AS SEEN IN:
INNOVATIE NU | MARCH 2021

QING

PUTTING DIGITAL TWINS TO WORK

In collaboration with:

QING Groep

ADVANCED MANUFACTURING CENTER

ISSN 2772-428X

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PUTTING **DIGITAL TWINS** TO WORK

Digital Twins are at the frontier of industrial technology and are changing the way in which we approach factory design, operational management and development. Capturing real-world industrial operations data in a virtual simulated environment to accurately simulate process, a Digital Twin has enormous application potential far beyond what most businesses are realising today. In this article, we get together with engineering firm QING to discover their industry leading approach to driving the Industry 4.0 revolution.

The concept of a Digital Twin has been around for some time now but has not yet become commonplace in wider industrial applications. Traditionally, to effectively use large amounts of industrial data has been prohibitively resource intensive for many. Often requiring dedicated internal experts, highly specialised tools and knowledge and been constrained to limited areas of operations. Of those that do utilise a form of Digital Twin in their business toolbox, the application is too often underwhelming and constrained to basic operations monitoring or even as a single-use standalone tool. The true value potential in how businesses can use a Digital Twin is often strongly misunderstood.

Digitisation of the industry includes many new technologies that must come together to lead to powerful innovations.

Bart van Went
General Director
QING Groep

We create awareness that Digital Twin technology could be a strategic tool with various lifecycles. This is a challenge because companies mostly look at is as a single use tool. Here lies the true potential of Digital Twin technology.

