CitA
BIM GATHERING 2019

4th CitA BIM Gathering 26th September 2019, Galway, Ireland.

Delivering **better outcomes** for Irish Construction

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mcavoy
Smart Offsite®

Here's one I made earlier – Create, Interrogate + Construct

Lorraine McMorrow
BIM & Digital Construction Manager

Offsite construction for a smarter tomorrow
mcavoygroup.com

Introduction

- The McAvoy Group and our digital journey
- How the latest advances in digital technology were applied to a pioneering project at Concordia Academy, Essex
- How the McAvoy Group create and interrogate information to validate before construction
- The synergy between offsite construction and digital technology

About The McAvoy Group

- One of the Ireland and UK's **leading offsite specialists**
- Independent, family-owned
- Over 200 employees
- Established **Principal Contractor**
- **Delivering high quality buildings** for education, healthcare, residential, commercial and infrastructure
- **Harnessing digital technology** to streamline processes and further improve the quality and efficiency of buildings

Smart facts

First offsite specialist to achieve BIM L2

Smart facts

Digital technology is core of our business

Smart facts

Delivering bespoke offsite solutions for 50 years

Smart facts

BIM Awards Contractor of the Year 2019

Smart facts

Multiple award - winners for digital technology

Smart facts

2 purpose-built offsite manufacturing centres spanning 150,000 sq.ft

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Volumetric Construction

- Series of 'Modules' or Units
- Bespoke shapes / sizes
- Approx 80% finished prior to dispatch
- Suitable for transport across the UK & Ireland

Lynch Hill Enterprise Academy

Client: ESFA

Project Value: £20m

Type: 8,750m² 3 storey STEM school

Programme: 61 weeks

Northumbria Specialist Emergency Care Hospital

Client: Northumbria Healthcare NHS Foundation Trust

Project Value: £15m

Type: 6,500m² 3 storey ambulatory care unit extension

Programme: 52 weeks

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Passenger Boarding Zone, Dublin Airport

Client: Dublin Airport Authority

Project Value: €22m

Type: 2,200m² boarding facility to accommodate 8,000 passengers per day

Programme: 45 weeks

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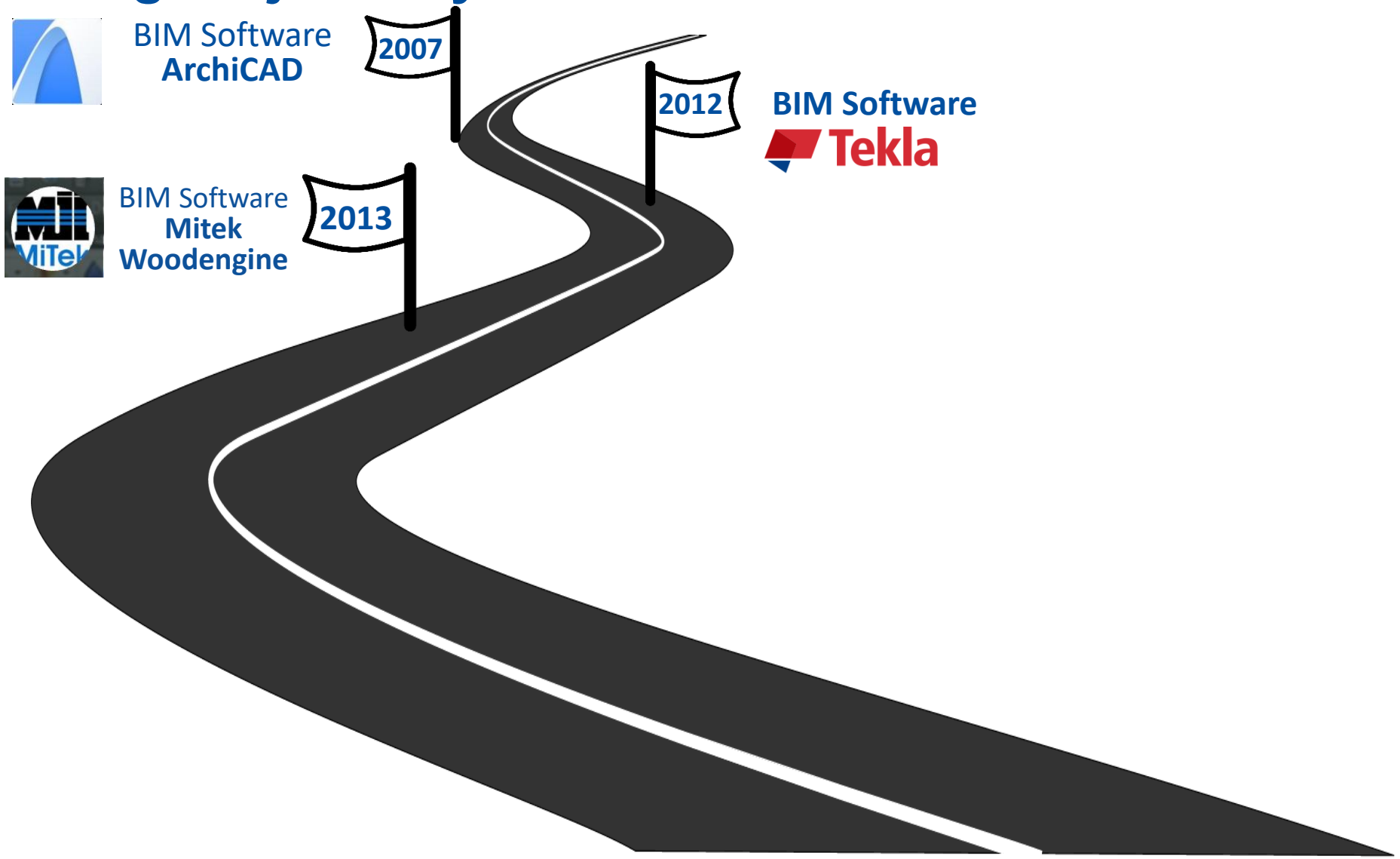
Our digital journey

