WHITEPAPER

5 QUESTIONS TO ASK

ABOUT DIGITISING YOUR CONSTRUCTION BUSINESS

4PS

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*'Digital Transformation
will disrupt all
industries – and it will do so
at an unprecedented rate.'[1]*

Dr. Klaus Schwab, The Fourth Industrial Revolution

ASK YOURSELF
are you Apple or Blackberry?

Digital Transformation is one of the most commonly used terms by business leaders nowadays. The business world is going through a rapid process of embracing innovations and companies are facing the choice of either "jumping on the bandwagon" or being left behind. The reasoning behind this decision lies in the attempt to build stronger and better customer relationships, to improve workforce efficiency, to save time, optimise resources and maximise profitability.

Is this not what everybody wants? As it reads in
The Fourth Industrial Revolution book by
Dr. Klaus Schwab (founder and executive
Chairman of the World Economic Forum):
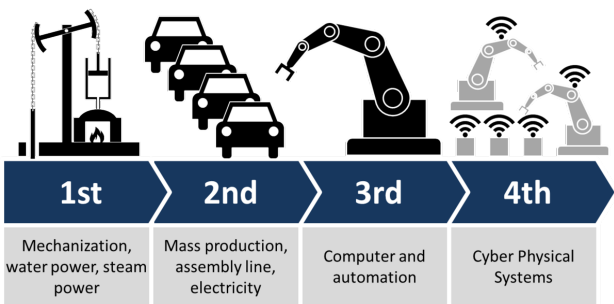
'We are on the brink of the Fourth Industrial Revolution. And this one will be unlike any other in human history. Characterised by new technologies fusing the physical, digital and biological worlds, the Fourth Industrial Revolution will impact all disciplines, economies and industries - and it will do so at an unprecedented rate.'

A powerful statement, indeed, but how will this affect construction businesses? Will it have the same impact on the world that the industrial revolution did? More importantly will your business lead with technology or get left behind those who are making changes as we speak?

Do you want your business to be a Blackberry, or Apple? Do you want your business to be Blockbuster or Netflix? Those that did not move fast enough? Or those that led, and quickly dominated the market?

Footnote[1]: Dr. Klaus Schwab, 'The Fourth Industrial Revolution', 2016

QUESTION 1
Does software technology have a place in the construction industry at all?

The construction industry has traditionally relied on tested methods and best practices. It is how it should be, perhaps, to ensure safety of the users of the completed building. That is not to say that methods have not developed over the years, and innovative products have certainly improved processes.

The same applies to the software in the industry. The introduction of the PC and computers saw the birth of 2D computer aided design software, which allowed more accurate designs and structural calculations, that some construction companies adopted for more predictable results.

There has also long been software available for estimating the various disciplines in construction, using data for bills-of-quanitities and pricing to compile accurate estimates, much faster.

The rapidly increasing mobile technology further reinforces the use of technology and software in construction allowing for site pictures to be taken and distributed, and documents to be easily shared to site without the need for infrastructure in temporary site cabins.

> It is beyond any doubt that Technology already had clear impact in construction, but there is a lot more to come! It makes us wonder: what is next?

QUESTION 2
What are the emerging technologies in construction?

