THE BIM ENGINEERS

Digital Twin

Asset Management Technology Solutions

By The BIM Enigineers

About us

DRAW UP BIM PROTOCOL

DRAW UP ILS

We are a multinational, multidisciplinary and full-service BIM company. We operate in the innovative and revolutionary changing field of design and engineering, construction, installation and infrastructure across the globe. We add value through our excellent BIM knowledge and experience, capacity and innovation.

The firm

+300 colleagues
worldwide

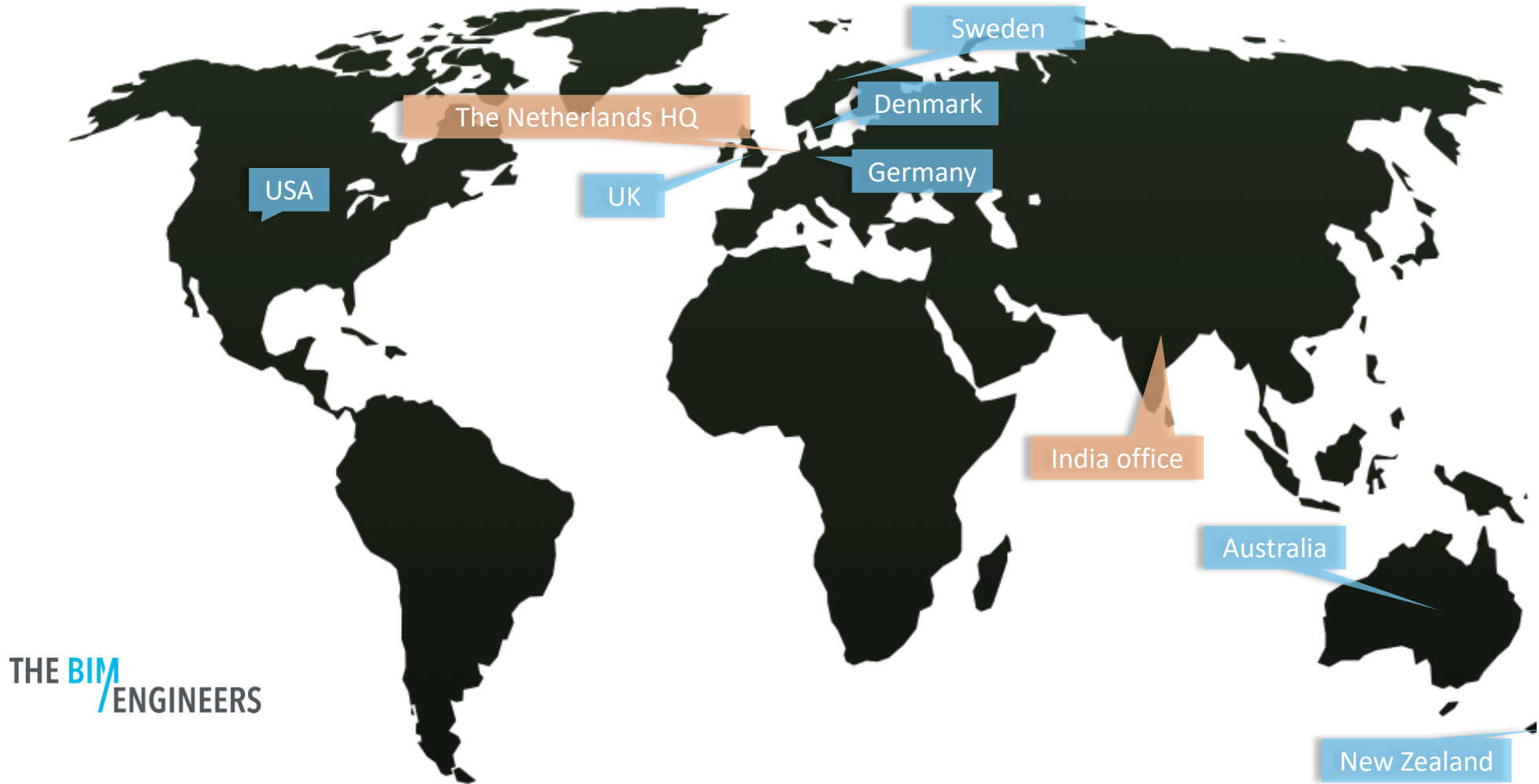**ANDRÉ LAGEWEG**

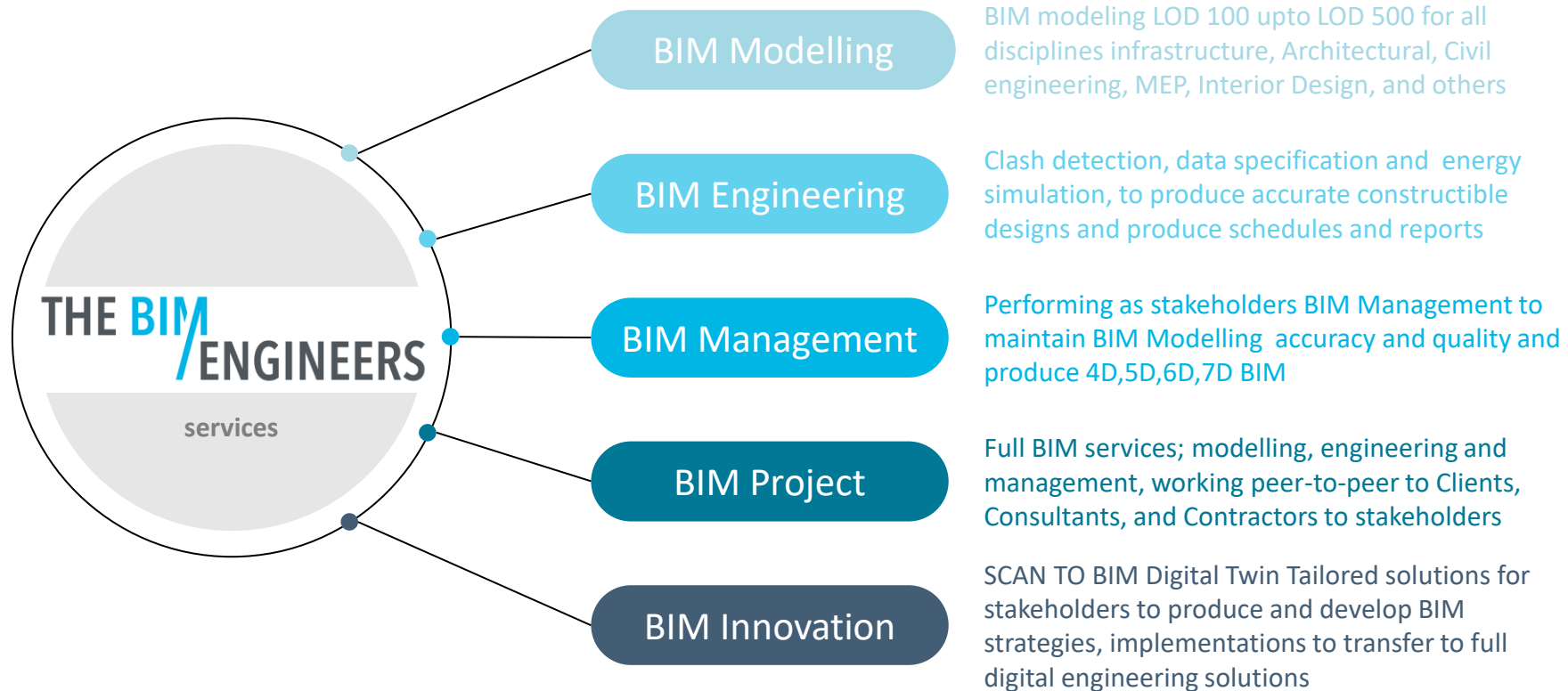*CEO The BIM Engineers
The Netherlands*

LEYE AGBEDE

*Country Director The BIM Engineers
United Kingdom*

20 Years Experience in
Project & Programme Management

The BIM Engineers worldwide

Services

BIM Modelling

BIM modeling LOD 100 upto LOD 500 for all disciplines infrastructure, Architectural, Civil engineering, MEP, Interior Design, and others

BIM Engineering

Clash detection, data specification and energy simulation, to produce accurate constructible designs and produce schedules and reports

BIM Management

Performing as stakeholders BIM Management to maintain BIM Modelling accuracy and quality and produce 4D,5D,6D,7D BIM

BIM Project

Full BIM services; modelling, engineering and management, working peer-to-peer to Clients, Consultants, and Contractors to stakeholders

BIM Innovation

SCAN TO BIM Digital Twin Tailored solutions for stakeholders to produce and develop BIM strategies, implementations to transfer to full digital engineering solutions

THE BIM ENGINEERS

services

Reference projects

Airports

- Heathrow International Airport Terminal 5 Extn.
- Dial- Indira Gandhi International
- Nmial - Navi Mumbai International Airport
- Chennai International Airport
- Singapore Changi 4 The Jewel Airport
- Schiphol Airport
- Hong Kong Airport

Railway/Metro

- Ghatkopar Metro Station
- Duhai Metro Station
- Tai Seng Facility Building
- Guldhar Metro Station
- Asi Metro Station
- Chennai International Airport Metro Station
- West Kowloon Metro Station
- Mass Rapid Transit Station
- Euston Station
- Delhi Metro Rail Corporation
- Patna Mass Rapid Transit System

THE BIM ENGINEERS

Healthcare / Mixed