Bram de Vrught
Business Manager
QING *Groep*

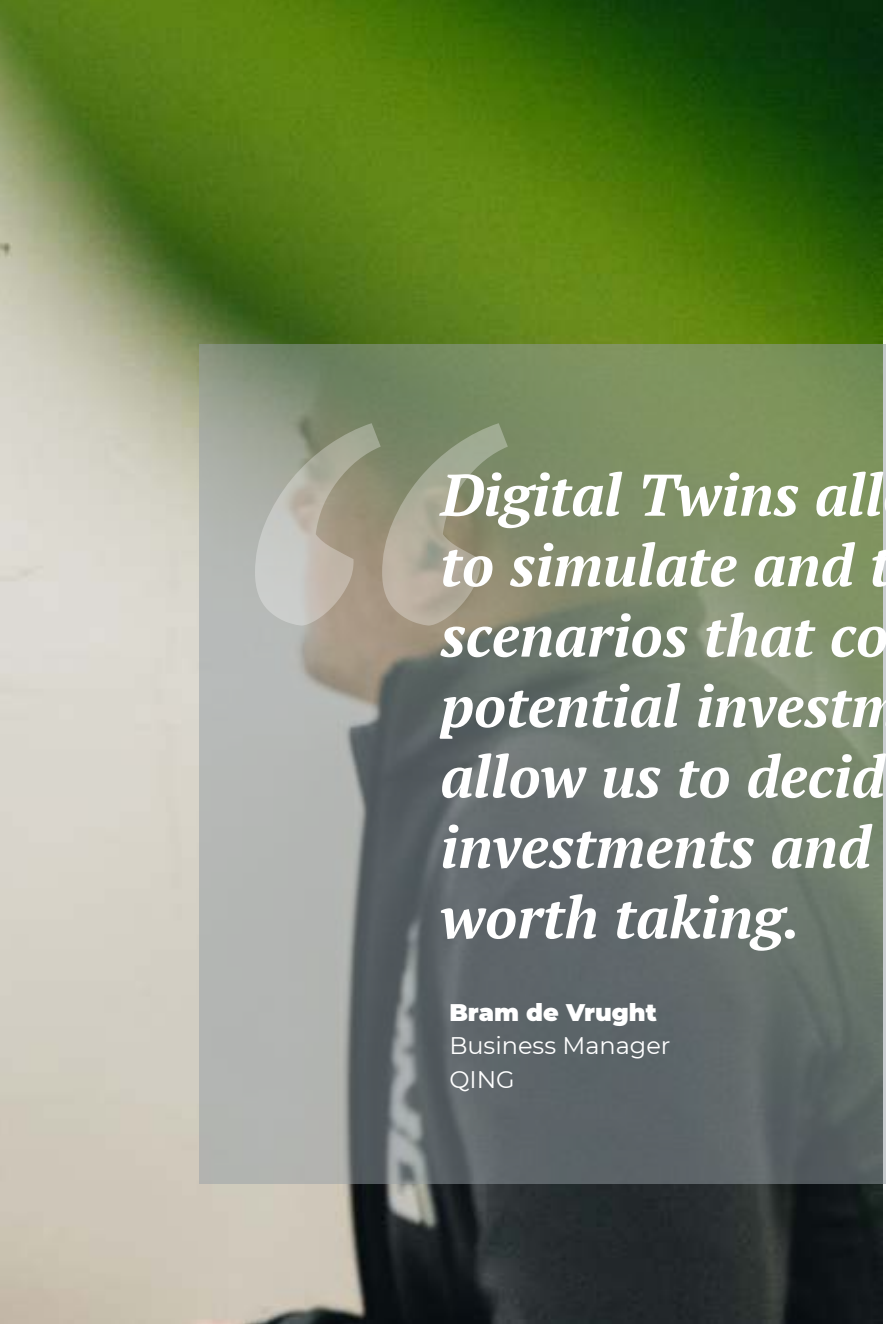
A key technology

QING are an engineering firm with a strong focus on innovation, taking a different and self-confessed unconventional approach to applying the latest in industrial technology. Over the last three years, QING have been introducing European food and agriculture businesses to the true value and potential of Digital Twins. General Director Bart van Went and Business Manager Bram de Vrught provided an interesting insight into how QING are doing things a bit differently. They see Digital Twins as a key technology to unlocking maximum value in future technology implementation. Below we give an overview of how they are emerging as leaders in how industry should be taking technology into the future.

Where QING differentiate themselves is by moving away from simply being a technology provider that pushes a single solution or technology to solve a problem. Bram de Vrught, described that they put as much of the emphasis on developing and improving the application of Digital Twin technology internally as they do on developing unique solutions in collaboration with clients.

Technological Potential

The QING approach to a Digital Twin is multi-faceted and quite original in specification and application towards each client's unique problems and goals. Bram describes that recently working with machine builders and manufactures has shown that the true value of a digital twin is realised through knowing how and



> *Digital Twins allow us to simulate and test scenarios that could be a potential investment and allow us to decide if those investments and risks are worth taking.*

Bram de Vrught
Business Manager
QING

to strategically utilise data driven simulations across different functions of a business.

Bart van Went describes how the QING approach to Digital Twins sees the application potential of a modern virtual simulation as the most important aspect when engaging with the complex data environments and needs of clients. Something that is often completely misunderstood by many is that a Digital Twin has potential far beyond copying or simulating an established industrial process. A common status-quo in understanding a simulation often comes from traditional CAE (Computer Aided Engineering) methods. A virtual environment is used at a single point in time, often only in development, using disconnected historic data to prove a point. The simulation is usually an almost disposable single use tool, archived after use to never be opened again. In the same way, sometimes simulations are simply understood as a tool that can observe and monitor an industrial process.

QING does not look at a Digital Twin as a standalone tool or something that is used for only one single purpose. They create awareness that Digital Twin technology can be a strategic tool with various lifecycles that can be adapted to suit a specific business's needs. Bram de Vrught stated that this has been one of the main challenges that QING has faced. Many people enter conversations or projects with a misinformed idea that a Digital Twin is a single use tool. This is not the case at all. The ability to completely tailor the lifecycle to a business or projects unique requirements lies the true potential of Digital Twin technology.

