CS500136

Leveraging data driven decisions utilising Autodesk Construction Cloud

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Kirby Group Engineering

Co-Speaker: Caroline Shaw
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Autodesk Construction Solutions

Learning Objectives

- Learn the ways of leveraging Big Data on projects
- Learn how to make data-driven decisions with the help of data reporting teams
- Learn how to build reports for Senior Directors
- Leverage the results of collaboration between Autodesk Customer Success Team and the Customer

Description

The goal of this class is to demonstrate how contractors, like Kirby Engineering can leverage Big Data on projects. Kirby Engineering is currently harvesting information from the site team through QC checklists, Rfi submittals, drawing reviews, contract delivery and desktop audits on BIM 360 & Autodesk Construction Cloud. Kirby Engineering champion team would like to demonstrate the development of a business dashboard that would allow senior Directors make project decisions based on real data. Kirby team has set up an internal Data reporting team where ACC has proven to be central to the project data reported back. Other areas of focus include but are not limited to the use of integrations and tools to support data-driven decisions, such as Data Connector, PowerBi and ACC Connect. The class will be delivered by the customer together with Autodesk Customer Success team to demonstrate the importance of collaboration between construction customers and their technology partners.

Kirby began working with Autodesk Construction Solutions 18 months ago with the objective of optimising the current ways of working at the firm. For Kirby, it was important that the team were able to explore software and technology that helped solve common issues in the industry – from increasing reliability by using data better to facilitating greater collaboration across the group and supporting Kirby's supply chain partners to deliver better outcomes.

Working with Autodesk, Kirby identified a number of manual or fragmented processes that could be digitised to not only save time and remove repetition, but also provide better insights to support key business decisions. This industry talk discusses how Kirby effectively digitised their operations through Autodesk Construction Cloud and released the true value of data on a construction project.

Speaker(s)

Mark Danaher

Mark Leads the Digital Construction & Offsite Manufacturing division for Kirbygroup Engineering. He is responsible for the co-ordination of MEP services, the delivery of offsite manufacturing and the promotion and implementation of digital solutions on all of Kirby's projects.

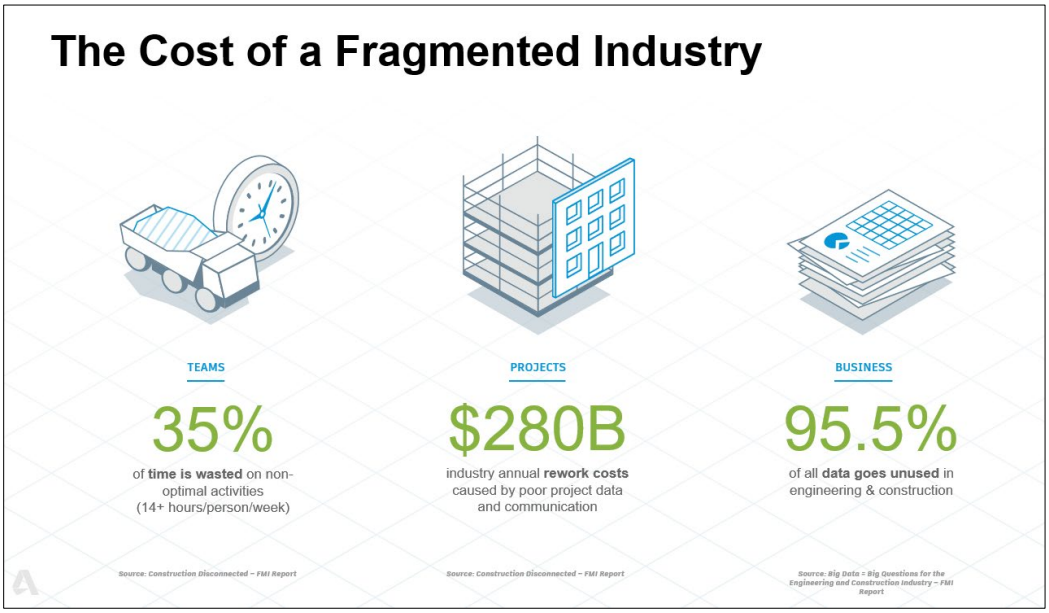
Mark has worked on some of Ireland and Europe's most significant construction projects. In his role, he presents solutions in the early stages of a project and helps deploy Autodesk solutions as the technology platform for multinational clients and construction contractors. Mark was named as part of Autodesk's 40 Under 40: Champions of Construction 2020 as a recognition of his efforts in digitizing Kirby's operations on some of Europe's largest projects.