You may have seen some of the funny online videos of people using virtual reality glasses, falling over due to them being lost in the life-like images they are seeing inside the glasses. What does this have to do with construction? - I hear you ask.
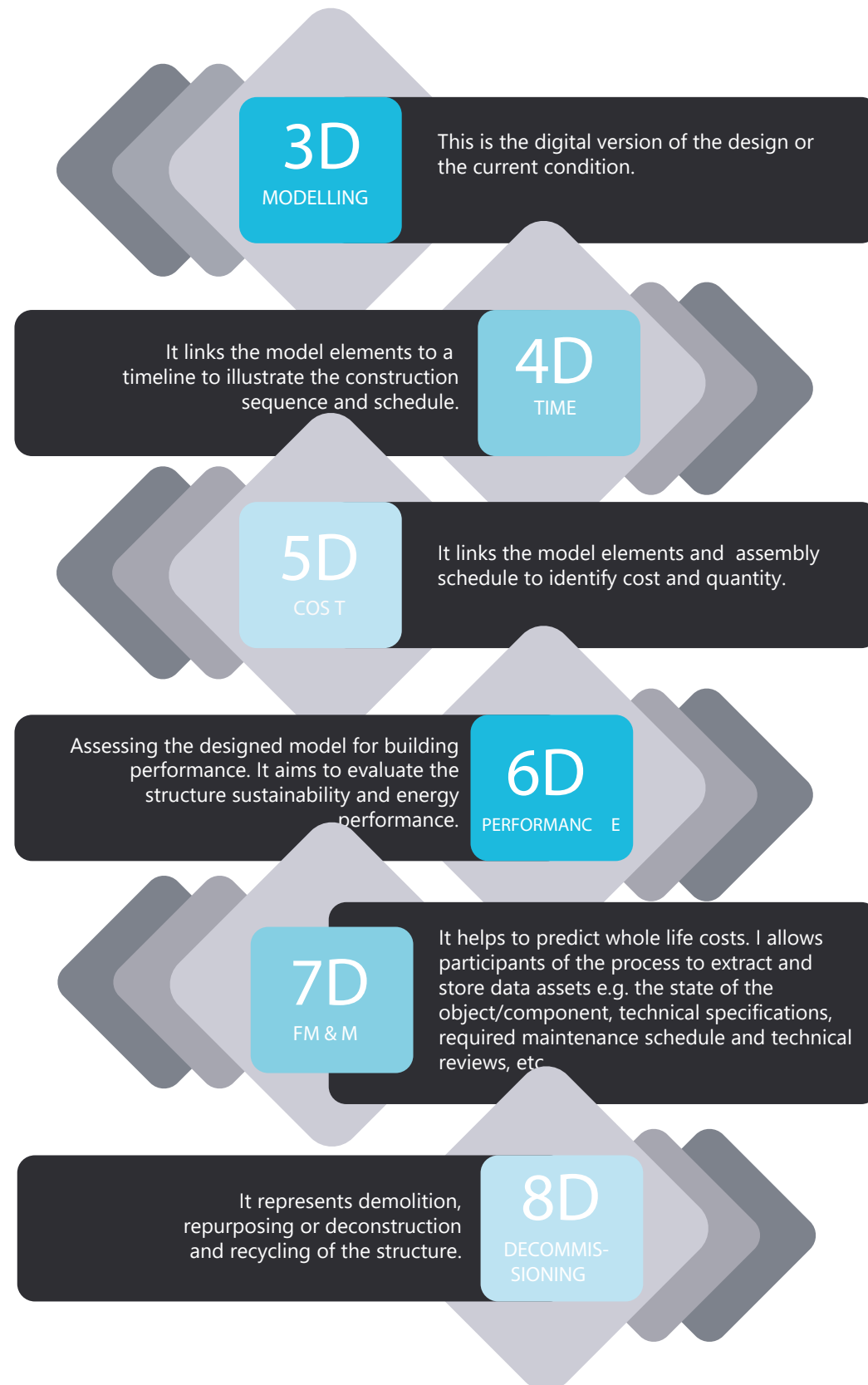
Imagine bringing a site to life, by being able to view a 3D room plan or BIM model through VR glasses, visualising the plan whilst standing on the unfinished site.

Imagine being a field engineer servicing an asset, whilst being able to view asset technical information whilst working in front of the product. This eradicates the need to flick through manuals or even chase them up from a manufacturer.

Another key example is the possibility to run estimating directly from a BIM model so that very little data input is required. Nowadays, there is the potential ability to operate an item of large plant that can automatically operate from GPS co-ordinates against a pre-programmed BIM model.

The Dimensions of BIM

3D
MODELLING

This is the digital version of the design or the current condition.

