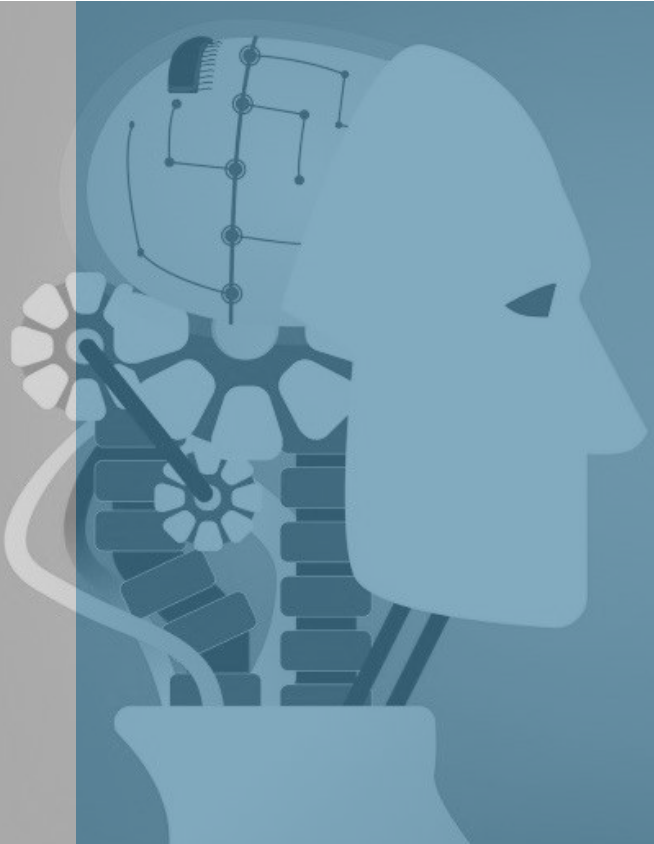# INTERPRETING
THE DATA

Understanding waste water flow data

THE DIFFERENCE BETWEEN HUMAN AND AUTOMATED WASTE WATER FLOW MONITORING

SMART NETWORK MONITORING

With a increasing population and ever growing demands on the water network, a smart water network enables water utilities to:

- Remotely monitor and diagnose problems
- Prioritise and manage maintenance
- Control and optimise the network using data insights

DETECTRONIC

INTRODUCTION

Many water industry technicians have suggested that a fully automated sewerage flow monitoring system is superior, more secure and more reliable than using a third-party system to monitor flows.

At Detectronic, we have the knowledge, experience and hard data that says otherwise. We believe that the best possible way to monitor your waste water flow levels is to use an automated system in conjunction with a skilled analyst reviewing the data provided and making appropriate interventions on a considered basis.

Here we take a look at some of the regular questions that arise and explain why the Detectronic Data Screening System, which integrates tried and tested technology with the operator's technical experience and knowledge, is the best way to Predict Blockages and Improve Network Performance

WHY SHOULDN'T YOU LEAVE DATA MONITORING TO A TOTALLY AUTOMATED SYSTEM?

When you distribute clean water it is managed and distributed in a totally controlled environment, i.e., pressurised, piped and delivered when and where it is wanted, on tap, literally.

THE FLOW OF DIRTY WATER IS DIFFERENT

It cannot be controlled and flow rates are influenced by a great many variables. Volumes vary hugely through industrial, commercial and personal water consumption and when it rains, the sewer networks inevitably fill up. Consequently, alarms will go off and as a fully automated system would not necessarily know that it is rain that has caused the alarm, they may send unnecessary alerts.

With a part human, part automated system, the operator can adjust and override what a fully automated system might be programmed to do automatically, as on occasions, not doing something, or doing something differently, may deliver a better result.

Leaving your data monitoring to an exclusively automated system may seem attractive and potentially, it may appear to save on operator time, but it does eliminate an all-important tier of control and management – and security - that only human intervention can provide.

ARTIFICIAL INTELLIGENCE MUST BE BETTER, RIGHT?

The big misconception is that technology is better. Yes, it works 24/7 all year round and does exactly what it is programmed to do. But that's where the solution becomes part of the problem, as the technology will do only what it is told to do. It cannot think, it doesn't have a mind of its own and therefore, cannot be rational in its operation.