Caroline Shaw

Caroline has over thirteen years' experience within the construction industry, with a focus on information management and digital project delivery. Recently moving from a Senior Deployment Specialist role to Customer Success Manager within the Autodesk Construction Solutions Customer Success Team. Caroline works with some of the largest contractors and consultants companies in the UK and Ireland, and is passionate about supporting them on their journey to digital project delivery and achieving positive business outcomes using Autodesk Construction Cloud.

Introduction

Data & Journey to Digital Project Delivery



We all know one of the biggest challenges we've had in the construction industry, Is that we are late to the party when it comes to surfacing the sheer volume of data captured across construction projects.

In the basic form, we know that teams are often disconnected due to the use of multiple apps or a complete lack of digital adoption, Not only does this create a huge amount of wasted time but also, the disconnection between the office and the field accounts for a massive amount of avoidable rework. Which impacts project cost, programme, and quality.

Now If we go up a level the impact on our overall business is huge. The construction industry urges for more connection – from people to data - and technology plays a key role within this opportunity.

Introduction to Kirby Engineering

As an MEP contractor Kirby are at an intersect point with regard to data and information on all of our projects. Traditionally the construction industry is slow to adapt to new technologies and rely on old fashioned paper-based solutions. Kirby began working with Autodesk Construction Solutions in 2019 with the objective of optimising the current ways of working at the firm. For Kirby, it was important that the team were able to explore software and technology that helped solve common issues in the industry such as poor information flow, slow release of information and poor change management.

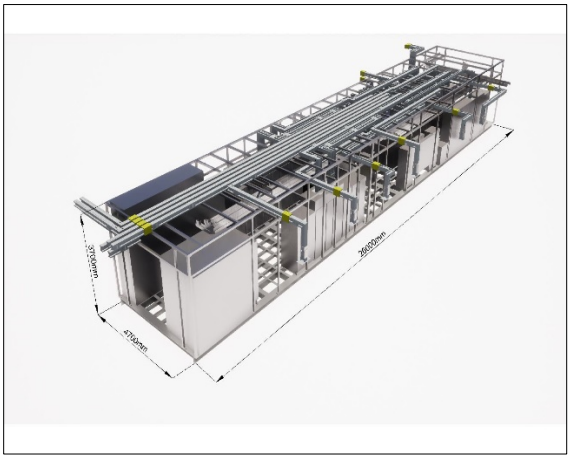
Kirby before our data journey

Kirby relied on paper-based solutions to deliver our projects. Over the last number of years, Kirby has expanded its project pipeline and client base growing substantially across mainland Europe. It was vital that as the business grew, we were able to continuously deliver on our core values – People, Safety, Quality Delivery and Value. Below is how it stood 2019

- Kirby utilised paper-based approach to documentation
- Traditional on-site building principals – Stick Build
- Slow release of data from design to site
- Change management was not streamlined
- Real time information was not available, resulting in reactive rather proactive decision making

Autodesk Construction Cloud Pilot Project

Kirby was working on a particular project that was identified as a suitable candidate for piloting the new technology. Kirby took the lead co-ordinator role on the delivery of two new data centres for a leading cloud computing provider in Dublin. The project involved incorporating the application of prefabrication and modularisation expertise to the project delivery. On data centre projects like this, compressed schedules and site restrictions can often be a problem, reducing site storage, site tooling and congestion of people was critical to completing the project on time, safely.



3D design and component standardisation were critical to the project's success. The modules were designed to be built in an off-site manufacturing facility. The off-site works included the fabrication of steel frame and fitting of the structural floor, installation of electrical equipment, such as UPSs, LV switchgear, battery racks, LV busbar installation to the perimeter of the modules, containment for LV submains, lighting, fire alarm and general services.

The modules were point cloud scanned off-site and imported into Navisworks. The on-site conditions were also point cloud scanned and both were appended to see if there were any clashes before delivering the modules to site. This method ensured that any required modifications were completed off-site.