Our digital journey



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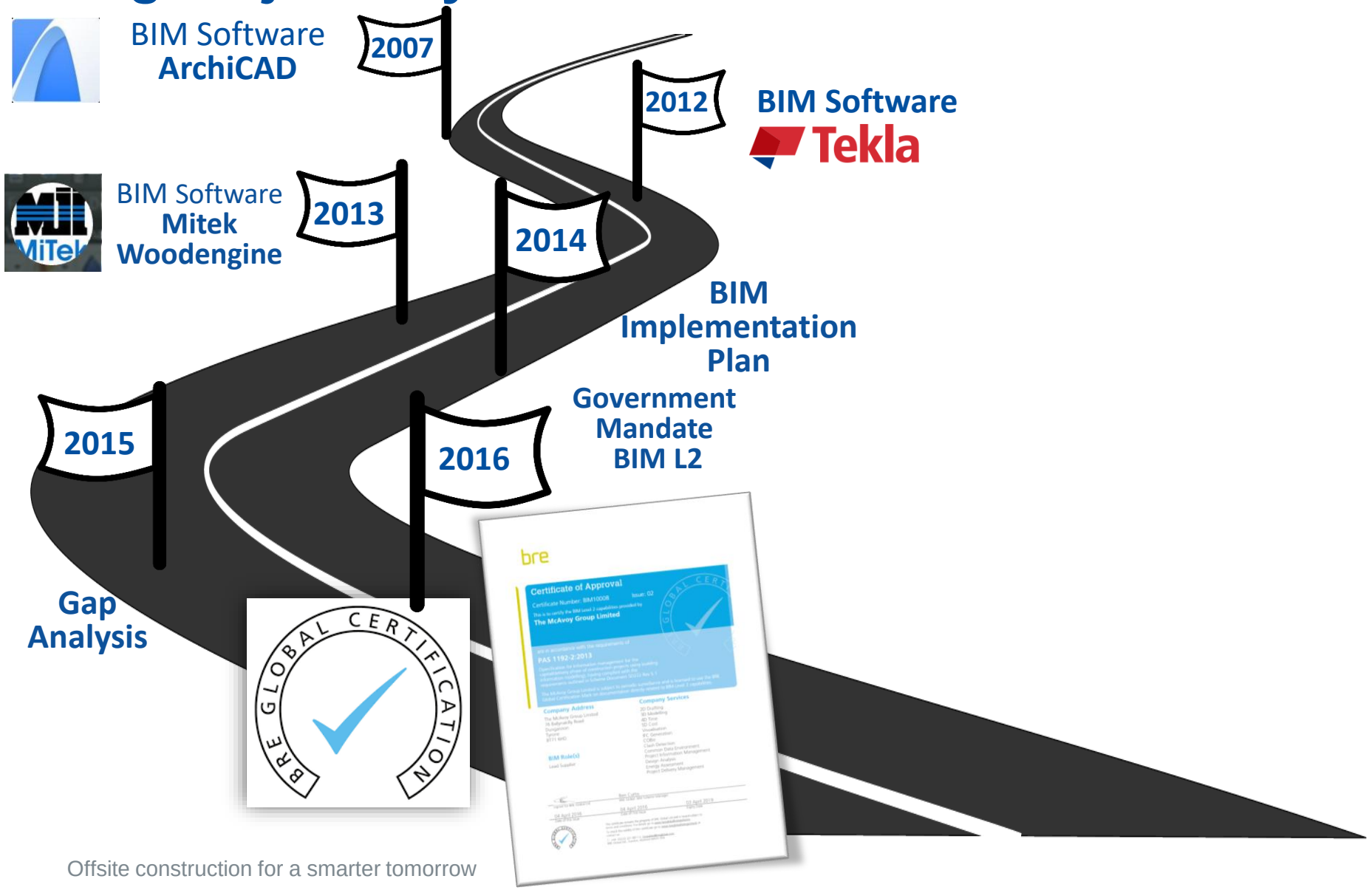
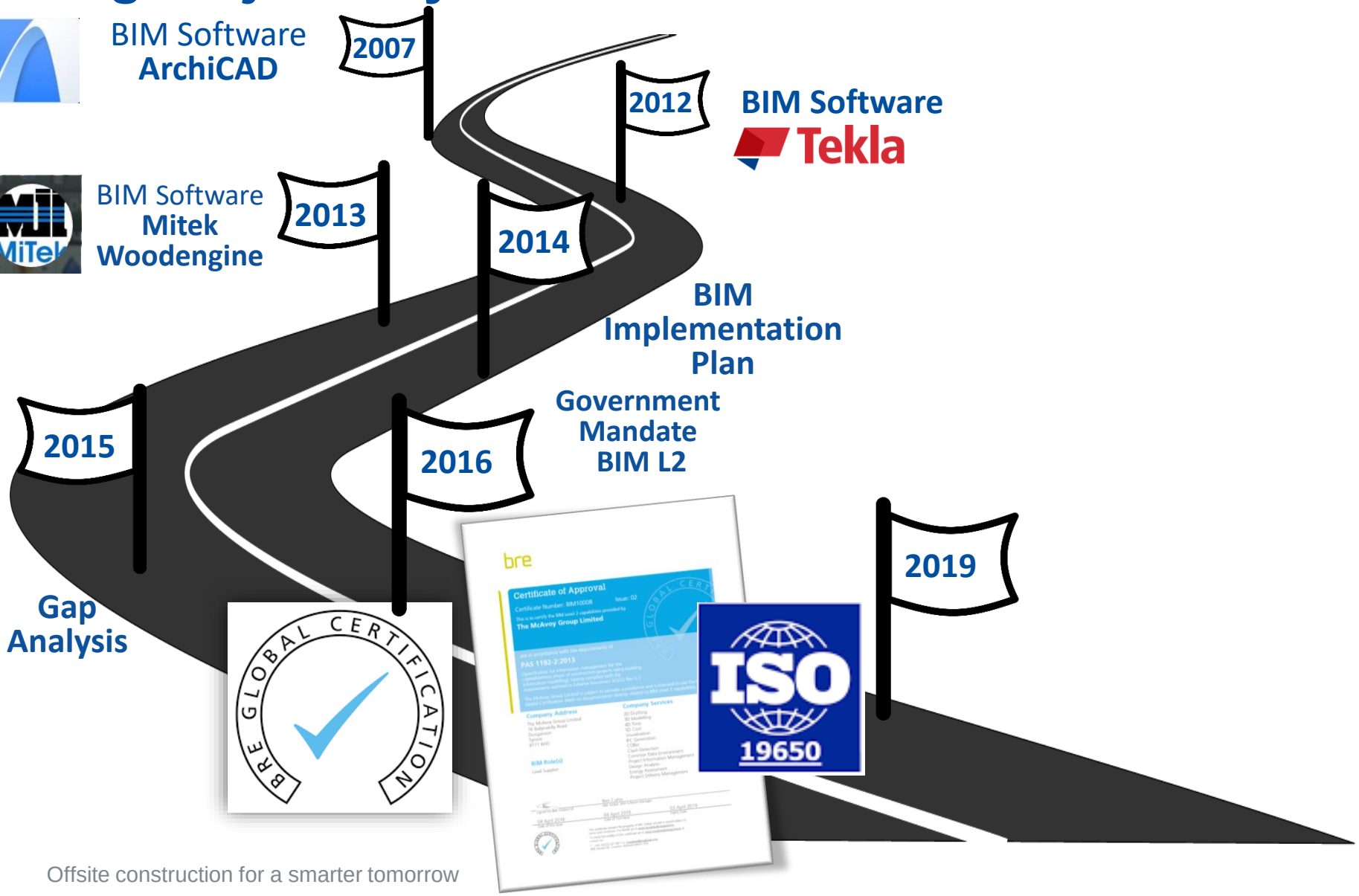
Our digital journey