For example, when there is excessive rainwater runoff, the system can be programmed to know that it is raining and suppress alarms but only a person monitoring the system would know that if the levels should have receded at a certain rate and they haven't then the alarm should be raised.

An analogy has been drawn between the management of the sewer network and the managements of air traffic control:

Both are immensely complicated with many variable inputs affecting their performance and are heavily impacted by ever changing weather patterns.
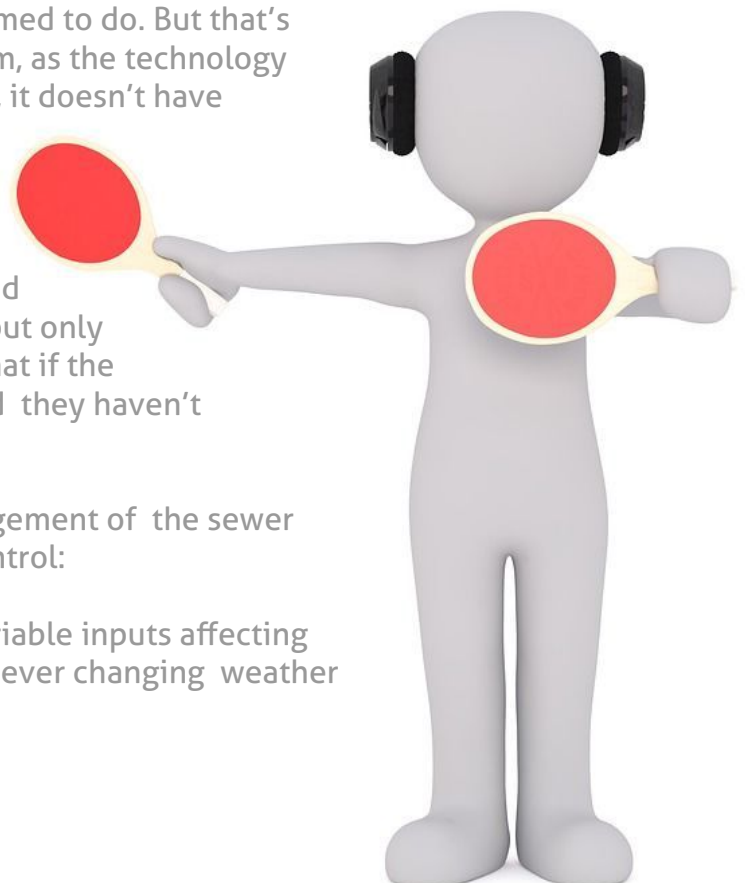
Neither work effectively without the skilled eye of an operator making real time judgments based on what information is on the screen in front of them.

The Federal Aviation Administration has spent over $3 billion on software and still failed to offer a fully automated system, for managing air traffic control. It should come as no surprise therefore that the water industry is struggling to fully automate it's wastewater network.

HUMAN INTERVENTION

People think rationally and respond in a certain way to events, thinking in a way a computer program cannot.