- Nyt Ouh –New University Hospital Denmark
- New Malmo Hospital Sweden
- Ikea Furniture Stores Us
- Ikea Furniture Stores India
- New Garda Police Hq Ireland

Industrial / Plant

- Pyhäjok Nuclear Power Plant Finland
- Nxtra Data Centre Sri Lanka
- Airtel Data Centre India

Speciality
Reference key projects

Technology expertise

3Ds Max

Revit

BIM360

Lumion 3D

Dynamo

Enscape

Navisworks

Aecosim
AECOsim
Building Designer

Solibri

THE BIM ENGINEERS

Tekla

Synchro

Advance steel

Primavera

Civil 3D
C3D

Inventor

Bluebeam

ArchiCAD

AutoCAD

Scan to BIM

From the scanning part, all the way to the final BIM model, we cover all

Scanning methods

Standalone scanners

Mobile Lidar mapping

Drone scanners

Handheld scanners

iPhone Lidar scanners

Manual measurements

Specialized equipment

- Primary scanner **RTC360**
  - This is what we would use for most of our as-built MEP work.
- Alternate Scanner/total station (Used for mainly exterior)
  - **Leica Nova MS60 MultiStation**, GNSS connectivity and digital imaging, they say it is the highest-end total station available. Scanning speed of up to 30.000 points per second, allows you to compare 3D visualisations of measurements to reference surfaces or even DXF/ICF models.
- **Matterport Pro2/Ricoh Theta Z1 360 Camera**
- **GNSS/GPS EQUIPMENT** and access to the **Lecia Pegasus Backpack**
- Aerial photogrammetry and surveying, our drone fleet includes
  - DJI Phantom 4 Agriculture & Surveying
  - DJI M210 RTK Inspection, Public Safety, Renewables, Surveying
  - Inspire 1&2 - Filming & Surveying
- **Elios 2** - Indoor drone for confined space inspections

Specialized equipment

- **Leica RTC360 -** 3D Reality Capture Solution (MEP)

- **Leica Cyclone -** FIELD 360 software (MEP)

- **Leica Pegasus -** Backpack Mobile Mapping Trailer

- **Leica Nova MS60 -** Topography and as built check (External)

- **DJI Matrice 210 RTK drone -** aerial photogrammetry & Survey

- **Elios 2 -** Indoor drone for confined space inspections

Redefining As-Builts
with the RTC360 Laser Scanner

Since welcoming a new member of the team, the RTC360 laser scanner. We have had a high demand for clients using our laser scanning services to save them time and money.