Our digital journey



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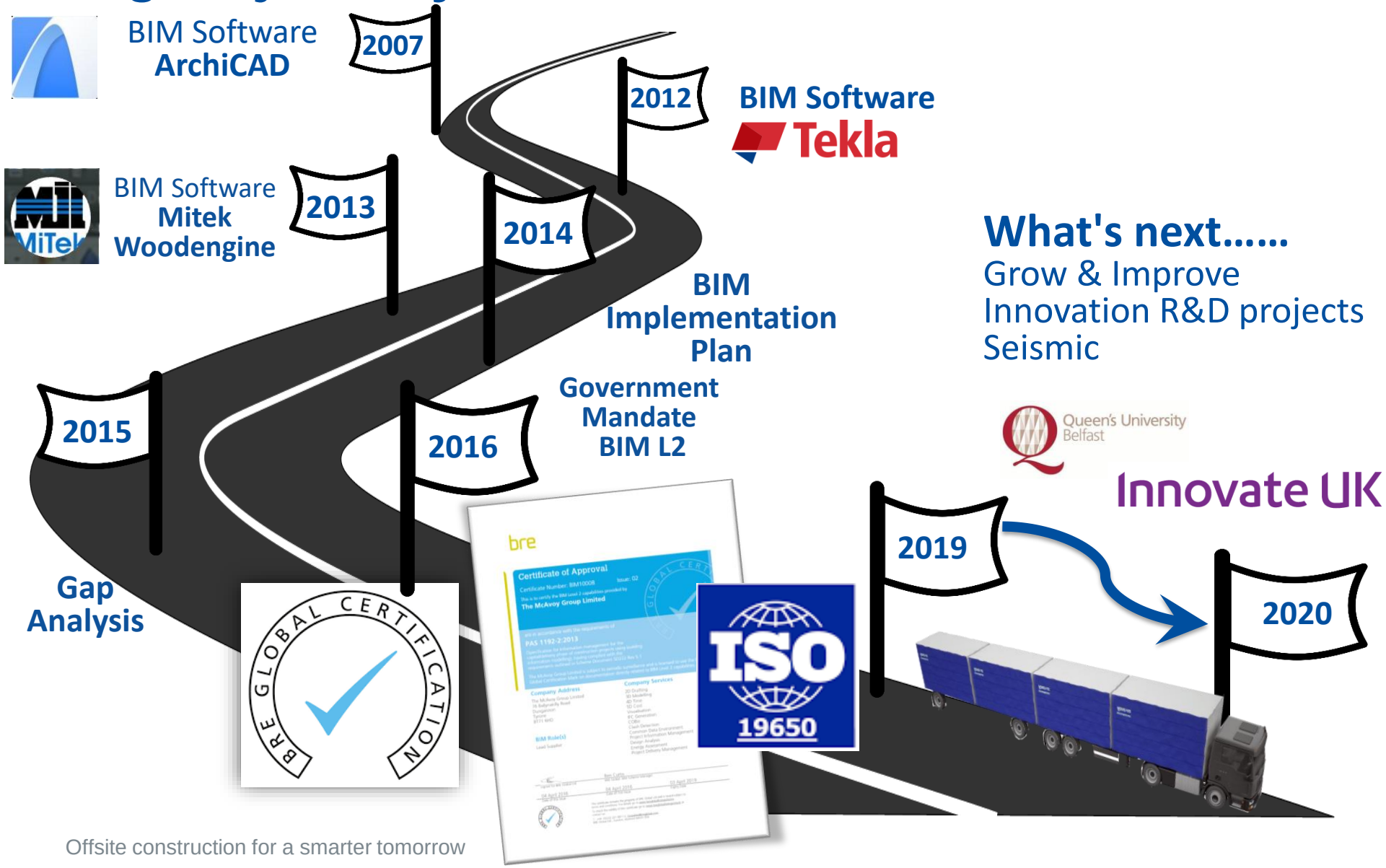
Our digital journey



What's next……

Grow & Improve
Innovation R&D projects
Seismic

Queen's University Belfast

Innovate UK

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CASE STUDY – Concordia Academy, Essex

- **Client** Education & Skills Funding Agency
- **2,972m²** 4-storey primary school
- **630** student place
- Extensive use of BIM and virtual reality