A potential flooding or pollution alarm may be that event. When an alarm occurs, the operator has the benefit of consultation, having the ability to consult and discuss the available options with colleagues and then to arrive at the best and most effective solution. This may not necessarily be the one that is pre-programmed into the system yet it could be a more effective option.
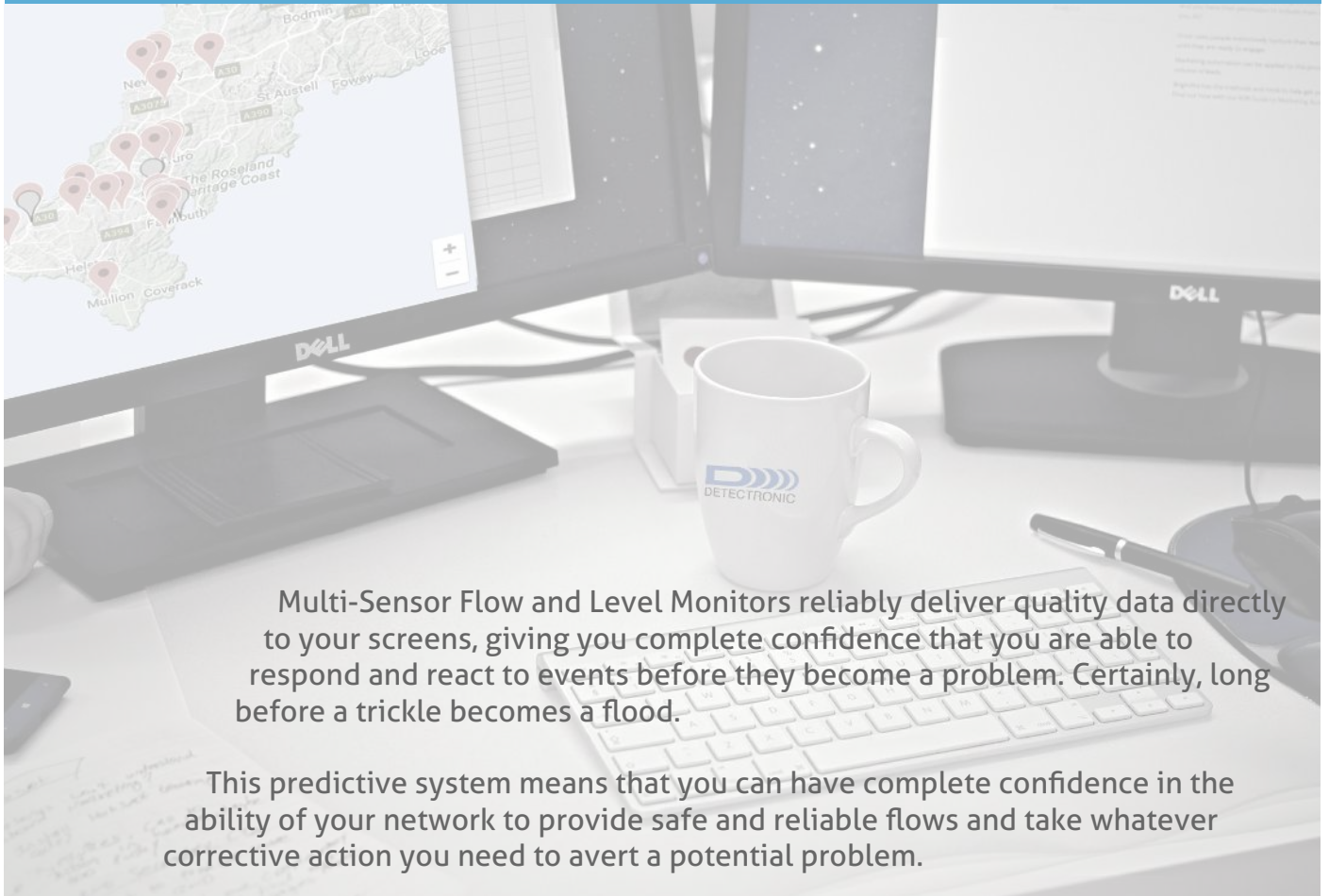
A person will often preempt an event, consequently changing the outcome