The RTC360 laser scanner. It's a substantial improvement over other approaches to produce as-builts and verify existing conditions.

Our scanning processes are easily achieving a 60+ %-time savings and can deliver information the architects and engineers can work from the very next day. Therefore, giving them a huge advantage in overall production.

Transforming Turnarond
With in-field registration

With most laser scanners, the point cloud data from the scans then need to be aligned or registered in the office before it can be ex-ported to a useful deliverable.

Leica RTC360 3D Reality Capture Solution

As part of our scanning solutions using the RTC360, the Cyclone FIELD 360 app links the 3D data acquisition in the field with the laser scanner and data registration in the office with Cyclone REGISTER 360.

On-site, we can automatically capture, register and examine scan and image data. The user interface combines easy handling of complex calculations with a graphical user guidance that offers a remarkable experience.

3D modelling
for MEP Spatial Analysis

Laser scanning & 3D modelling of a brewing plant for spatial analysis.

Overview

On-site, we can automatically capture, register and examine scan and image data.

The user interface combines easy handling of complex calculations with a graphical user guidance that offers a remarkable experience.

Scan to BIM
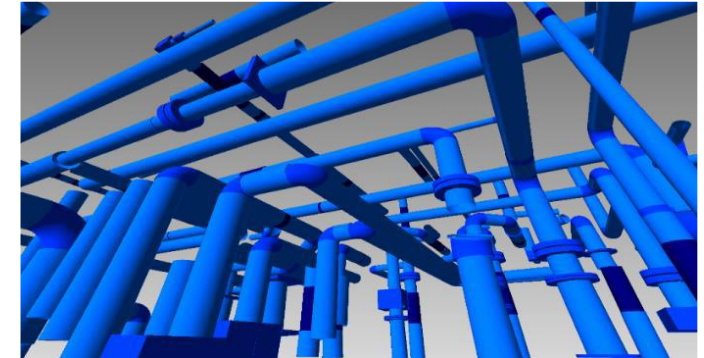
Laser Scanning for MEP
Leica RTC360
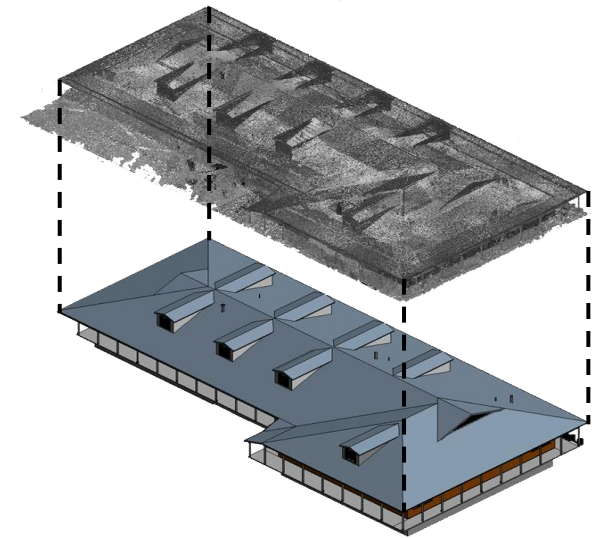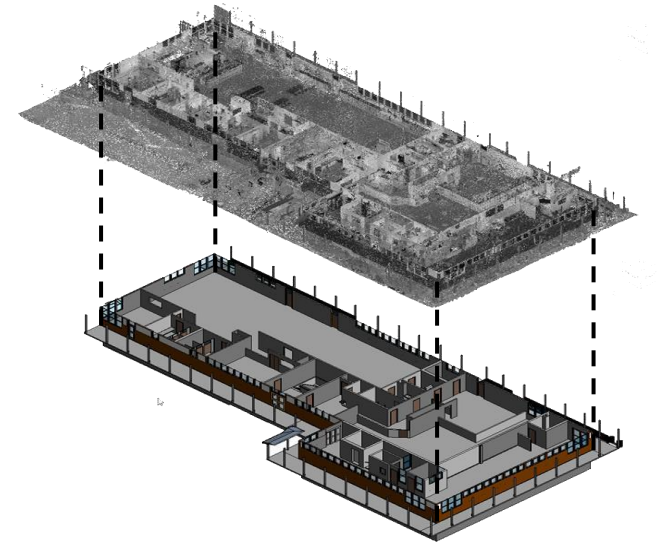
Exterior Scanning
with LIDAR and Drone Photogrammetry

We are often able to deploy a combination of principal technologies to seize the 3D data.

