PROCESSVUE

Alarm Management without limits:

Alarm Management in the Digital Age

Andrew Dixon – Partner Channel Manager

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Alarm Management Without Limits

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Alarm Management in the Digital Age

ProcessVue is reframing the way we think about alarm management.

No longer just a necessary cost to be safe and meet compliance requirements, it is a route to optimisation, a downtime killer and a window into operations data and continuous improvement potential.

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Our Story

ProcessVue is the culmination of over 30 years of experience and expertise in managing alarms.

ProcessVue is trusted by leading industrial organisations the world over because of its rich functionality, ease of use and because of the knowledge, support and passion of the ProcessVue team.

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Who are we?

- ProcessVue is part of the M.A.C Solutions business, a member of the Pantek Group of companies
- Founded in 1996, MAC Solutions specialise in helping customers select and source solutions to leverage their plant control and automation systems.
- The ProcessVue Alarm Management Software Suite is the culmination of over 20 years' experience and expertise in managing alarms.
- Based on globally recognised alarm management standards It provides key personnel with clear, relevant and prioritised alarm information for operational, compliance and business optimisation needs.
- ProcessVue is used by leading companies throughout the world on the basis of its ease of use, rich functionality and the passion of the ProcessVue team.

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What is Alarm Management?

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According to Wikipedia

Alarm management

Alarm management is the application of human factors and ergonomics along with instrumentation engineering and systems thinking to manage the design of an alarm system to increase its usability. Most often the major usability problem is that there are too many alarms annunciated in a plant upset, commonly referred to as alarm flood (similar to an interrupt storm), since it is so similar to a flood caused by excessive rainfall input with a basically fixed drainage output capacity. However, there can also be other problems with an alarm system such as poorly designed alarms, improperly set alarm points, ineffective annunciation, unclear alarm messages, etc. Poor alarm management is one of the leading causes of unplanned downtime, contributing to over $20B in lost production every year, and of major industrial incidents such as the one in Texas City. Developing good alarm management practices is not a discrete activity, but more of a continuous process (i.e., it is more of a journey than a destination).[1]

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How did we get here?

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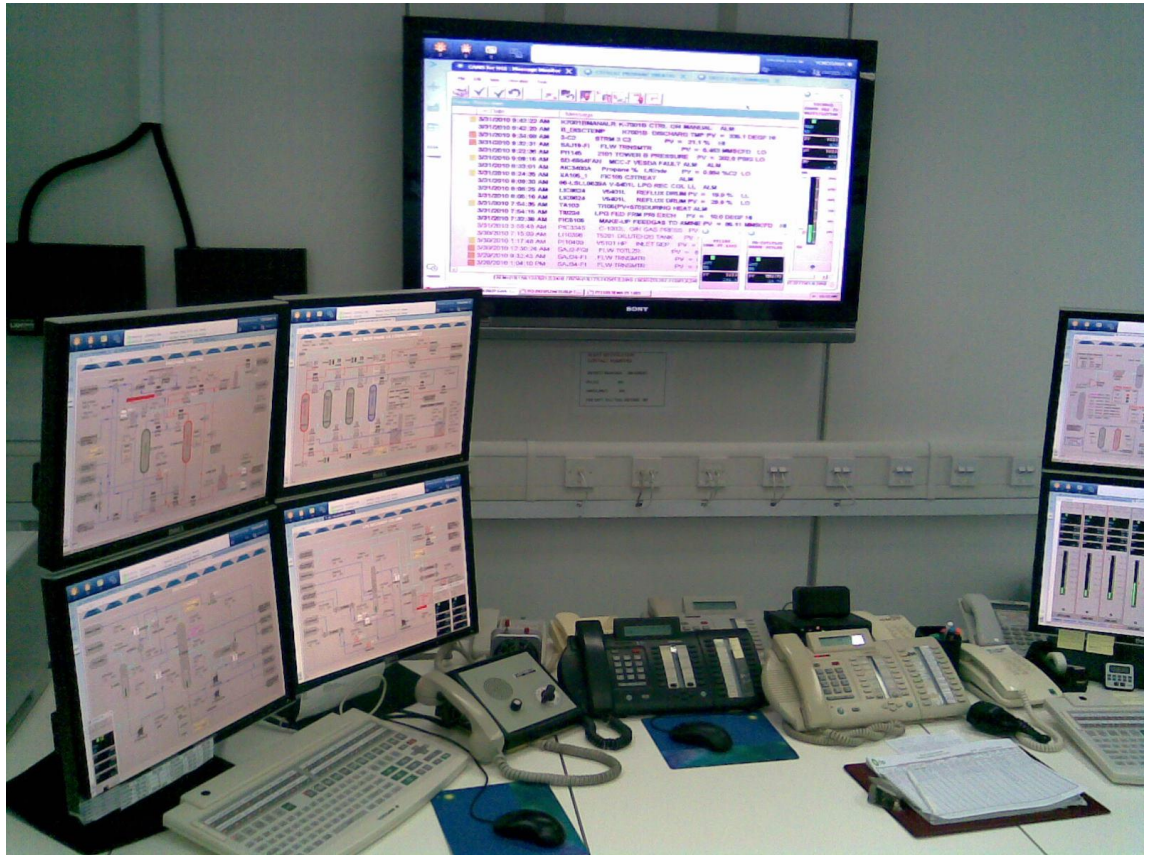
How did we get here?