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Digital Construction

It is a process of how we deliver projects in the most efficient way possible:

- **Streamlining** of processes
- More effective **collaboration**
- Better **quality** decisions
- **Shorter** design periods
- Improved client **engagement**
- Tremendous synergy with **offsite**

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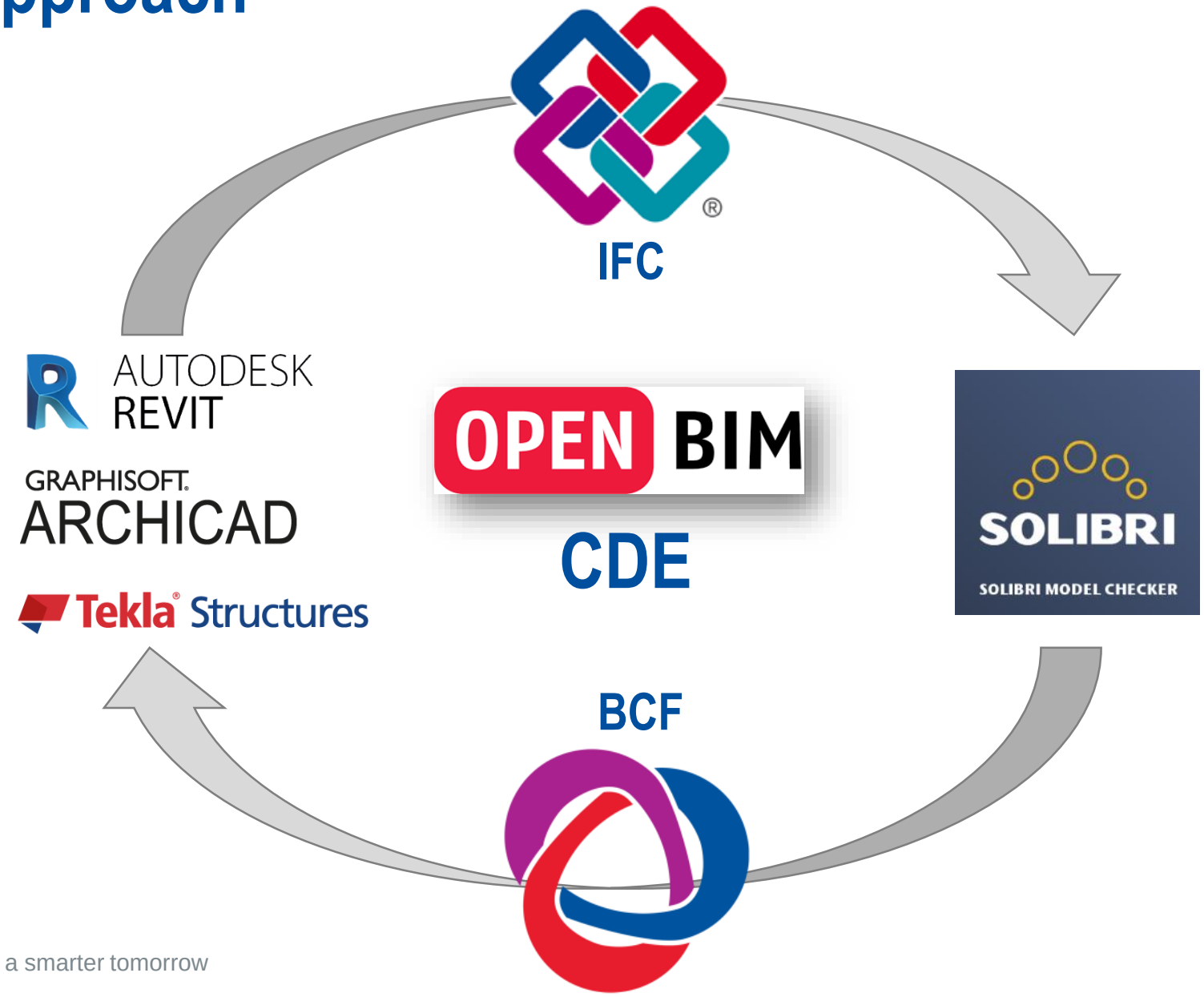
Open BIM Approach