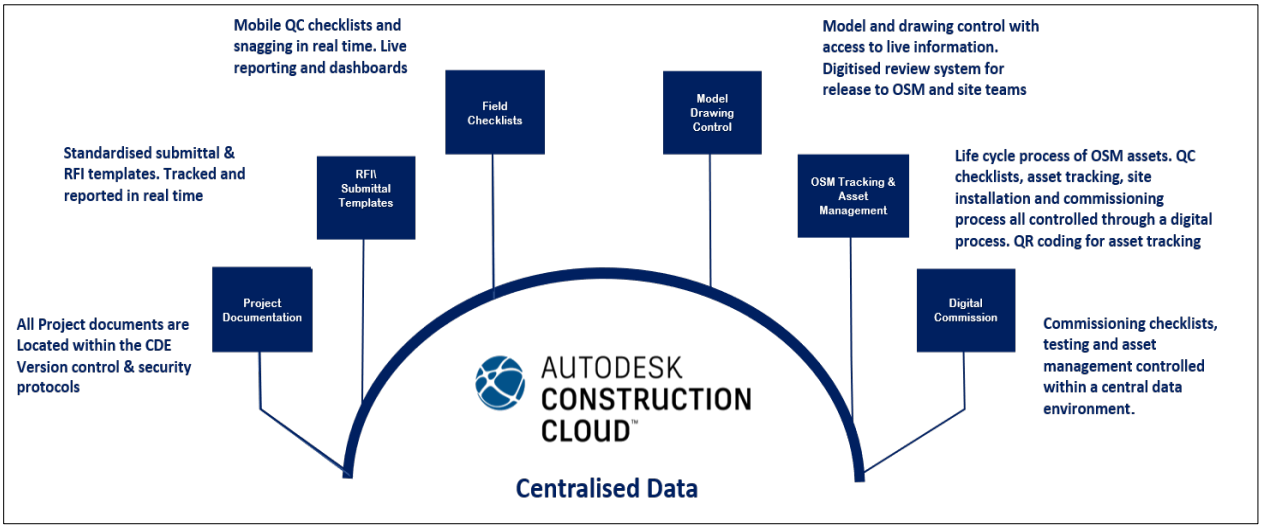
In total, 56 modules were made off-site, each weighing in excess of 20 tonnes and measuring 26m(L) x 4.7m(W) x 3.7m(H), which was the largest allowable size for transportation on the Irish roads.

Once the modules were delivered to site, Kirby utilised robotic totalstations with laser technology to install the modules to the precise model co-ordinates. These co-ordinates were taken directly from the federated model and automatically synced to the robotic totalstation eliminating any install errors.

Entire electrical switchrooms were installed in a matter of days paving the way for the final hook-up of distributed services. A total of 24 switchrooms were installed, energised and are in the final stages of commissioning.

Learn the ways of leveraging Big Data on projects

Kirby and the Autodesk team mapped out Kirby's end-to-end project delivery journey for this particular project – keeping a view to rolling out more widely across all future projects. We identified how we could move to a more connected and digital way of working by phasing out manual and paper-based processes and joining up their digital practices into one unified place that was easy to access for all involved in a project. We decided to transition all our projects away from using a mix of different software solutions and paper-based processes onto Autodesk Construction Cloud – a unified platform connecting project teams and data in real-time, from design through construction.



Information including the federated model, fabrication drawings and technical specifications could be accessed by the fabrication workshop, the site teams and the client. Document reviews, technical submittals and RFIs were all run through the software, which centralised all of the information and enabled more effective communication amongst the project stakeholders.

Below we have highlighted the key areas of our project were the use of Autodesk Construction Cloud could allow us to capture data more easily. This would enable us to data mine and essential work with a Big Data approach.

- Documents and templates standardized to allow for better quality data
- Full project document control through Autodesk Construction Cloud
- Centraslised our BIM data with a live feed of information directly to site
- Delivered an OSM approach to the project through live data
- Standardised digital checklists for consistent information capture in the field