Old alarm system

Previously…

- Significant justification required for individual alarms
  - Required space
  - Costly to install
- Few alarms implemented
  - Abnormal process conditions only.

How did we get here?



New control room / alarm system

Now…

- No real investment required, alarms are effectively free
- “Alarms” no longer restricted to abnormal conditions.
- Although available on individual process graphics, alarm lists are the norm, interrupt driven
- View restricted to ‘window’ on the plant through displays

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Alarm Management Challenges

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Alarm Management Challenges

High alarm load

- Operators accept alarms without review
- Poor decision making in response to alarms
- Critical priority alarms may be missed
- Unnecessary plant outages

Alarm floods

- Distraction causing delayed response
- Incorrect responses to the incident

Nuisance alarms

- Alarms regularly ‘defeated’
- Alarms not acknowledged
- Alarm system becomes ignored

Overall consequences

- Alarm system is ineffective
- Production downtime and reduced profitability
- Operators with reduced situational awareness
- Increased stress and fatigue on operators

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Standards & Guidelines

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Standards & Guidelines

- Over the last 30 years there have been numerous incidents where poor alarm management has been cited as a contributing factor
- Impacted the environment, health & safety of employees and productivity of the companies involved
- These incidents have led to the development of several standards and guidelines over the years:
  - EEMUA 191: Comprehensive guidance on designing, managing and procuring an effective alarm system
  - ISA 18.2: standard, provides a framework for the successful design, implementation, operation, and management of alarm systems in a process plant.
  - BS EN 62682: The British standard for the management of alarm systems in the process industries, very similar to ISA18.2

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The Human Factor

Human factors: Alarm management

Why is alarm management an issue?

Optimising alarm system design is important to facilitate accurate and timely fault prompting and diagnosis to operators, and hence more effective plant management. There is a great deal of evidence relating to the role of poorly design alarm systems in major incidents, for example the staff at Milford Haven Refinery were faced with a barrage of alarms for five hours preceding the incident.

Key principles of alarm management

1. Alarms should direct the operator's attention towards plant conditions requiring timely assessment or action;
2. Alarms should alert, inform and guide required operator action;
3. Every alarm should be useful and relevant to the operator, and have a defined response;
4. Alarm levels should be set such that the operators have sufficient time to carry out their defined response before the plant condition escalates;
5. The alarm system to accommodate human capabilities and limitations;