TYPES OF DATA ANALYTICS

Value

Prescriptive

Predictive

Diagnostic

Descriptive

Complexity
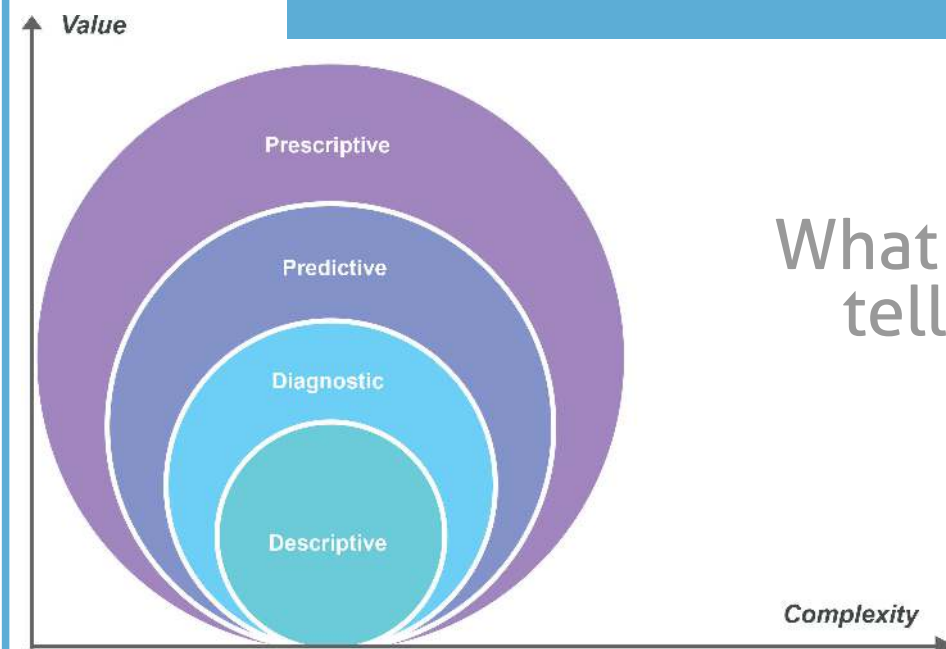
What is the data telling you?

WHAT DO MULTI-SENSOR FLOW MONITORS DO?

Multi-Sensor Flow and Level Monitors reliably deliver quality data directly to your screens, giving you complete confidence that you are able to respond and react to events before they become a problem. Certainly, long before a trickle becomes a flood.

This predictive system means that you can have complete confidence in the ability of your network to provide safe and reliable flows and take whatever corrective action you need to avert a potential problem.

DESCRIPTIVE: WHAT IS HAPPENING?

- Comprehensive, accurate and live data
- Effective visualisation

DIAGNOSTIC: WHY IS IT HAPPENING?

- Ability to drill down to the root cause
- Ability to isolate all confounding information

PREDICTIVE: WHAT IS LIKELY TO HAPPEN?

- Historical patterns used to predict specific outcomes using algorithms
- Decisions are automated using algorithms and technology

PRESCRIPTIVE: WHAT DO I NEED TO DO?