Learn how to make data-driven decisions with the help of data reporting teams

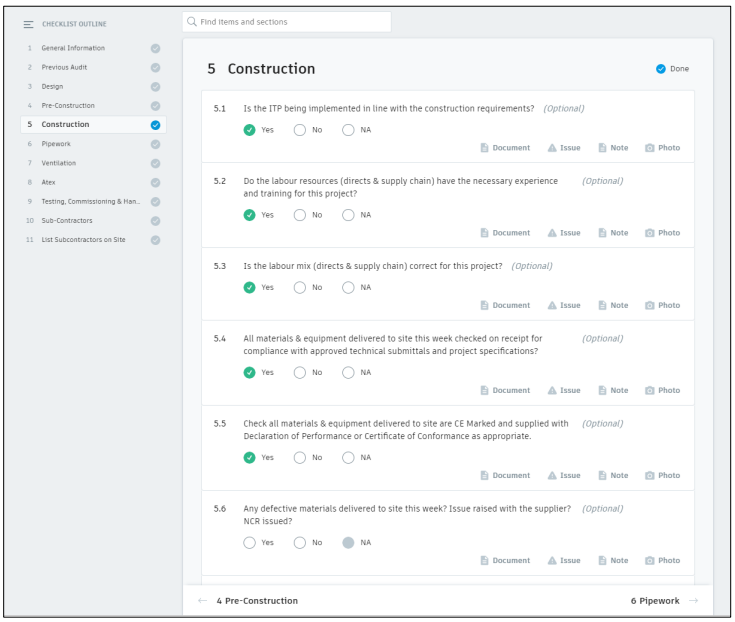
Centralised BIM data with a live feed of information directly to Site & Manufacturing

Miscommunication and delay of information to the construction teams was a real issue. The old way off working was to complete drawings , print them out and deliver them to site. This led to old information being utilised on site and caused construction and quality issues. With ACC we were able to issue drawings directly to site and our manufacturing facility in real time for review and comment. Information flow in both directions was instant and live.
Digital construction HUBs linked site and OSM to our live BIM data. This lets the construction team and their offsite manufacturing teams access to live information such as revised drawings and federated models.

With the ability to review live design information our design teams and construction teams were able to make real time decisions and reduce the need for costly rework or delays

Digital EHS & QC checklists

Standardising processes and capturing data in real time is the key for utilising Big Data. By replacing on site paper checklists with digital checklists we were able to capture live data from site in multiple locations and functions.



By capturing this data within checklists Kirbys management team could review and flag any information that may be of a risk to the project. The live data from the checklists was reviewed in real time within the software allowing for the team to make more informed descisisions. This resulted in a high quality and safe project delivery.

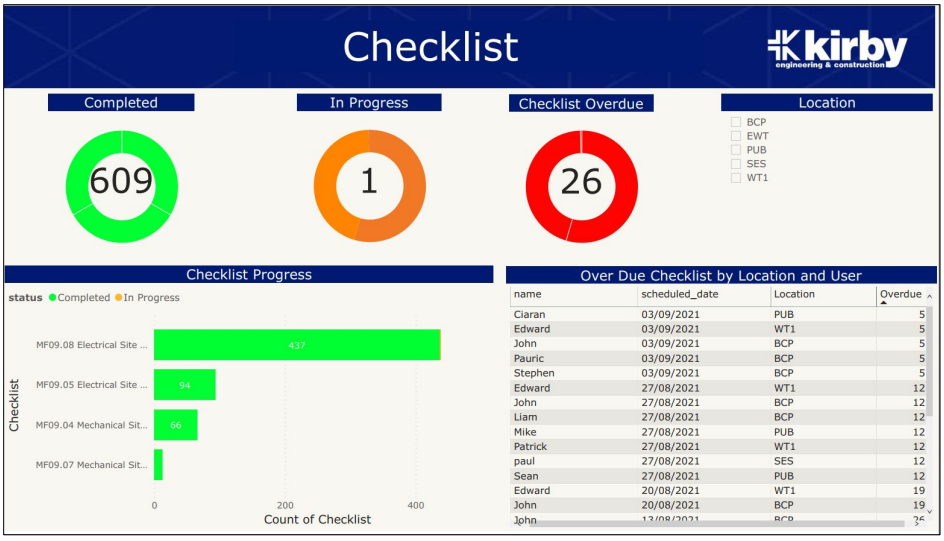
Data Capture & Team Training

To embed the technology and support the entire team at Kirby to understand the value the technology could add, the company developed The Kirby Way – the company's cultural, systems and process approach to doing business. The Kirby Academy, which is part of The Kirby Way, trains all key site staff to deliver its projects as a collaborative team using world class processes.