4D
TIME

It links the model elements to a timeline to illustrate the construction sequence and schedule.

5D
COST

It links the model elements and assembly schedule to identify cost and quantity.

6D
PERFORMANCE

Assessing the designed model for building performance. It aims to evaluate the structure sustainability and energy performance.

7D
FM & M

It helps to predict whole life costs. I allows participants of the process to extract and store data assets e.g. the state of the object/component, technical specifications, required maintenance schedule and technical reviews, etc

8D
DECOMMIS-SIONING

It represents demolition, repurposing or deconstruction and recycling of the structure.

BIM has been discussed for some time, and 3D BIM is being used throughout the industry already, but the technology is evolving. 4D BIM is the 3D BIM model currently used, but with the ability to add a schedule, and planned activities to the model. 5D BIM adds the dimension of cost against the model and activities. Imagine the benefits if you could calculate and plan activities directly from your BIM model, without the need to re-enter data in different systems. 6D, 7D and 8D are also defined. See picture on the right. With these extra dimensions, the collected data will offer you even more opportunity to analyse, take action and optimise your processes.
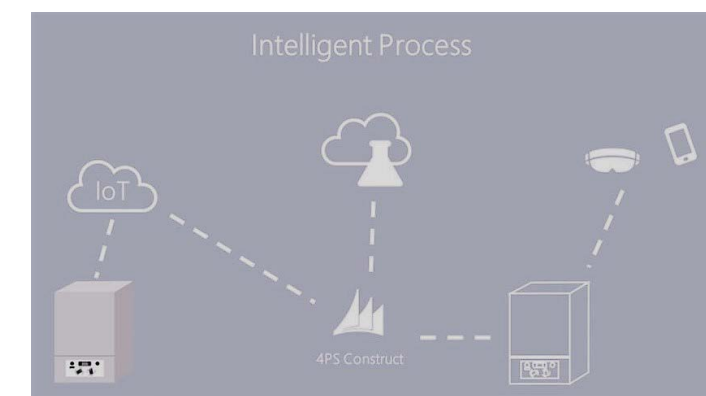
Another emerging technology is the so-called Internet of Things. It is a term often referred to and can apply to the construction industry also. Maintenance of objects and client assets can be connected to the internet using cabling or Wi-Fi, then data can be monitored remotely and automatically. Data can be checked, aggregated and filtered, so that if a component reaches a critical temperature for example, the system could trigger and raise a service call to send a field engineer to repair the item, or prevent the need for repair. You could potentially know about maintenance issues before your client, allowing you to offer supreme customer service.

Imagine that your customer gets a notification on your customer portal that notifies him that there was an issue, that you took action to resolve it and that the problem has already been fixed. Without the customer having to do anything about it. That is the potential of the Internet of Things.

QUESTION 3

What are the benefits of digitising my business?

Whilst the above demonstrates that technology already has an impact on the industry, it is important to make decisions that could offer benefits in the near future as well as further away.

Forward thinking companies are already seeing the benefits of vertical market ERP software, however many companies have taken non-construction ERP products and tried to 'bend' them to fit their construction business.

This often results in using a number of additional third-party products being added to a company wide solution, which can stifle potential benefits. A fully integrated solution can overcome this issue and offer real value. For example, a standard construction focused system that encompasses CRM, estimating, project management, financials, supply chain, reporting, and resource planning reduces the need for repeated data input at each stage of a project, and most importantly the chance for errors.

It is common, particularly in major construction projects, that there is severe overrun in terms of schedule and exceeding budgeted costs. This is not healthy, particularly when the construction industry is notorious for working to low profit margins. Is it a coincidence that other industries such as manufacturers are highly digitised and enjoy much higher margins?

Of course, there will always be unexpected events interfering with construction projects, but with these new technologies, construction companies are offered the opportunity to maintain better control of their projects and respond faster and more efficiently to these unexpected events.