SURVEY DATA
TO POINT CLOUD

- Carry out site inspections prior to construction starts

- Structural inspections without the need for human labor

- Progressive point cloud scanning

- Aerial photographs throughout the build progression

- Close eye on-site activity to ensure safety and progression

- Project Completion inspections

- Meeting government regulations

- Merging of ground and aerial data to create a full 3D point cloud model
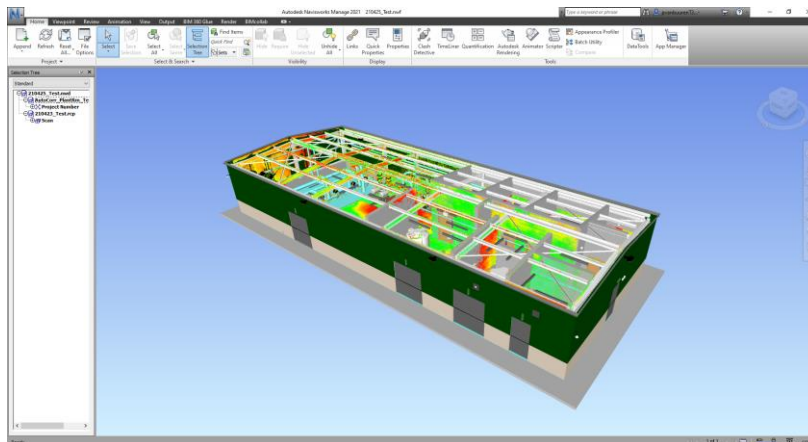
Quality control Scan to BIM (demo)
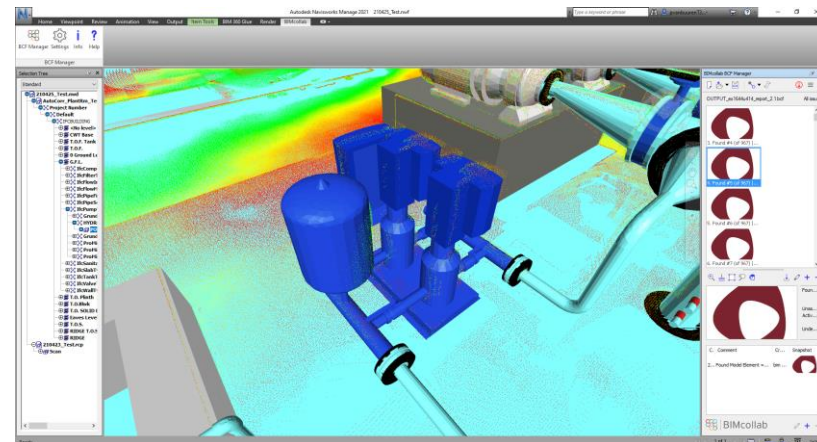
Scan to BIM
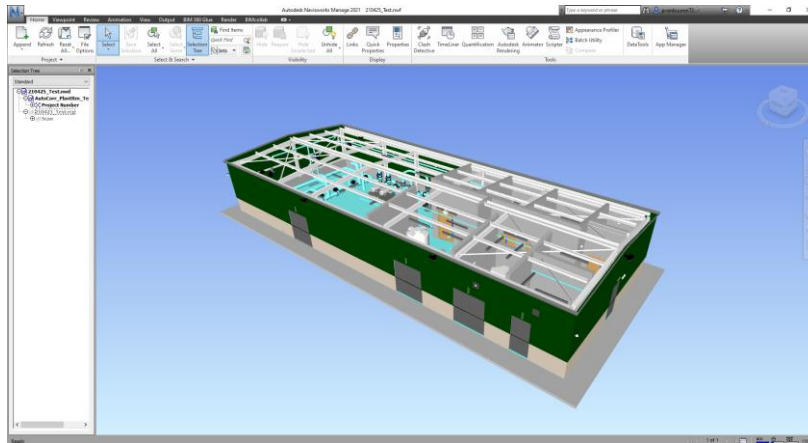
BIM model