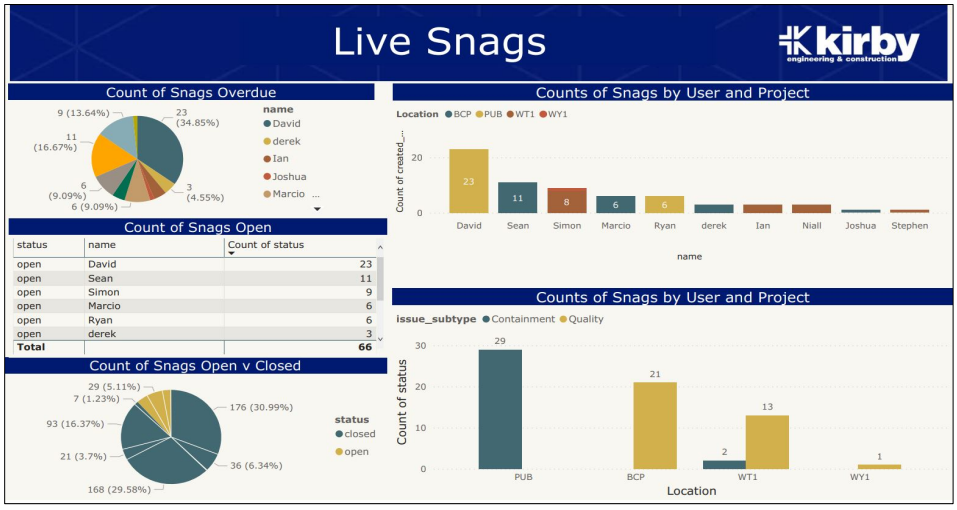
Autodesk Construction Cloud is a key enabler to this, and piloting the technology on a few projects first helped us to develop this training iteratively for the team. We were supported by Autodesk to develop some of the training solutions for our Academy. We're committed to ensuring we're using world-class software in the right way - applying the best processes and delivering the best possible outcomes for our clients and for us. The training for the team not only provides a thorough understanding of how technology is applied to projects and it also reaffirms Kirby's key values of quality and safety to their employees undertaking the training.

Learn how to build reports for Senior Directors

Live dashboards were developed by Kirby to provide high level status of the information to the project management team. This information ensured that the data was being captured correctly and on time. The project management team could then ensure that the standardised data was available within the database for data mining and accurate analysis leading to pro-active descision making rather than reactive.



Live data feeds could be accessed by the senior management team iallustrating the current status of the project. An example of this would be with internal snagging. As seen below the snags can be reviewed with regard to Locations, Status, Users and due dates. This results in less rework, time saving and a better quality product.



This was possible through the Autodesk Construction Cloud data connector and linked directly to Power BI. For more information this please resources section at the end of this handout.

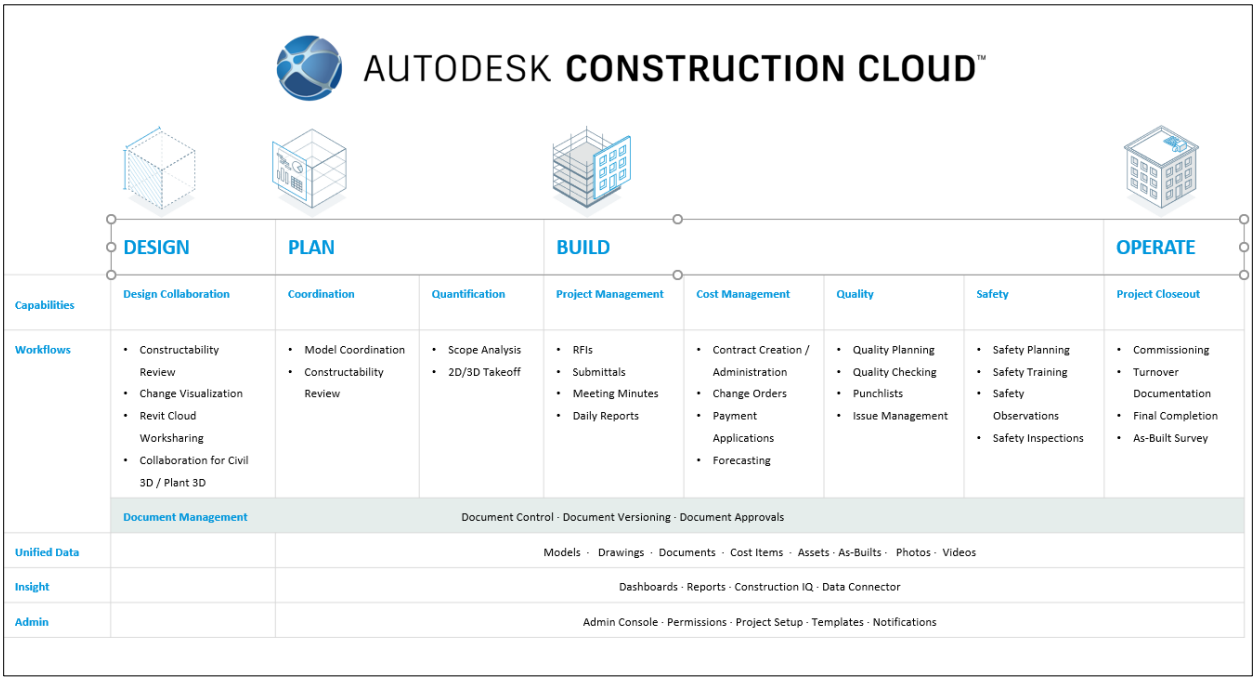
Leverage the results of collaboration between Autodesk Customer Success Team and the Customer

