DETECTRONIC

DETECTRONIC
ALARM MANAGER

USING AUTOMATED PREDICTIVE ANALYTICS
TO REDUCE POLLUTIONS & PREVENT FLOODING

DETECTRONIC **PROVIDES REAL-TIME DETECTION AND ALARM NOTIFICATION,** ENABLING UTILITY CUSTOMERS TO MANAGE WASTEWATER NETWORKS MORE EFFICIENTLY AND AVERT ENVIRONMENTAL DAMAGES, COSTLY CLEAN UPS, FINES, REGULATORY PENALTIES AND NEGATIVE PUBLICITY.
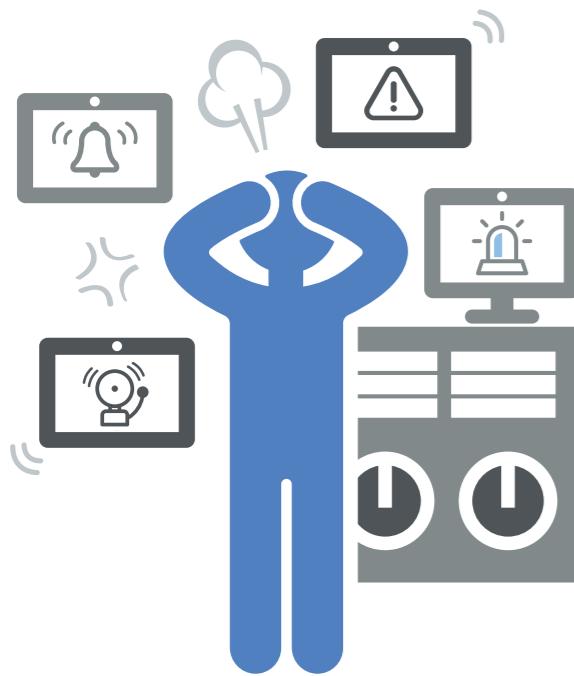
A **FLOOD** OF **ALARMS**

When an alarm is created, values are attached that define the high and low set points. When its value goes outside that predefined '**normal range**', the alarm becomes active.

A **SCADA system** for a water company can have hundreds or thousands of alarms, that could potentially become active and **not all of them will be valid.**

When a company has more alarms, there is an increased risk of more alarms becoming active at any one time. That also means there is additional exposure to the possibility of more false or unnecessary alarms being triggered. The consequences being that an overwhelmed operator dismisses them all as a group and the alarm system becomes a distraction rather than a useful resource.

SIFTING THROUGH THE DATA

Detectronic has a rich history of working with water companies to monitor flow rates and effluent levels at CSOs and other critical points in the network.

Within the **Detectronic Data Centre**, skilled analysts screen and audit different data sets to build a detailed history of a site, correlate the data against other environmental factors and develop the models needed to generate the right metrics, alarm profiles and indicators.

Before reporting on potential flooding or pollution incidents, analysts review what is happening within the surrounding catchment to make accurate assessments as to the necessary actions required. The assessment of additional variables massively reduces the number of false alarms and helps direct resources to the most critical sites needing intervention.

PREDICTIVE ANALYSIS

Predictive analysis is designed to make predictions about future outcomes **based on historical data and analytics techniques**, such as data mining, statistical modelling, machine learning and assorted mathematical processes.

Future insights can be generated with a significant degree of confidence, helping organisations to find and exploit patterns contained within data in order to mitigate risks.

INTELLIGENT ALGORITHMS

The **Detectronic Alarm Manage**r uses predictive analysis techniques to turn raw data into insights that are used to build an advanced automated alarm system. It uses algorithms, capable of cross-referencing suites of data accumulated by the **Detectronic Data Centre** using over 2 billion data points from sewer networks, catchments and live feeds.

Every waste water sewer catchment has its own specific DNA.

Monitoring and local knowledge allow a profile of site-specific 'normal' behaviour to be built, enabling anomaly detection. Catchment-based rules are used to aid the formation of an alarm coefficient, which ensures the alarm hierarchy is updated with reliable information for final alarm protocol decision making and used to highlight risk.