- Recommend actions based on champion/ challenger testing outcomes
- Apply enhanced analytical techniques to make specific recommendations
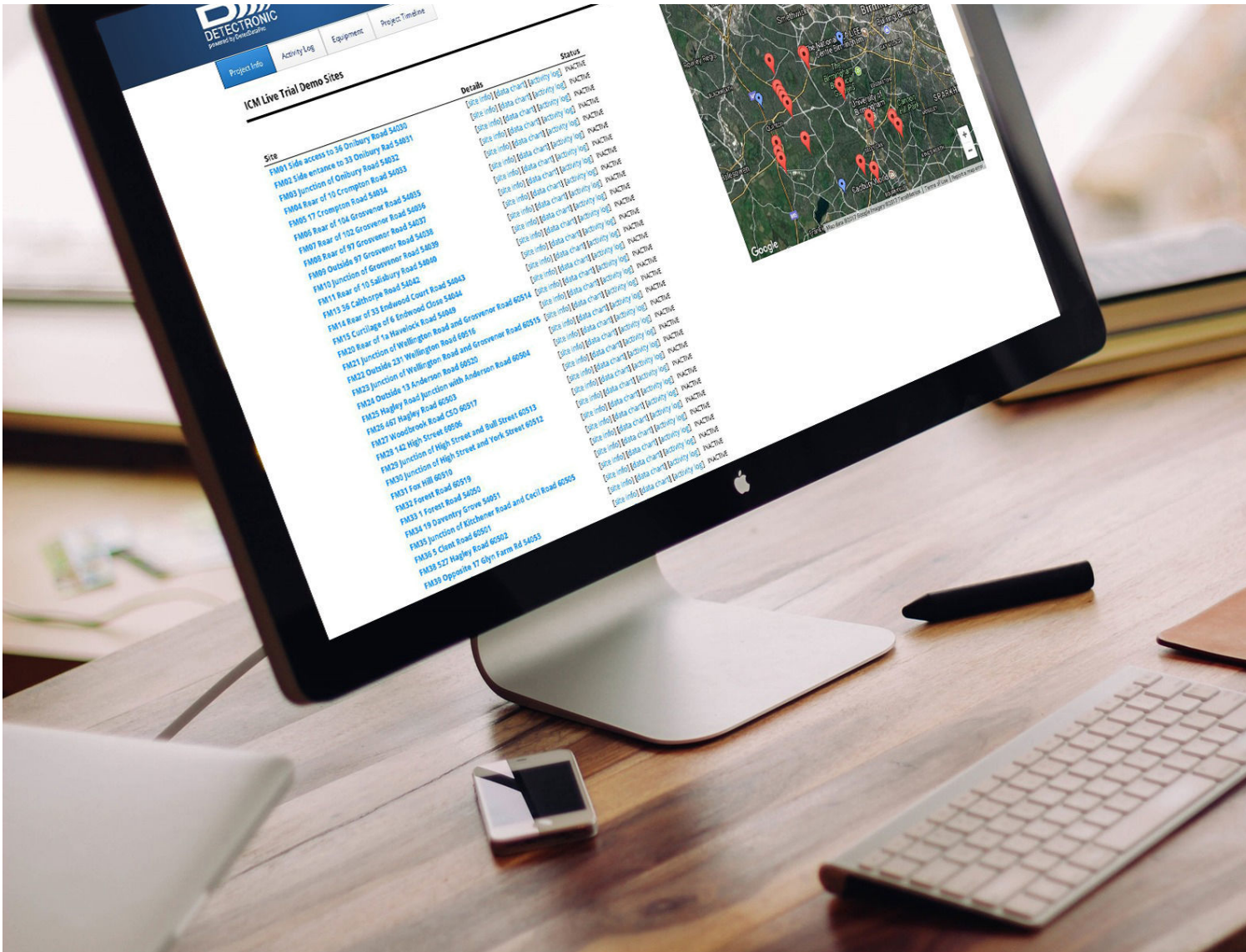
WHAT DOES THE OPERATOR SEE AND WHAT IS THE DATA TELLING ME?

Successful data harvesting leads to understanding the network, which makes the difference between efficient network management and network failure

Trends in data sets can be compared quickly using powerful DD+ graphing engine and software tools, tailoring the alarm protocols for each individual site. This means that you will only be alerted once the appropriate responses and decisions have been made by the system. The resulting effect being that you only respond to true alarms, based on the agreed alarm criteria..

Flow and Level Monitors generate alarms for high (or low) levels, normally associated with spill levels or other operationally monitored parameters. Not all alarms require action, particularly those caused by rainfall events, where the monitored CSO performs within its designed criteria.

How does Data Screening work?

The Detectronic Data Monitoring System is very effective as it records observations into the database so that trends can be recorded. It notes typical flow conditions so that variations in flow can be readily identified.

This enables you, as the Data Technician, to screen groups of sites on a changing weekly rota so that you become familiar with all sites, learning to understand their 'normal' patterns and trends. This prevents individual bias distorting your observations and enables you to easily spot changes in the norm.

WHAT ALARM STRATEGIES CAN YOU APPLY?
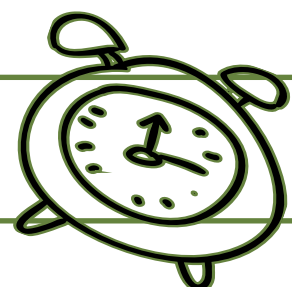
There are eight different alarm triggers you can apply, each with a strategy applied to it. There are also rules applied for exception reporting. These are based on an easy-to-use highly effective traffic light system which takes into account wet days, high river levels and the delayed run off from high snow melt.

Based on these green, amber and red signals, you are prompted when and where intervention is required and that action must be taken to alleviate the situation. This information is also transmitted via GPS to ensure you are in contact 100% of the time, or able to check in as necessary using mobile devices.

HOW ACCURATE IS THE INFORMATION?

Data Screening by Detectronic generates routine maintenance work schedules which ensure consistently high levels of reliable data. We are confident that you will be monitoring data that is 100% accurate, giving you total peace-of-mind!

Want to know more? Download our data screening guide

THANK YOU