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Perception shift

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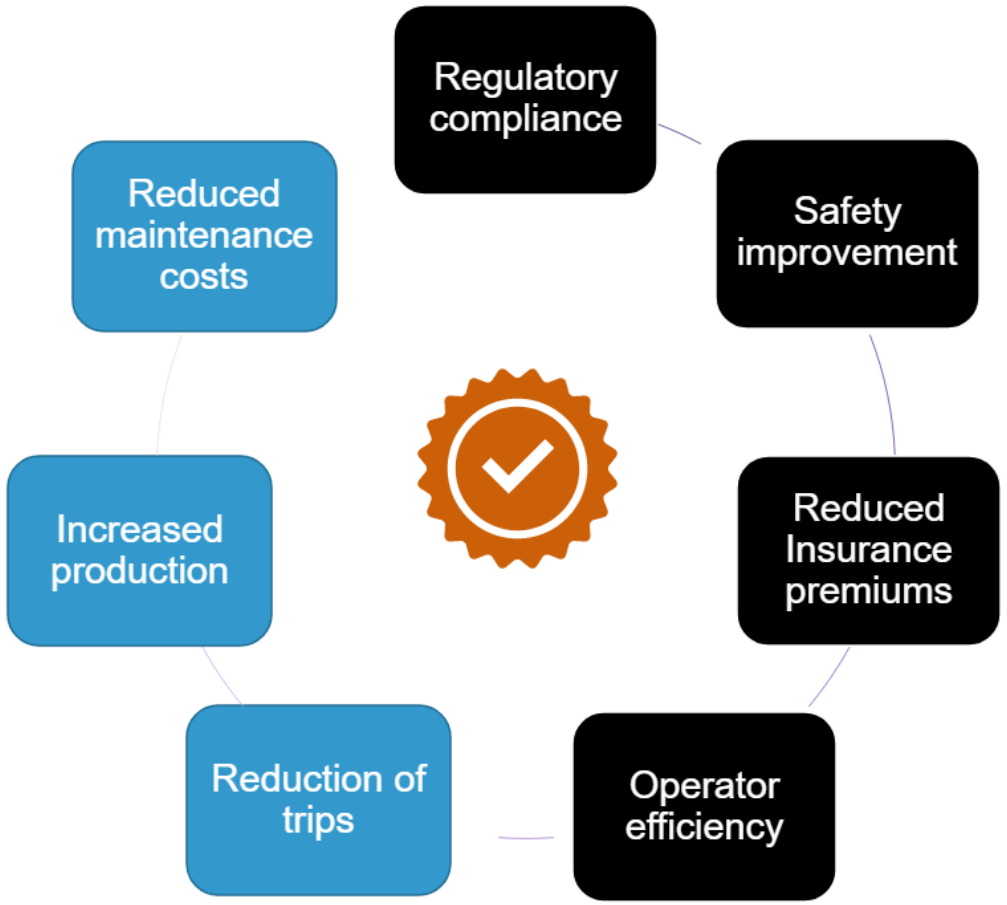
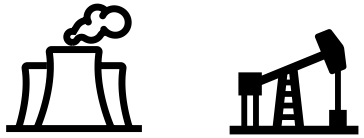
Perception shift



Traditional – Process safety, regulation & compliance



Emerging – Wider digitalization process, reduce downtime, cost saving, efficiency

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Product Suite

ProcessVue Suite is designed to meet the requirements of a broad range of industries, including Oil & Gas, Power Generation, Pharmaceutical and general manufacturing.

PROCESSVUE SEQUENCE

Collects alarm and event messages from multiple disparate systems and consolidates into a database

PROCESSVUE ANALYSER

Increase operational efficiency by benchmarking your alarms and analysing your events

PROCESSVUE GUARDIAN

Reduce rationalisation time and improve the efficiency, safety and compliance of your plant