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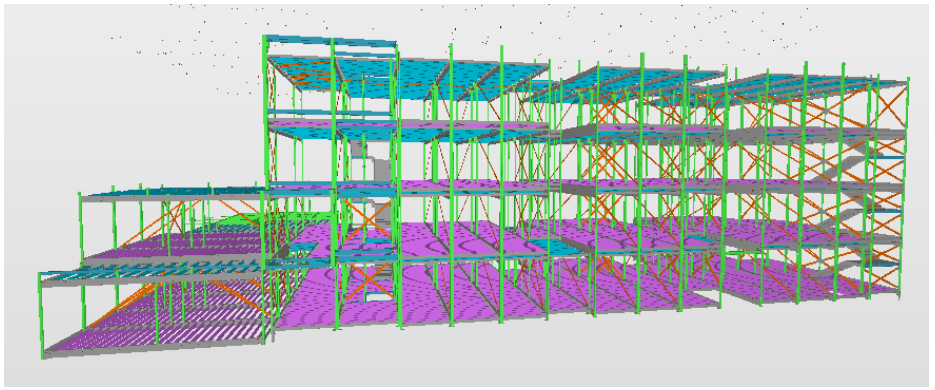
Create

- 3D modelling for enhanced collaboration
- Clash detection between modular structure and M&E elements
- Reduces risk of re-working in design, manufacture and on site
- Seamless construction



Collaboration

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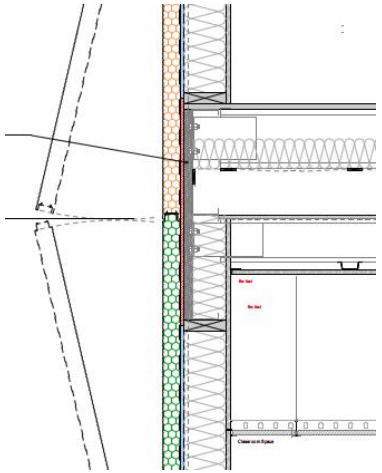
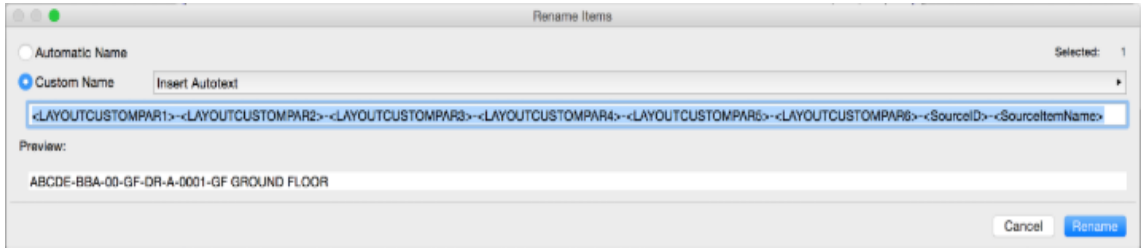
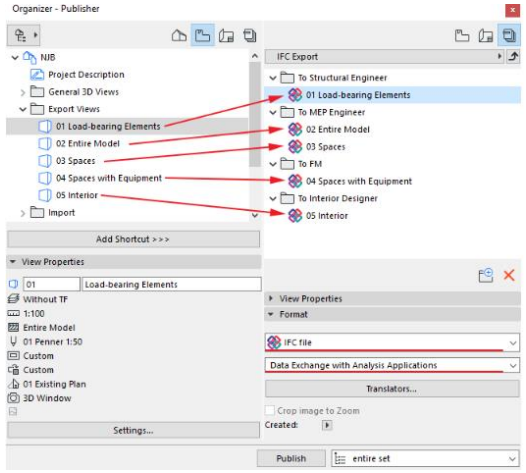
Create - ArchiCAD

