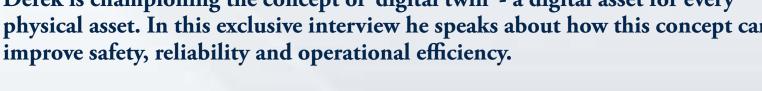# 60 seconds with...

DEREK MIDDLEMAS
Chief Executive Officer at DIGATEX

Derek is championing the concept of 'digital twin' - a digital asset for every physical asset. In this exclusive interview he speaks about how this concept can improve safety, reliability and operational efficiency.

Can you please tell us a little bit about your background?

I have nearly 40 years' experience in the marine and process plant industries and I am an engineer through and through.

Over time I got seriously interested in the use of technology to improve engineering information management and how we used information in projects. My passion is linking business strategy and operations to three-dimensional visualization and information management right across the board of capital projects and brown field operations.

With the advent of cloud computing and major advances in both S/W and IT infrastructure interoperability,

enabling real digital transformation, I saw a gap in the supply chain of asset intensive industries which was blocking effective moves towards digital transformation. The data and information, was not getting the focus it needed.

Whilst in the software business I pushed very hard for the last 20 years a concept that for every physical asset there should be a digital asset, a digital twin if you will, that reflects an object centric view of the data and information in the context of the physical objects and systems that make up the asset.

I realised that the missing ingredient in the supply chain prohibiting or slowing progress was a new speciality, which I call Information Engineering. This is a

new breed of engineers whose sole role it is to define, build and manage digital assets across the supply chain... and DIGATEX was born.

> " **Utilizing a digital asset strategy will make your information more accurate and complete.** "

DIGATEX's vision is built around a simple concept: for every physical asset, there should exist a digital one. Can you explain this concept further?

By using this phrase as a thought provoker we create a discussion, which quite naturally leads into talking about digital transformation, because I want people to start thinking differently about their information, about what could be, not what was and what is.

So a digital asset strategy supports far better decision making across the asset lifecycle. Most decisions in the industries we serve rely in some way on engineering data as part of the decision-making process. Whether it's designing, building, procuring, maintaining or operating an asset.

Engineering asset data is often referred to as the lifeblood of a successful project and operations. That information needs to be delivered in a timely way,

it needs to be accurate and consistent, it needs to be complete, and ideally it needs to be delivered in context: of the workflow and in context of the task, or the decision that needs support.

Nearly all tasks, in terms of design, maintenance, procurement, operations, involve computer programs and the data is created in those computer programs. Very often in the engineering world that data is then transcribed or reported out as a document and in that process the intelligence and the granularity of the data tends to degrade.

However, with a digital asset you search by object or system and immediately have to hand all the information sources that contain or consume information related to that object, from design specifications, to manufacturer information, maintenance history, performance data, open work permits, etc. You also know all the linkages from that object to its connected pipework for example, or other similar object types in the asset or indeed across multiple assets. You can also visualize that information in a 2D or 3D way that provides much better context to support better collaboration and decision making.

Utilizing a digital asset strategy will make your information more accurate and complete, more accessible and us-able thus improving safety, reliability and operational efficiency.

Digital transformation has become a major priority for operations leaders in hazardous industries. However, most don't know where to start to start. Can you speak about this challenge?

Firstly, we do see a significant improvement in asset owners understanding the value of the engineering data about their assets. This is driven a lot by regulatory regimes and the priority on improving safety and an understanding of the role accurate, timely data has in making the right decisions fast. But there is also increasing understanding and case studies on both the cost of poor quality information and the benefits from having accurate timely information to improve operational efficiency.

There are many examples of the cost of poor quality of data. And it's been shown that you can reduce this by between 75% and 85% if you organize your data in an object centric way, around a digital asset, and if you manage the process with a proper strategy about how you're going to hand over that information. So, it's about focus on the data.

Colin Pearson of ABB Automation said the biggest revenue loss in all the plants around the world is operator error. And that is not operators making mistakes, it's operators not having the correct information on hand to make the right decisions at the right time.

My second point is that the reason for this is that when you look into an operating plant that's been around for many years you've got document and data anarchy. You have so many data sources, so many documents and versions that over time you find have not been kept up to date as well as they should have been. It can seem too difficult and too costly to fix it without some significant business driver. This could be the sale of an asset, or a major life extension project. However, ROI cases can be built for various plant improvements. For example, we know that employing a Digital Asset Strategy for piping inspection and corrosion management can reduce time spent on inspection effort by 40%; we know that engineers spend more than 50% of their time accessing and validating the information they need to support them; we know lack of accurate timely information has contributed to major safety incidents.

So, I think that the industry is getting it. But I think more work needs to be done to provide a holistic life cycle view of the returns on investment.

What do you see as the major gaps which need to be closed in oil, gas and chemical companies when it comes to this transformation?