Autodesk technology successfully employed by Kirby and the team's modularisation expertise enabled efficient project phasing and over 20,000 hours (15% of total project man-hours) of the construction activity was completed off-site. This minimised potential safety & quality issues, improved QA/QC process efficiency and reduced onsite management costs.

Kirby successfully applied the latest technology to construction and utilised a design for manufacture approach to deliver a 60MW hyperscale DC project. This project is unique as it contains 24 largest electrical switchroom modules in Europe, which were manufactured off-site and delivered to site Just in Time.

By applying state-of-the-art Autodesk software and modularisation expertise, Kirby ensured that all project milestones were met by maximising efficiency, reducing on site management costs, enabling the execution of level 3 testing and commissioning and creating a safe working environment for the whole project team.

Autodesk Construction Cloud



Kirby's implementation and adoption of Autodesk Construction Cloud has highlighted the power of connected workflows spanning design, plan, build and operate, sharing data across all phases of a project.

Through their use of build, the Kirby team have implemented robust document management workflows, enabling the team to capture and maintain all project documentation in a central location.

What's really powerful, is that all members have controlled access to the latest information whether they be on-site or in the office.

By also incorporating in their quality and safety inspections, Kirby has been able to ensure their entire team can maintain quality & safety standards from any device, anywhere at any time.

By deploying a centralised issue management process, allows their functional teams controlled access to design, quality and safety issues from one unified location.

Kirby also leverages Build to manage their RFI (request for information) process between their supply chain and the contractor to achieve effective communication and collaboration between team members during the review process.

Utilising Assets has allowed Kirby to track the manufacturing and commissioning process for mechanical and electrical equipment, by connecting quality checklists and recording issues, but also the assigning QR codes to each asset to streamline the process of locating each asset to record required data.

Next Steps

Take the time to assess your technology landscape and evaluate the number of solutions being used across your business:

- Simply start by booking 30 minutes slot in your calendar and pick up some post-it notes. On each post-it detail a required workflow within your function group and the current technology solution(s) you currently use to house those workflows.

- Once complete discuss with other functional groups within your business to identify what solutions they are using to facilitate their required workflows.

- Establish a digital steering group with your IT department involved who can provide data around construction applications used and the number of devices being utilised within the business.

Starting that conversation and understanding across your business what solutions are being used and the workflow requirements will highlight where duplication of workflows exist facilitated by multiple solutions. You may also identify where paper-based methods are still in place to achieve workflows that could be housed on Autodesk Construction Cloud providing a more efficient way of working and visualising data captured.

Resources

Autodesk Construction Cloud - Data Connector:

https://construction.autodesk.co.uk/tools/construction-data-connector/

https://help.autodesk.com/view/BUILD/ENG/?guid=Data_Connector

Autodesk Construction Cloud Power Bi Templates:

https://construction.autodesk.co.uk/templates/power-bi/

Power Bi Connector Beta:

https://construction.autodesk.co.uk/templates/power-bi-connector/

Autodesk Construction Cloud Digital Builder Blog:

Why Adopting a Data Strategy Gives Construction Businesses a Competitive Advantage – And Where to Start:

https://constructionblog.autodesk.com/adopting-construction-data-strategy-europe/

New Report Reveals Data Strategy is a Key Advantage in Construction:

https://constructionblog.autodesk.com/construction-data-strategy-report/

You Have Data — But Do You Have Construction Insights?:

https://constructionblog.autodesk.com/construction-insights-data/

Previous Autodesk University Classes:

BIM 360 and Data Analysis (2020):

https://www.autodesk.com/autodesk-university/class/BIM360yushujufenxi-2020