Pointcloud heatmapping
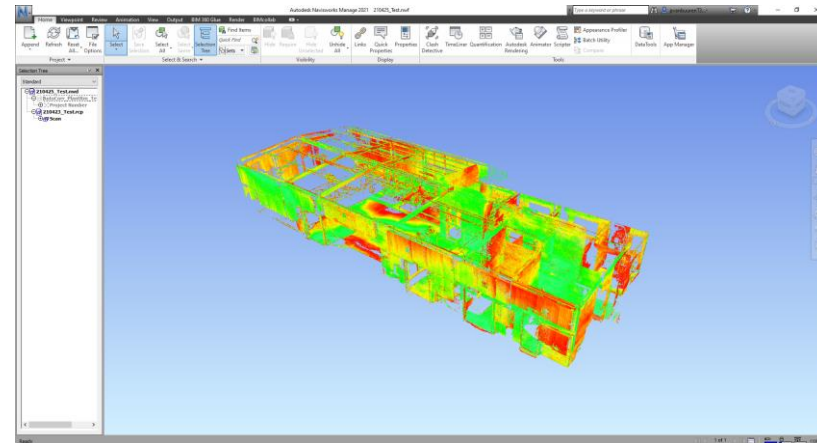
Pointcloud and BIM model
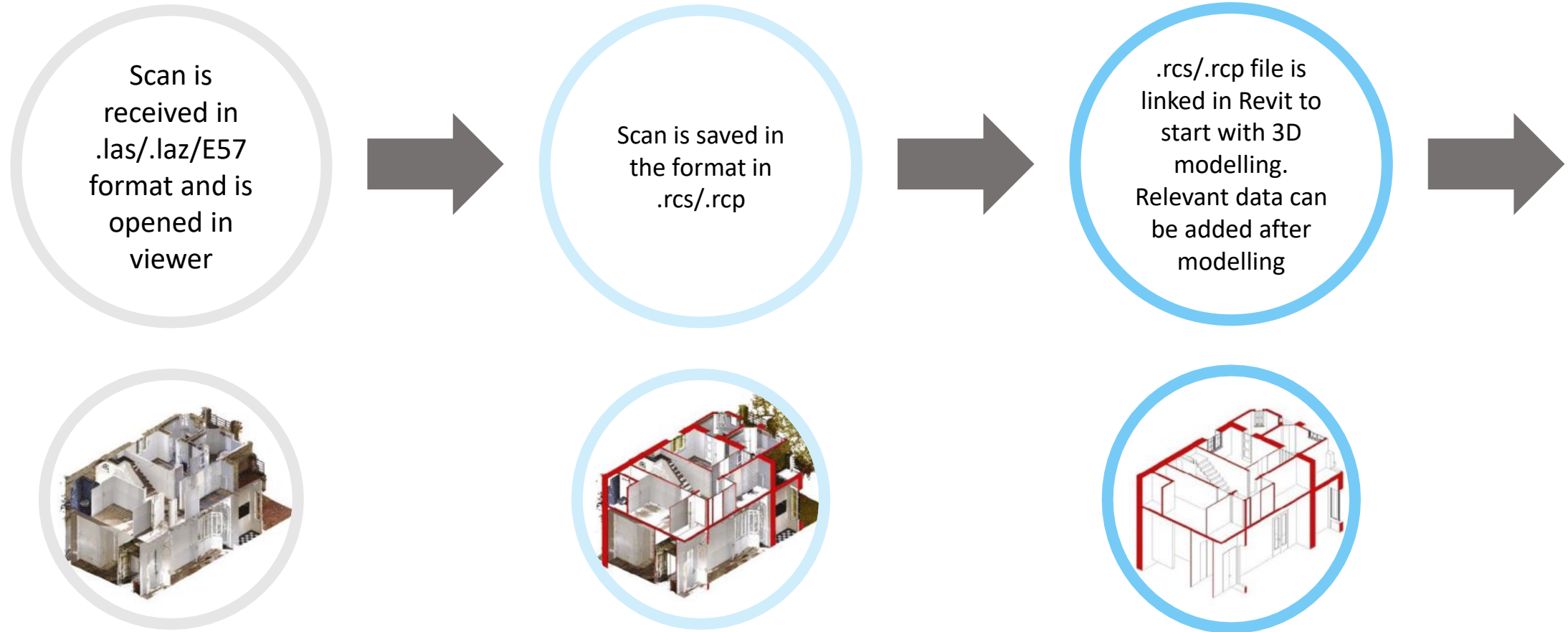