It's very difficult when you're faced with this sort of anarchy of data to know exactly where to start to fix it. There's a gap around the business models that are used in the industry that causes this problem.

In the process industry, oil and gas, power, or any of these big asset intensive industries, the contracting strategies tend to be quite fragmented and very often adversarial. While the owner operator companies tend to be organized into a capital projects group and an operations group and this creates 'gaps' in the whole contracting strategy. I think as the information flows through the project it should flow seamlessly. But unfortunately, in reality it's like a leaky pipe and the information that should be consistent, complete and accurate actually leaks out of the system as it goes through. So, at the end of the day you end up with inconsistent data, inaccurate data and data that's difficult to find and risky to rely on.

In my view, owners must take full

responsibility for their engineering data within a digital asset strategy. This cannot be easily delegated to the existing value chain, as it must be sustained over the life cycle and that means it must transcend the multiple changes in the supply chain over the life of the plant.

Historically this was achieved by using a document control approach, which a) does not support a digital transformation agenda and b) has not proven very successful in maintaining accurate accessible data, even in document form.

> **" A data centric strategy is absolutely imperative if you want to get more value from your asset information. "**

Very often people believe solving this data anarchy is primarily a software and IT issue and they jump straight in to creating an IT project. This is almost always the wrong approach. The strategy must first be described in terms of desired business outcome, supporting work processes, information standards and data requirements. Then comes a discussion about software and IT.

Moving from a document centric to a data centric strategy is absolutely imperative for it to be part of a digital transformation agenda if you want to continuously improve to get more value from your asset information.

And this is really where DIGATEX comes in, because we have set up solely to focus on this topic and help owners close these gaps, both in their business processes and in their information models and technology. We employ digital asset strategies using information engineering resources and techniques.

What about change management? How should companies be integrating digital assets into their operations?

It's not a technology problem, and I think this is a mistake that a lot of people make. Technology for me, is maybe only 15-20% of the solution.

The first thing is to make sure that you don't address it as a technology problem, but you address it as a business initiative, which means people and processes are just as important to reach a successful conclusion. That, in turn, means recognising you need to manage change; you need to make sure that

it adds value to the people that you're asking to use that new process and that new technology at every step of the way.

As soon as you start asking people to do a lot more work, to do something with their data where they don't see an advantage, but someone further downstream gets the advantage, the whole thing starts to fall to pieces. You have to be very careful to take things in a sequence and to think through the business process before you start going out and shopping for technology.

Having a visual paradigm to be able to communicate information is an extremely powerful way of driving that change management.

Finally, what is the role of digital assets in driving operational excellence?

It's about having the right information, at the right time, in the right place, and in the right context. If you have that, you're going to make better decisions, faster decisions, and more confident decisions with improved outcomes.

We've seen very many cases where this has happened, where people have improved business processes to improve productivity in a plant. Piping inspec-

> **" It all boils down to having the right information at the right time, in the right place and in the right context '. "**

tion and corrosion management is one that comes to mind. Where, by bringing together information and repurposing it to support that task showed that you could reduce the time spent on managing the inspection operations by up to 40%.

We see similar things with new training programs. For example, using gaming type techniques to train people and to collaborate within an augmented or virtual reality world. That actually cuts down the amount of classroom or on-site training. But you cannot do that without a digital asset with complete accurate data.

Also, maintenance, work permits, safe job analysis, and so on, where a digital asset supports an operational excellence initiative, but it all boils down to having the right information, at the right time, in the right place and in the right context.

Derek Middlemas
Chief Executive Officer
DIGATEX

Derek spent the first part of his career in the design and construction of on-shore and offshore capital projects. For the last 20 years he has focused on the use of engineering information systems and technology to drive business improvement across the whole project and asset lifecycle.

Derek has held senior management and board positions in two leading software companies providing engineering IT solutions to these industries, specializing in strategic development of new solutions and markets.

Derek is one of the few people that can create a digital transformation strategy and then execute the practical deployment of such within these asset intensive industries.

INTERESTED IN LEARNING MORE ABOUT THIS TOPIC?

10 - 12 October 2017 London, UK

Derek Middlemas will share his experience on creating a successful digital asset at the upcoming **Operational Excellence & Risk Management summit** - coming to London this 10-12 October 2017.

At this executive level event you'll be able to meet with over **100 Heads of Operations, HSE, ORM and Operational Excellence** to learn world class strategies for keeping your people safe, your operations productive and your products sustainable at a time of intense market volatility.

Confirmed keynote speakers for 2017 include: **Statoil, EDP Renewables, BP, Oceaneering, Deepwater Horizon Joint Investigation Team** and many more. Plus over 20 case studies from risk, operations and EH&S leaders that will show you how to adopt the culture, systems and processes of the world's Highest Reliability Organizations.

For the full event line-up **download the 2017 agenda** or visit the official website **opexandriskmanagementeurope.iqpc.com**