Often, in the first meeting with clients to discuss their requirements and potential benefits of a new ERP, they will discuss pains that their business encounters. Common issues are that end of month project finance reports for their QS/commercial managers are often a week or two out-of-date by the time they are reviewed with management. Also, the lack of employee and subcontractor qualifications and insurances expiry dates can cause much inefficiency and delays on site.

Do these issues sound familiar? These are perfect examples of how digitisation could benefit your business in the short term and make your company future-proof in the long run. How powerful would live reporting on project finances be for you? Wouldn't it be useful for a purchase order raised a minute ago or a delivery to site this morning to be automatically logged? This is all possible and many construction companies are already using these ERP solutions. Today, you can have a cost-to-complete forecast from a QS which could all provide live project data in an interactive chart/graph format informing you of the end of project predicted profit margin so you can take corrective actions immediately, if required.
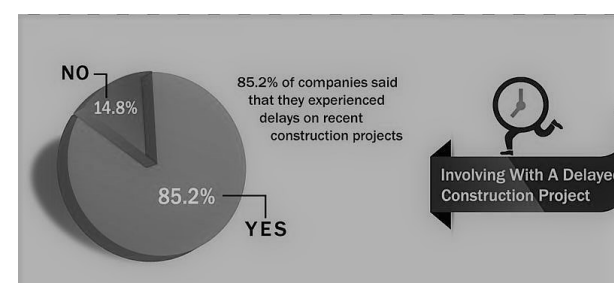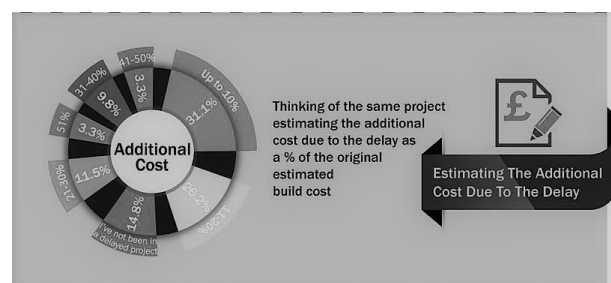
In addition to this, all your site staff qualifications can be stored digitally with document images, to be accessed by project managers and planners, so they can allocate resources to the project with the necessary induction and competencies to avoid costly delays on site. Document expiry date reports can be generated automatically in advance so that renewals can be planned with no down time, and in the process keep health & safety professionals happy!

For service & maintenance businesses, apps and portals are available to ensure a smooth integrated digital process from a customer logging a new call to being handled quickly by a planning manager, then sending directly to the field engineer located closest to the site. All this can be done digitally, quickly and save your business time and money in the process.

Footnote2: A Survey on the Costs & Reasons for Delays in Construction Industry Projects in 2017, https://www.cornerstoneprojects.co.uk/index.php/delays-in-construction-projects/ retrieved on 7th Dec 2018

QUESTION 4
What issues or barriers may I encounter?

Of course, with moving forward, decisions are made, and some changes are implemented to make workflows better, operations more efficient and businesses more profitable.

As with all change, it is not always well received by employees. People like to work with what they know. There is an ageing and very experienced workforce in construction businesses with a large percentage of workers born in the 50s/60s and 70s. But if the industry wants to attract new blood, then it has to engage with and excite the "millennials "and "generation Z" age groups. The best way to do this is with technology - those with youth on their side were adept at using iPads not long after being able to walk!