Issues automatically generated per element
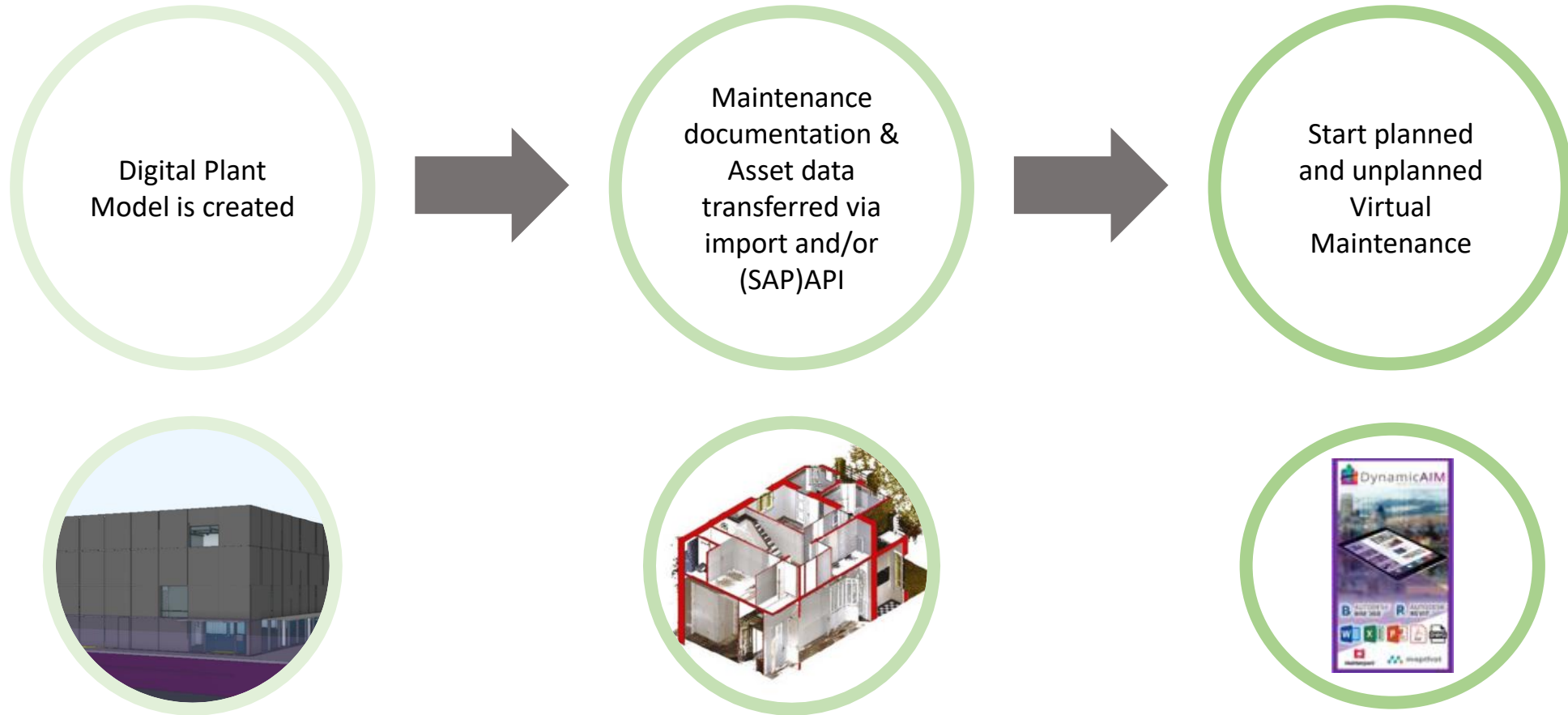
Process integration
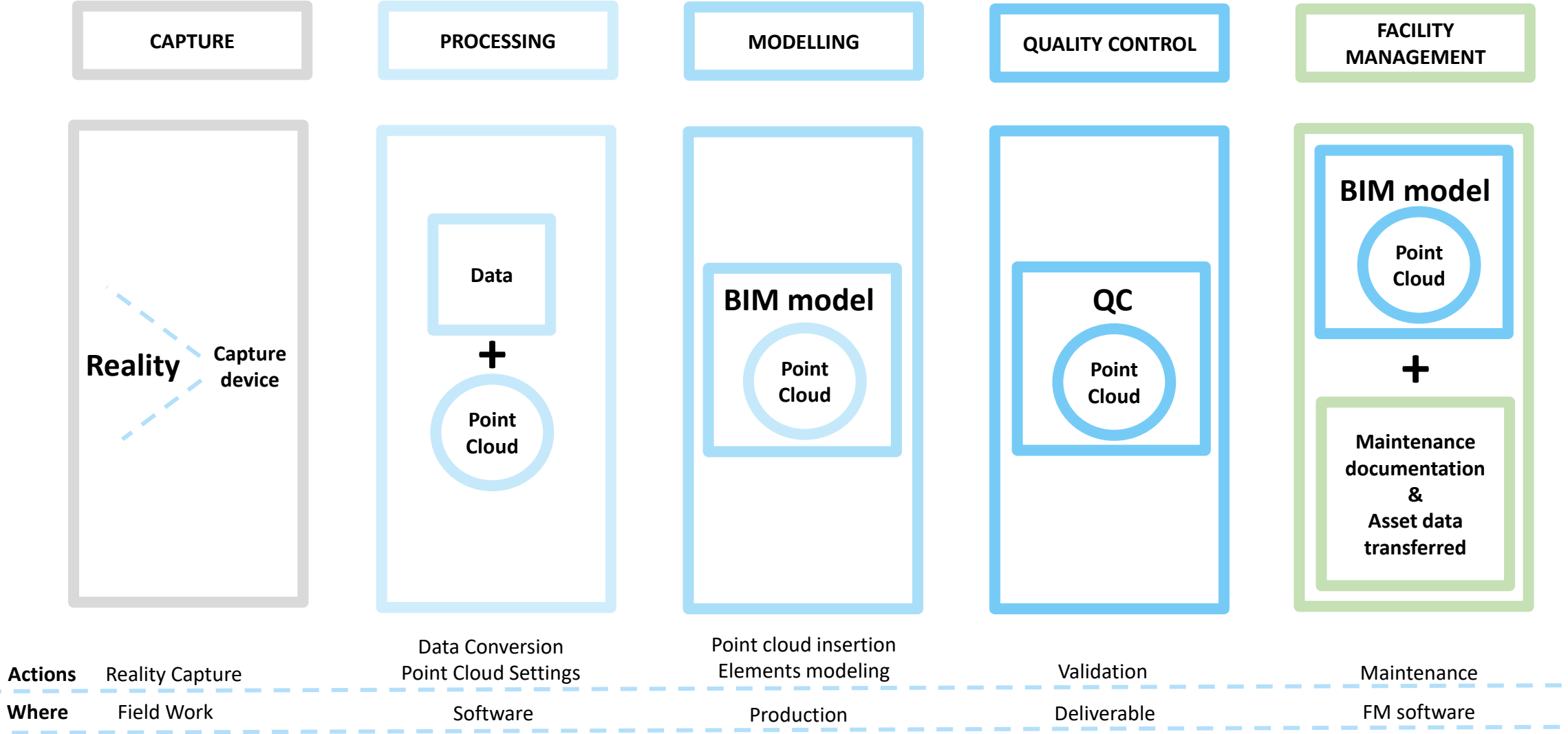## Digital twin (including Facility Management)

Scan to BIM

Scan is received in .las/.laz/E57 format and is opened in viewer

Scan is saved in the format in .rcs/.rcp

.rcs/.rcp file is linked in Revit to start with 3D modelling. Relevant data can be added after modelling

Process integration
Digital twin (including Facility Management)

Scan to BIM

Digital Plant Model is created

→

Maintenance documentation & Asset data transferred via import and/or (SAP)API

→

Start planned and unplanned Virtual Maintenance

Process integration
Digital twin (including Facility Management)

Scan to BIM

CAPTURE	PROCESSING	MODELLING	QUALITY CONTROL	FACILITY MANAGEMENT

Reality — Capture device

Data
+
Point Cloud

BIM model
Point Cloud

QC
Point Cloud

BIM model
Point Cloud
+
Maintenance documentation & Asset data transferred

	CAPTURE	PROCESSING	MODELLING	QUALITY CONTROL	FACILITY MANAGEMENT
Actions	Reality Capture	Data Conversion Point Cloud Settings	Point cloud insertion Elements modeling	Validation	Maintenance
Where	Field Work	Software	Production	Deliverable	FM software

One-stop-shop
Where do you benefit?