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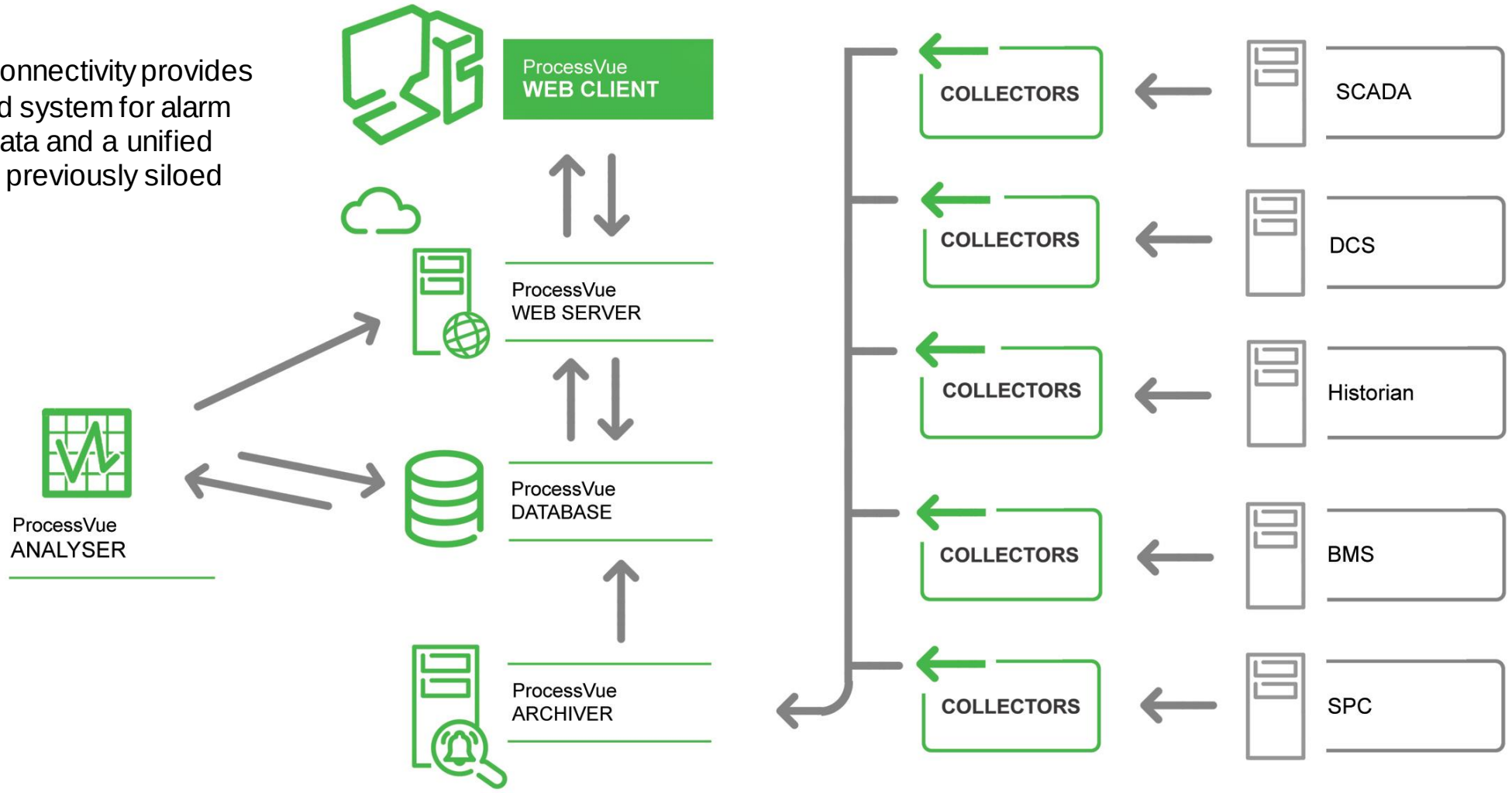
Connectivity

Seamless connectivity provides a centralised system for alarm and event data and a unified view across previously siloed systems.



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Customers

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WHITE PAPER

Industrial Alarm Management Without Limits

AUTHORED BY
James Fox
ProcessVue Product Manager

Executive summary

There is no doubting the importance of alarms to the safe operation of countless industrial systems. Alarms, and the subsequent discipline of Alarm Management, have come a long way from the very first analogue alarms wired directly to control rooms to offer warning of impending crisis to managers of big oil and gas plants or nuclear facilities. In the digital age, Alarm Management can offer much more.

The journey of alarms from a necessary hardware cost for the safe operation of big plants to a value driving software for almost any industrial environment tracks closely with the digitalisation of industry over the past thirty years or so. Yet relatively few industrial applications have considered what Alarm Management software could do for them if they removed the traditionally perceived limitations associated with it.

In fact, when viewed through a Digital Transformation lens, Alarm Management has the potential to play a central role in a continuous improvement philosophy that drives efficiency and profitability. Central to realising the full potential of Alarm Management is re-framing the way we think about alarms, understanding the immense power of the data created and analysed by Alarm Management software, and putting it to work on the right side of the ledger.