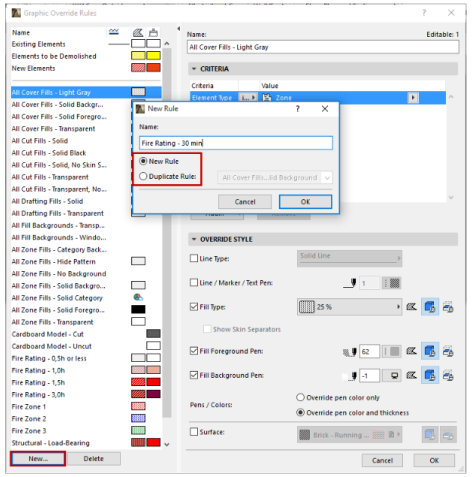
- **Intuitive Design & Flexibility** – critical for offsite construction
- **Data** – classification
- **Publisher** – automated documentation
- **BIMx** – visualisations
- **Interoperability** – comprehensive IFC

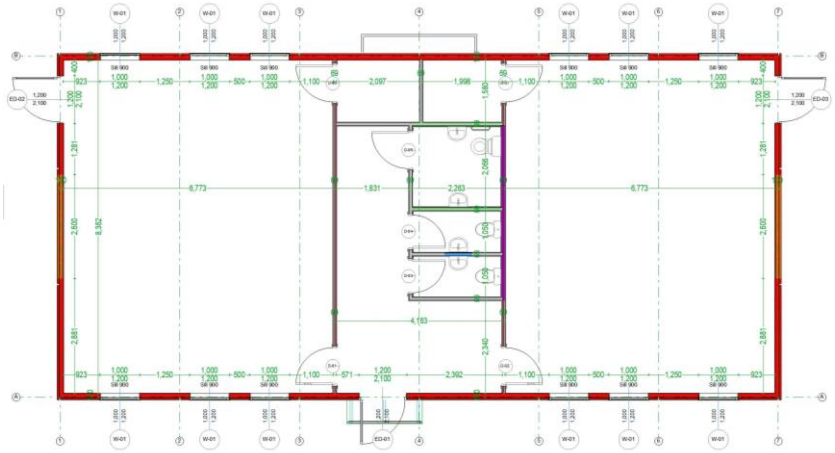


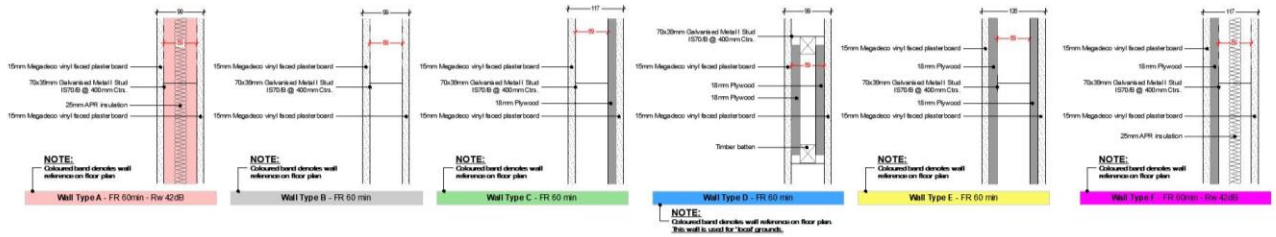




Create - ArchiCAD







- **Automation** – scheduling, graphic overrides using attribute data
- **Twinmotion** – photo realistic renderings
- **Collaboration**

Create + Interrogate - Virtual Reality

- One click transition from ArchiCAD to VR with Fuzor plugin
- Bi-directional live link between ArchiCAD and VR with a request sync back to bring changes made in Fuzor back to ArchiCAD