Input formats

- As built model based on point cloud

- All necassary parameters included immediately

- PDF drawings to BIM

- Manual survey/measurements to BIM
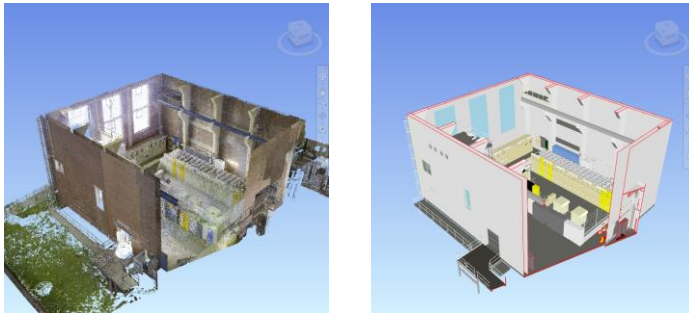
Facility Management
Data Integration
Digital Twin/Digital
Facilities Management

BIM based maintenance for end users

- Up-to-date BIM models, 2D drawings, documents

- Complete overview of assets and spaces

- Innovative product
  - QR-codes on assets
  - 360 degrees images
  - Point clouds

- 100% Tablet support
  - Access to models, drawings, assets
  - Workorders and workorder history

DynamicAIM
From site....to building....to room....to asset....

Facility Management
The solution

BIM & Documentation (Digital twin)

Operation & Maintenance
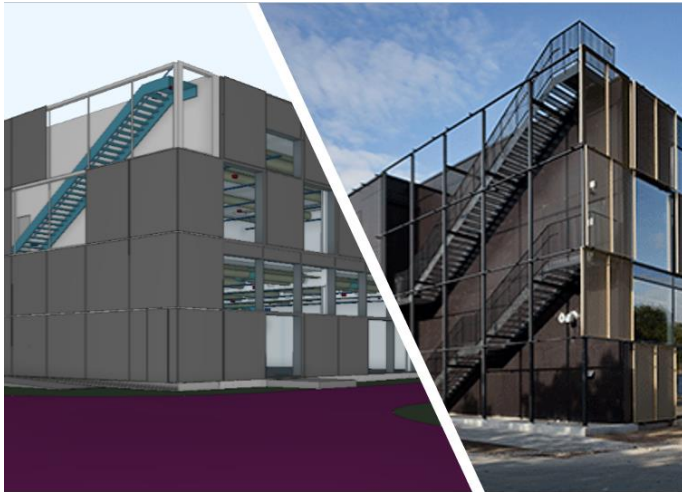
User Friendly FM

All data for your buildings in one system

Mobile and BIM-based maintenance
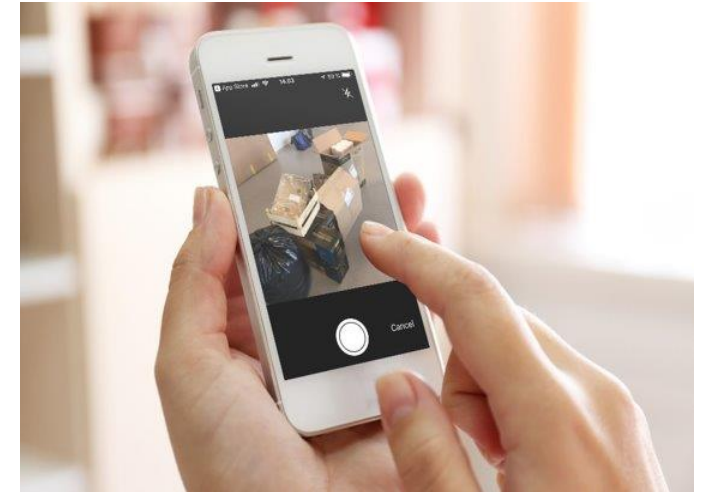
User-friendly and efficient FM

One-stop-shop
Where does your business benefit?

'' The Asset Information Model or AIM for short, is a term used to describe the collated set of information gathered from all sources that supports the ongoing management of an asset''

This process is set out in detail in the UK BIM Standards.

In other words, DynamicAIM is a place for Digital Stuff.

One-stop-shop

live demo

https://services.cadline.co.uk/dynamicaim/#video

DynamicAIM LIVE
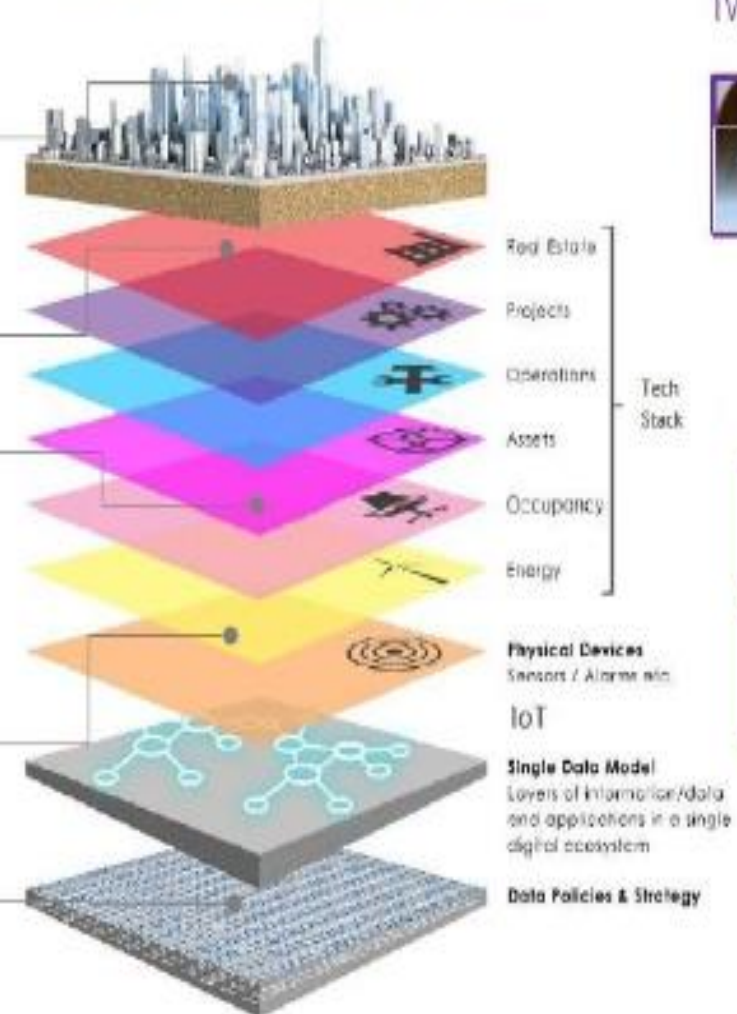
Business Benefits.