Whilst a healthy mix between older and experienced professionals and young and enthusiastic to learn people needs to be maintained, can your business afford not to invest in youth to progress and secure its future? Many companies invest in apprenticeship schemes for site staff, but what about head office based roles, and management positions?
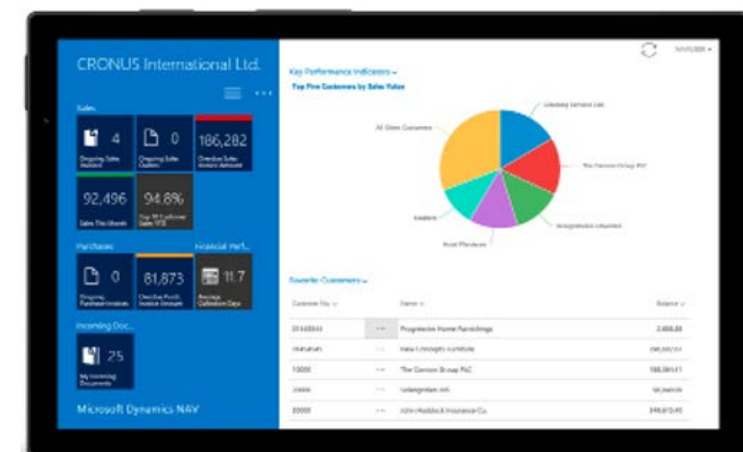
With Microsoft based easy-to-adopt format and technology, particularly the web browser client, means that workers of all ages and IT knowledge can get up and running quickly. If your staff can use Microsoft Outlook or Office products such as Excel, or can do online shopping for Christmas presents, then there is no reason why they could not easily adapt to some of the most popular ERP solutions. Cut-down forms for site managers make their specific tasks easy to find and execute. How much time could be saved by site supervisors booking in material deliveries, instead of unmonitored delivery notes piling up on site cabin desks?

Another big issue for IT projects, surrounds budget approval from directors who aren't necessarily IT savvy, so prefer to spend money elsewhere.

Those people do not always see the inefficiencies of the operational staff, so cannot visualise the potentially huge return of investment.

Whilst those benefits are not always visible initially, when live business intelligence can be demonstrated on a tablet, this issue is soon overcome. Business owners are extremely busy, so having powerful data at their fingertips, wherever they are in the world, is a huge benefit. Gone are the days of waiting for reports to be compiled - access the data when you want it, wherever you want it. All of this can be tailored to suit the individual with graphical representation.
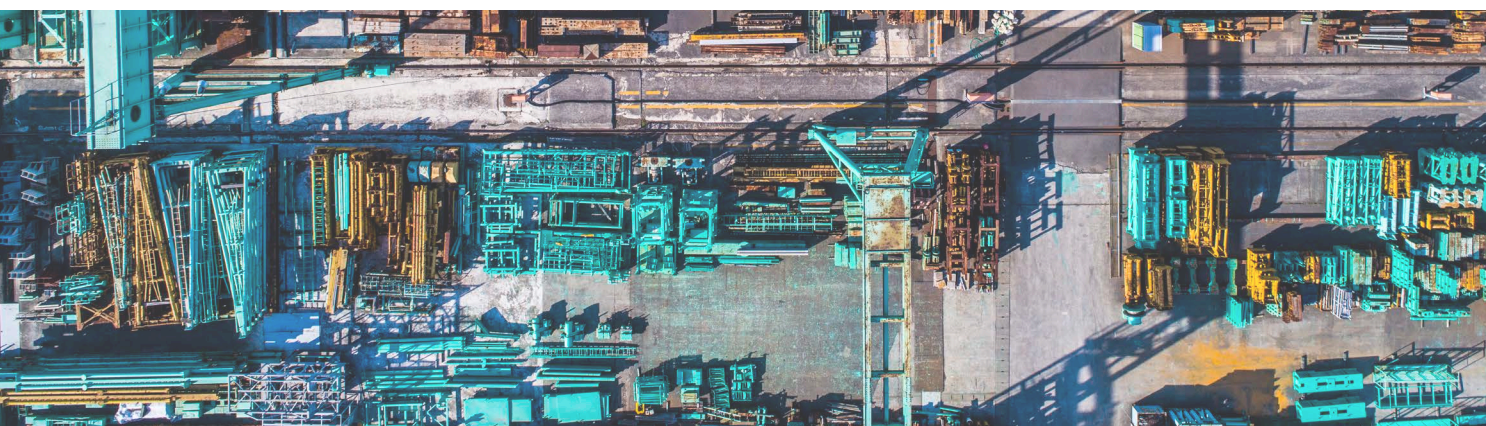
QUESTION 5
What can I do next to start the journey to a digital company?