VR

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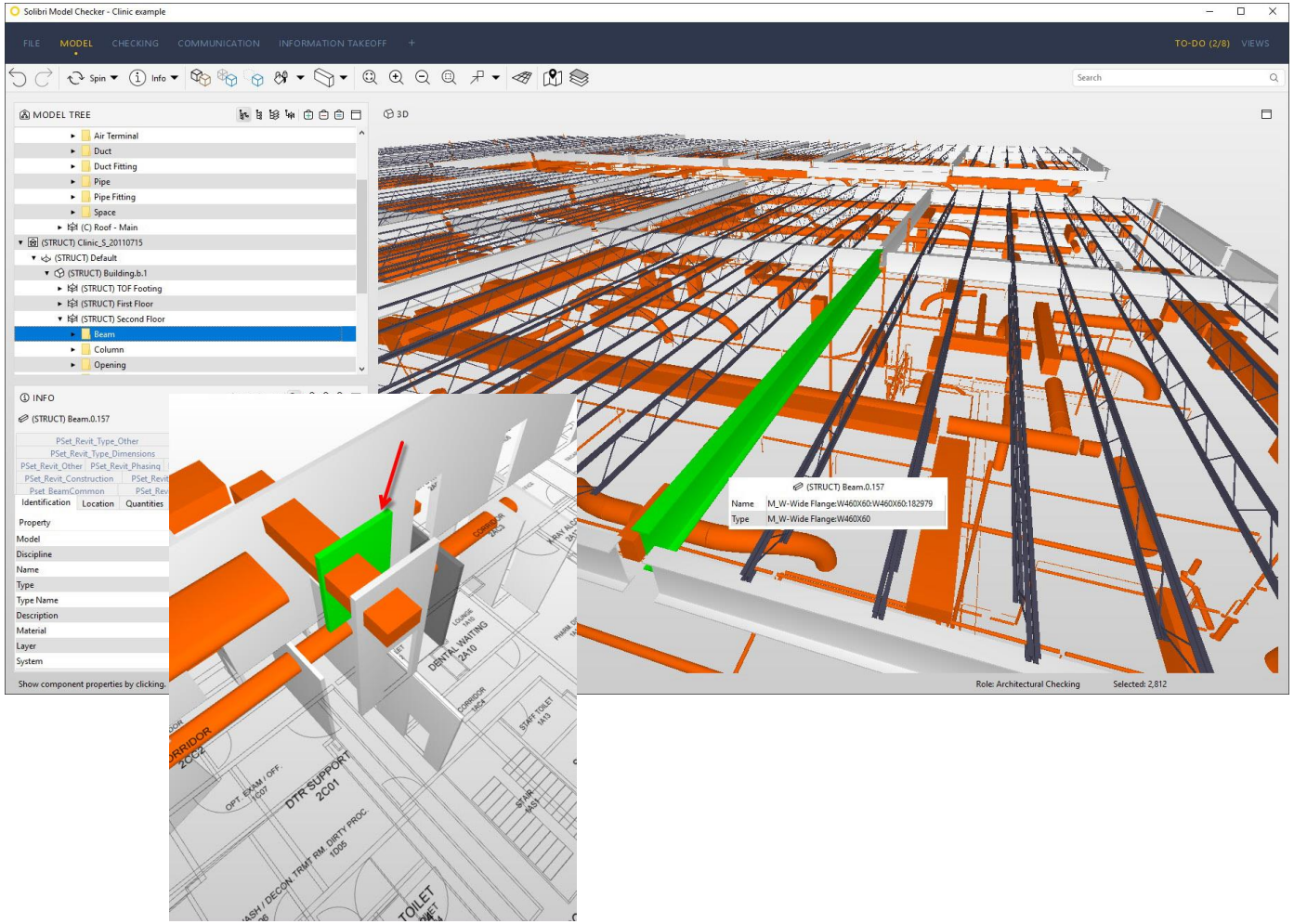
Interrogate – Solibri Office

Coordination: Geometry v Data

- Federate IFC Models
- Quality Assurance
- Coordinate and Communicate - **BCF**
- Simplify and automate process
- Ruleset checking and verification



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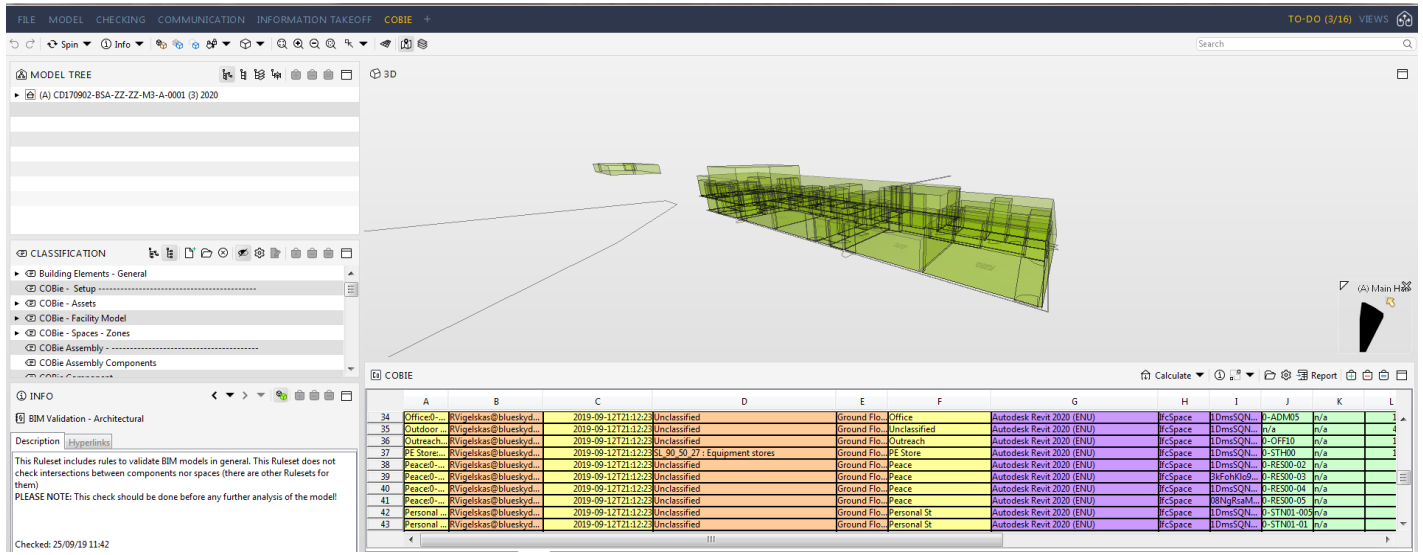
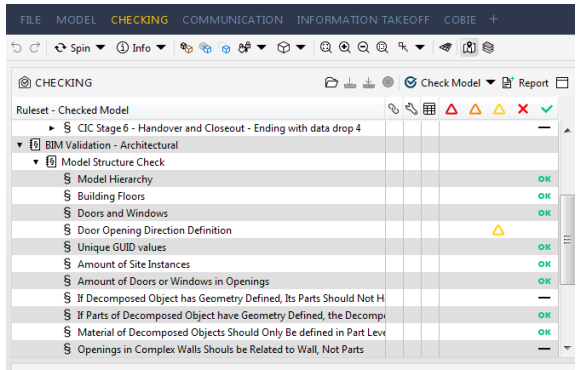
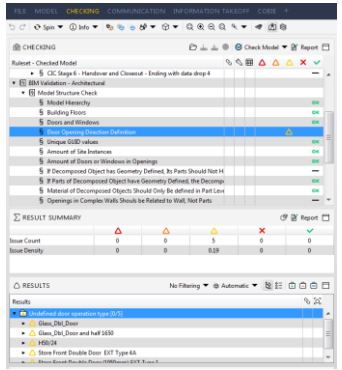
Interrogate – Solibri Office