Adding Value to Business

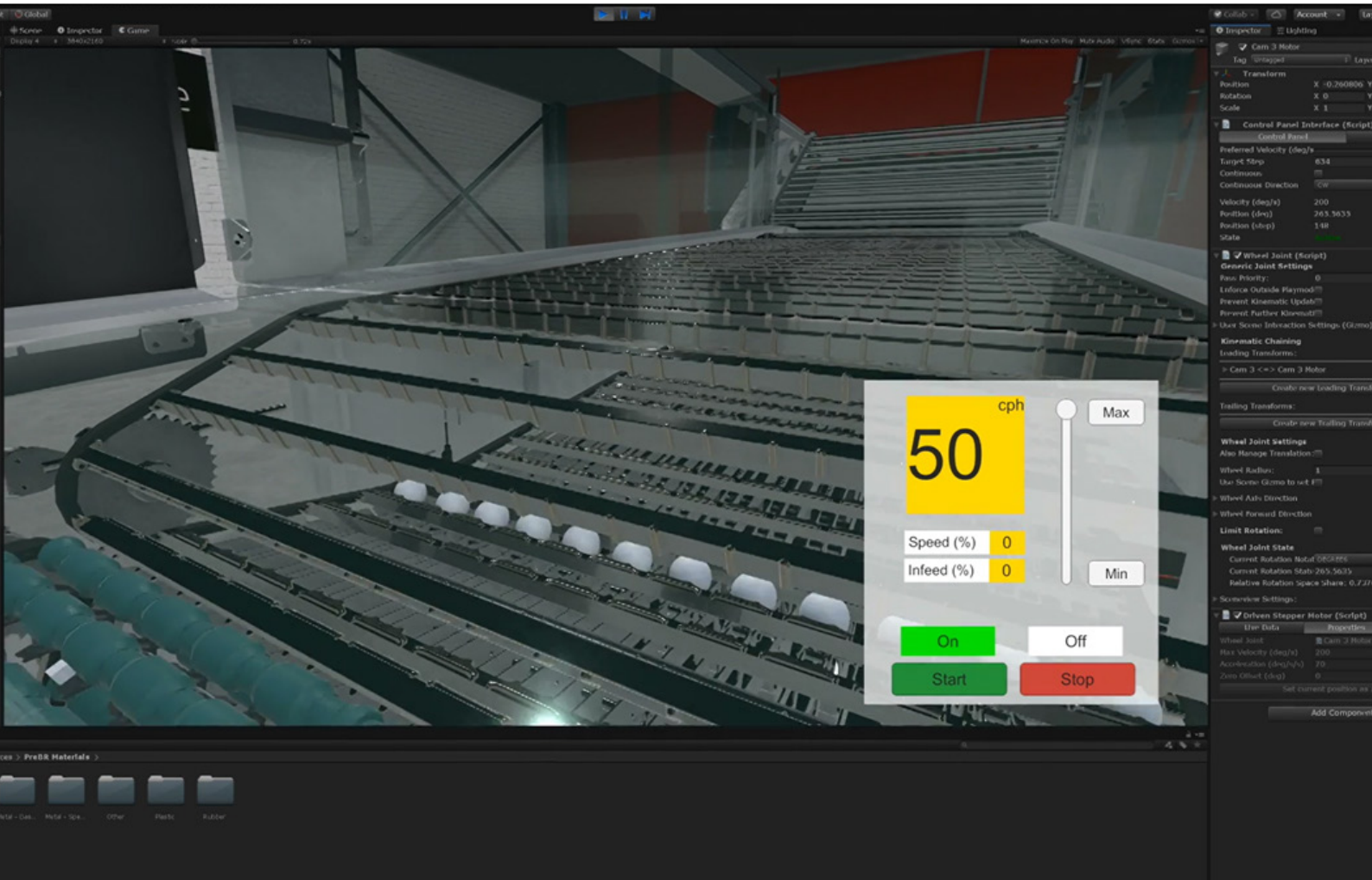
Digital Twin applications that serve and provide longitudinal value over time create a foundation that can complement and enhance a diverse range of business functions. Using data and technology in new ways allows for a simulation that is easily accessible by all staff, across various areas of a business. Below we cover a few select areas from both a technology and management perspective that may see a Digital Twin become an essential tool.

Operations Level

At the operations level, QING sees value in providing advanced capabilities in observing and measuring processes. Using live data in real time, a process management team can ensure strict regulation of environmental controls or conditions with extremely fast if not instant response times. Having rapid reaction capability to changing conditions can result in drastic improvements in operating efficiencies.

Extending beyond process control, the Digital Twin can also offer capabilities in taking the role of extremely effective staff training. Moving away from standalone detached training, modern ways of using interconnected data can see information feedback loops providing live staff guidance and direction as to whether a task is being performed correctly. Another benefit of having an interconnected Digital Twin based training environment is that training programs can be updated automatically in real time when processes change or evolve.

QING see operations efficiency as only the beginning of the value offering of a Digital Twin. An effective Digital Twin can become a very powerful tool for providing information for managing change and developing new projects in any industrial setting. For QING, this is seen as one of the most important applications of Digital Twin technology. By using simulations based on Digital Twin data, new project development can be streamlined with simulations that become extremely powerful tools for risk management. The existing digital twin outputs can feed virtual



prototypes of entire complex systems which would traditionally be performed by using real world physical prototyping. The value here is that the virtual prototype removes many of the usually prohibitive costs, risks and lead times associated with traditional prototyping. Many diverse settings and scenarios can be run with minimal resource requirement, that would normally not be possible.

Executive Level

Strategically and from the executive decision-making level, this gives fantastic insight into future investment and business case scenarios. To invest in technology is an expensive endeavour and this type of simulation can provide an excellent way to manage the risks involved with investing in future projects. The way that this information is presented is also far more developed than the old days of graphs and images on a presentation. For future development scenarios, the Digital Twin can be used as an immersive tool to give a broad range of stakeholder's involvement and interaction with prospective future changes. The various aspects and decision-making points of a project can be explored, and then in-context data driven decisions can be made at the executive level.

Core Foundation

In the end, it is up to businesses to try and understand what they really want to achieve from a digital twin and to fully understand the true value potential. For companies asking where the ROI is on investing in Digital Twin technology, Bram describes that industry needs to not look at a Digital Twin as a single expendable tool. At its core, Bram and the team at QING see Digital Twins as being indispensable future tools with a lifecycle that is potentially almost infinite: a tool that can be used in vastly different ways in development, operations management, training, and risk management. The Digital Twin has potential to become a core foundation for everyday decision making across the entire business.