Organisations could have a few business systems to support their daily operations – ERP solutions, Customer Relations Management, Human Resources Management platforms and many more. Most of the time these systems are not talking to each other. Further complexity is added when a lot of the activities associated with the range of systems are added and managed manually. These are the problems that the Digital Transformation and IoT are solving.

It is good practice to analyse your business systems in each department and check the effectiveness and integration of these systems. At the same time, it is a good opportunity for some "focus group" sessions to ask your colleagues what issues they face, and what would help them improve efficiency.

This information should then give you the basis of assessing what your business has, what it needs, and then discussions can begin about which products can fulfil those requirements.

By adopting an integrated (ERP) solution, you would be able to manage your business and many applications, processes and resources from a single platform and in real-time. Thus, by automating most of the processes to a big extent, the administrative burden can be reduced, and more time can be allocated to building strong customer relationships, maximising sales and optimising resources.

Choosing your ERP business software partner
3 aspects you should keep in mind

When choosing your ERP business software partner, some of the main aspects to bear in mind are:

#1 Technology

A reputable solution which is based on proven technology – Microsoft Dynamics 365 Business Central is very good for the purpose as it allows seamless integration with the Office 365 and a wide range of add-on applications.

#2 Integrated platform

An integrated platform which allows all systems to seamlessly talk to each other - CRM bid management, estimating, finance, project management, service & maintenance, plant.

#3 Standard software

Software that is tailored for the construction industry - keep an eye on system that can also offer CIS and applications for payment as standard (these are rarely seen in a construction business management system but have a big impact on efficiency and savings). Software should be standard, scalable and user-friendly. As market develops quickly, your software should respond accordingly.

4PS has developed standard ERP software for the construction, civil engineering, mechanical and electrical, service & maintenance and plant rental sectors that is suitable for any part of your company. It provides thorough support in the preparation, execution and aftercare of your projects, based on the reliable Microsoft Dynamics 365 Business Central.

Wondering what working with a single end-to-end solution means to your construction business? Watch our animation video to see if our integrated software solution is right for you.
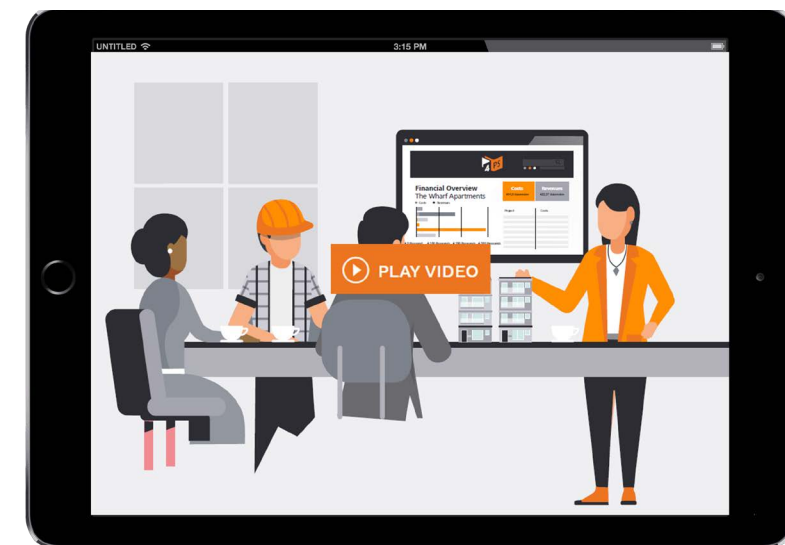
About the author

Mark Egan | has worked with the construction industry for more than 10 years. During that time Mark developed a good understanding of the industry. As a member of the 4PS UK team, he advises construction companies on maximising profits and optimising efficiency through digitising their businesses.

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