on the Microsoft Business Intelligence Technology Stack using SQL Integration Services for data processing, SQL Analysis Services for rapid data retrieval, and SQL Reporting Services for reporting

## Further Details

All sensor manufacturers and OEMs, please feel free to contact us at <http://adroit-europe.com> for more technical and commercial information on how to acquire the AEMS framework, and how to implement the plugins for your specific types of sensors