Using additional information and powerful mathematical processing, the true behaviour of the catchment is revealed. Alarm profiles allow the **Detectronic Alarm Manager** to prioritise severe disturbances from small disturbances, resulting in greater confidence in the system when alarms are forwarded on.
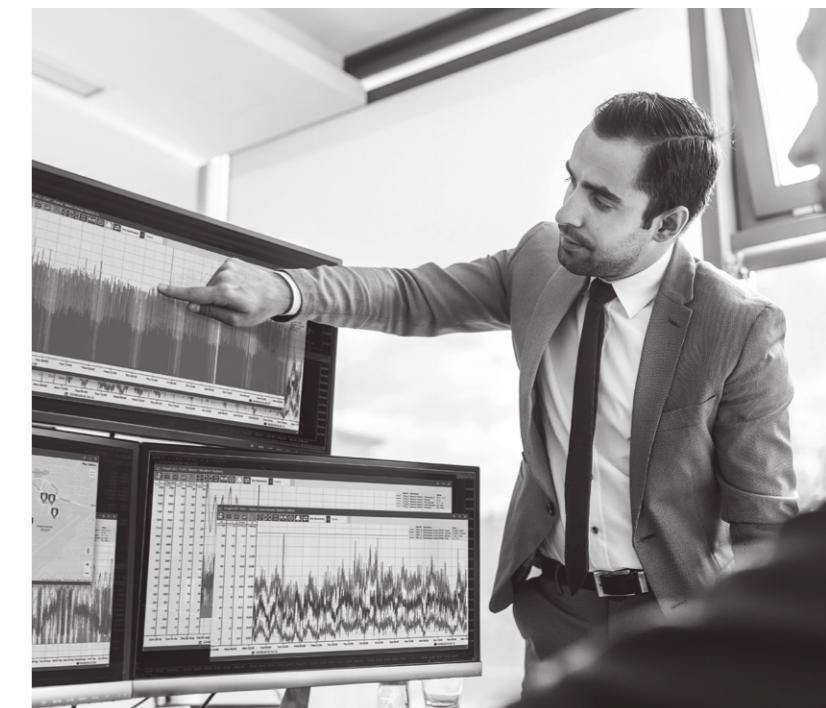
KEY FEATURES

Site Specific DNA
The characteristic of every site in the network is unique.

The **Detectronic Alarm Manager** takes into consideration everything from tidal influence and weather forecasts, to geology of the land, silt movement and river levels to build the site DNA.

Customised Rules
Parameters of membership rules are configured based on the influencing factors of the site DNA and used to configure the alarm generation and suppression criteria.

Alarm Profiles
Based on the rules set for a specific site, alarm priorities may vary according to conditions, sensitivity of the site and the rate of change in the hydraulic profile of the site.

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RESILIENT ARCHITECTURE

In complex environments, you need your alarm programs to perform and adapt. Regular performance analysis identifies problems or weaknesses in the alarm system. The additional screening helps the alarm protocol to evolve with seasonal variations and other changes in the site DNA influenced by varying weather patterns, urban creep and new building development local to the catchment area.

BENEFITS

- ☑ Real-time alarm management 24/7.
- ☑ Deeper network performance insights.
- ☑ Improved emergency call out response.
- ☑ Reduction in false alarms.
- ☑ Identify sewer flood risks.
- ☑ Sewer capacity assessment.
- ☑ Reduction in pollution incidents.

DETECTRONIC DIFFERENCE

- ■ Overflowing water industry experience.
- ■ Practical, tried and tested solutions.
- ■ Protocols built on historical analysis of over 2 billion data points.

ALARM INTERVENTION FACTS

For **1 CUSTOMER** between January and September 2018, the **Detectronic Data Centre** received **86,461** HIGH ALARMS

Our **DATA CENTRE ANALYSTS** whittled those **86k ALARMS** down and *sent just* **174 REPORTS** to the CUSTOMER

64 POTENTIAL POLLUTIONS reported, where the **depth has exceeded the spill level**

110 INTERVENTIONS reported, where the **depth is irregular but below the spill level**

36 pollutions confirmed

60 interventions confirmed

ONLY **0.04%** of HIGH ALARMS received were reported as **potential pollutions**

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