, industrial alarm management is not, traditionally, the sort pires kids to buckle down in STEM subjects and become an eneath the surface though and there's a fascinating story of d evolution that makes it a hugely powerful tool for forward- al enterprises in a range of sectors.

nention industrial alarm management to operators and engineers at use it, their blood probably runs a degree or so colder. In its tradition- agement is a thin buffer of warning between normal operations and action to avoid a disastrous failure that could have health and safety cause huge downtime. Many in industry only interact with alarm man- when they must, and, outside of regular compliance requirements, a problem. Serious and dangerous failures are mercifully rare, and of the worry – if things really started to go wrong, would the alarm he user, to take the right action and avert a disaster?

hat those responsible for alarm management are not familiar with the nal operation – alarms are extremely common and filtering out the actions that are necessary is often a day to day and week to week ustrial operations teams.

d of industrial alarm management there are so many alerts, alarms, known unknowns, and unknown unknowns that it's hard to stay on that is your only focus, and for many, alarm management is a part tions or management role.

nt is also a cost. And another system amongst many to be familiar ans that there are few people in industry who are truly comfortable – when the conversation turns to alarm management. It is seen, by complex, and necessary burden in the safe operation of a facility.

e. Some, at the progressive end of alarm management use, are pic and getting the conversation onto a more positive footing. They larm management without limits, and alarm management is begin- hold in new industry sectors such as manufacturing. It all starts with a

ent: Reframing the Way We think

e believe it is time to completely reframe how alarm management gital transformation era has done so much for alarm management inuing to serve that core function of managing alarms, it is almost east – it should be. For those at the front of the curve, alarm man- stone of digital transformation strategy. Alarm management is not ction any longer, it takes alarm data and makes it work much ious value-add benefits. For the initiated and enlightened, it is no ary cost to be safe and meet compliance requirements, it is a route oductivity boon, a downtime killer, and a window into operations improvement potential. It is a value-add, a revenue driver. It has from cost centre to profit centre.

g this will not recognise that picture. Others will question, in the era ion with software driven MES and SCADA that offer some alarm nality, whether proprietary, purpose-built software is even neces- point, until and unless such software is capable of managing alarm ange of existing proprietary systems and bring them all together on n Historian while sending automated reports for compliance, yes anagement is the best choice.

chnical and before we get stuck into how early adopters are re- uld be thinking about a new kind of alarm management - an alarm ach and philosophy that fits with a holistic understanding of the ellbeing of a business to help drive continuous improvement - l to understand how we got here.

inciples

o an alarm every morning. Few people like to hear that alarm, but l it is. Alarms are such an intrinsic part of life that the only time we ut them is if they fail (or we forget to set/change them – human

f an alarm in the industrial setting is exactly the same as the ets us out of bed. The existence of the alarm means that we don't cus from what we are doing in order to continuously monitor forget about it, knowing that if and when the moment for action ed. In a small way, the morning alarm reduces the cognitive ay life and, quite literally, helps us sleep at night. The same goes

d simple so far – let's go a step deeper.

About the author

James Fox is Product Manager for the ProcessVue suite of alarm management products from MAC Solutions. James has worked in the alarm management arena for over 20 years in both technical and commercial disciplines. Prior to his current role within the ProcessVue team he held positions at Honeywell, Matrikon and IMAC.

Contact ProcessVue for more informatiion about Industrial Alarm Management Without Limits

Let's talk

+44 (0)1527 529774
sales@processvue.com

Unit 6-7, Kingfisher Business Park
Arthur Street, Lakeside, Redditch
Worcestershire, B98 8LG
United Kingdom

processvue.com

PROCESSVUE
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ProcessVue for AVEVA™

The ProcessVue Alarm Management Suite, designed and optimised for AVEVA industrial software.

A proliferation in the number of alarms means the challenge to operators has never been greater. ProcessVue for AVEVA provides a means to not just live with the problem, but to solve it and to drive efficiencies and profitability by applying a digital transformation mindset.

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Let’s talk

Speak to one of our friendly, experienced team about the right solution for you.

ProcessVue UK
+44(1246) 733120

ProcessVue Americas
+1 (832) 444-6146

ProcessVue Continental Europe
+33(6) 8646 1637

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