Data Validation

- Rulesets for checking attribute data
- Improved modelling standards
- COBie validation
- Information Take Off

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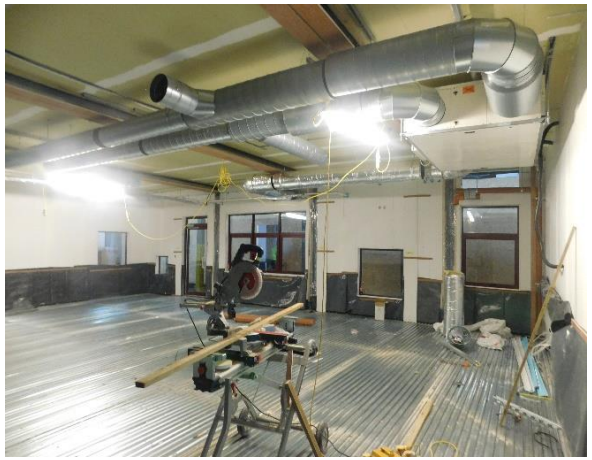
Construct

- Coordinated and validated information
- Communication
- 4D & 5D Analysis
- Optimised assembly information
- Data to CNC Machines
- Quality Control

Construct



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The Client’s Perspective

“The new school provides much needed primary school places for the local community in Romford. It has created an inspiring environment for high quality education provision, and an outstanding school to help every child realise their highest aspirations. Our children are benefiting from plenty of space in the teaching areas, there is lots of natural light and the main hall is a good size with excellent acoustics”

Raheel Akhtar, Headteacher, Concordia Academy

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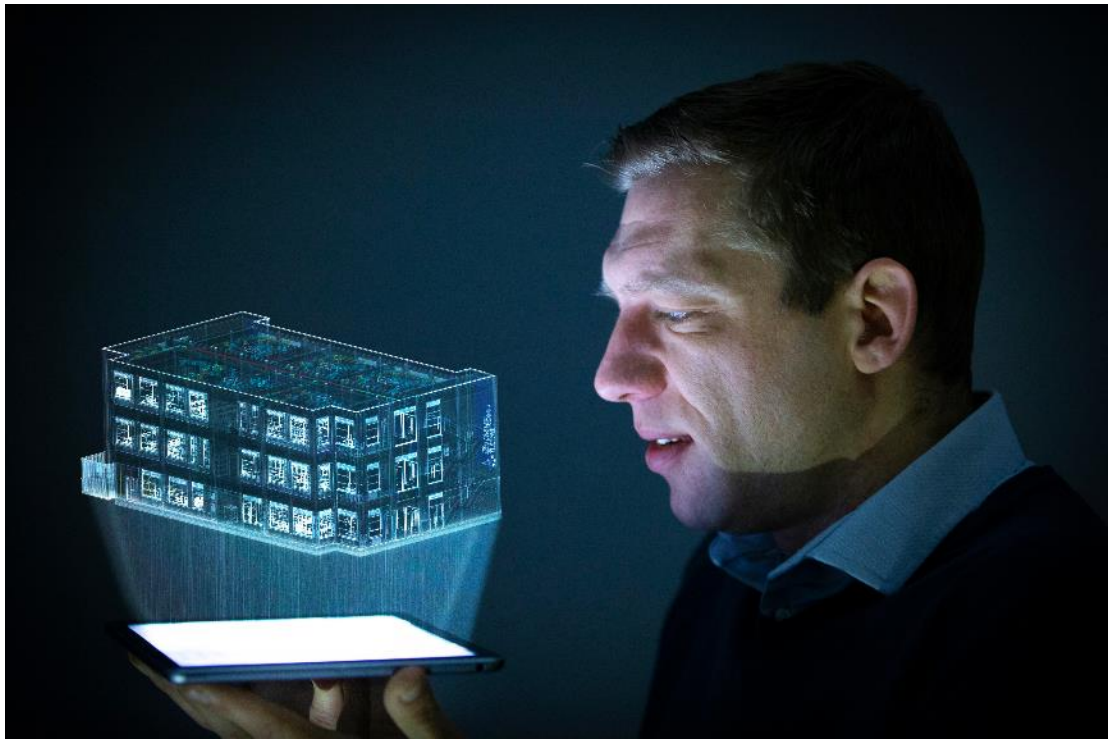
Conclusion



Thank you

Lorrainemcmorrow@mcavoygroup.com

@LorMcMorrow

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