- **Visit sites** & **assets virtually** from your computer or device.
- Find correct asset data **quickly**, in **one place**.
- **Navigate** down to any level of assets & easily use measurement tools.
- Dynamic **O&M** system.
- No need for native **CAD** software.
- No expensive **training** & adoption curve.
- Talks to **existing Asset & CAFM** systems.
- Storage is **managed**.
- You own your **data**.
- Dashboard & **Reporting** functionality bolt-on.

BIM Project Savings

£200M Project
10% Savings due to BIM process

United Utilities created a 3D model in the concept and definition phases, which was used as a template for the detailed design. However, the CAD team, led by Matt Lees, Cadline's BIM specialist, then decided to create a model from scratch.

Design collaboration.
Muti Disciplined federated models prior install.
Clash Prevention.
Once source of truth.
Scheme completed ahead of deadline.
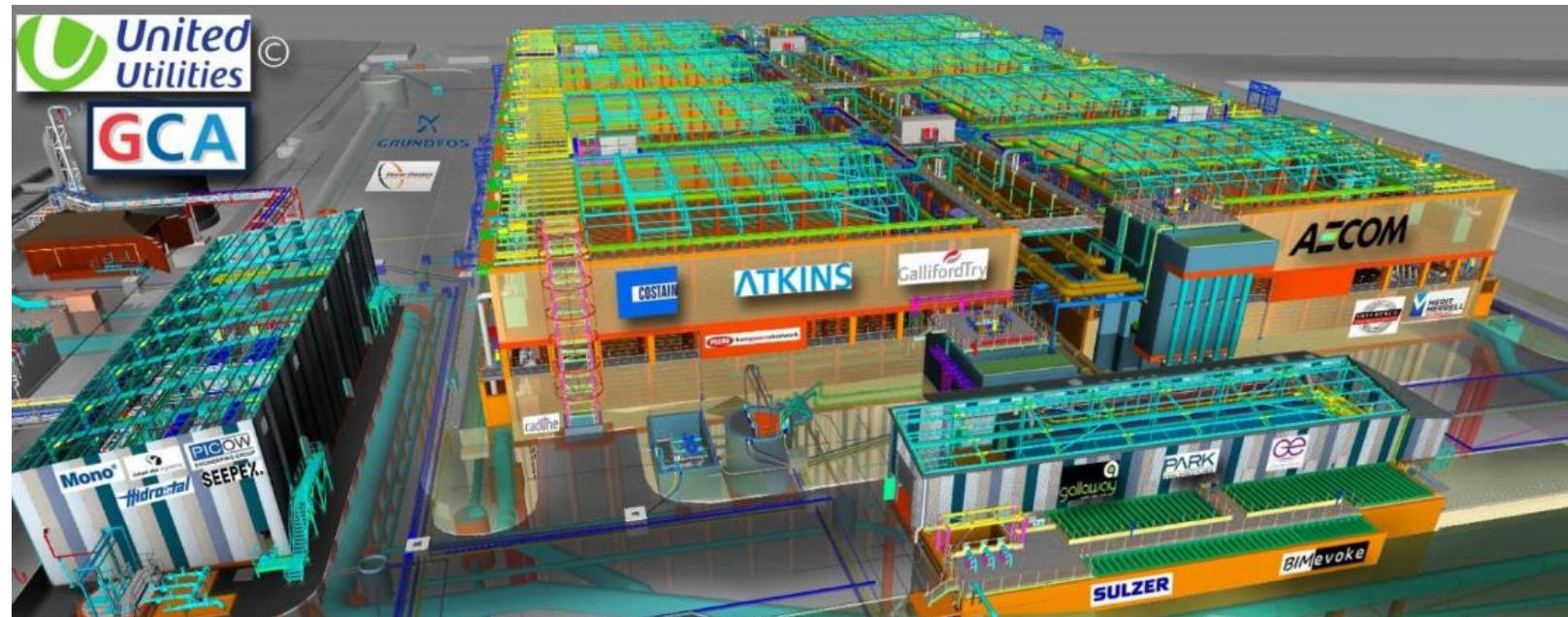
Scan to BIM Adoption

Scan to BIM Modelling - Training Program.
Purchasing Equipment with Cadline's trade specialists.
Elbow support during transistion & adoption.
On going Customer Support contracts.
Future proof on-going training for latest equipment features & software for continued innovative adoption.

Security

- Hosted on **AZURE** server (Microsoft).
- Detect threats **early** with unique **intelligence**.
- **Backed up daily**, no loss of data.
- **Ransomware resistant**, theft proof.
- Cadline working to **ISO 27001** - Security best practice.

Testimonial

"The Cadline Engineering Services
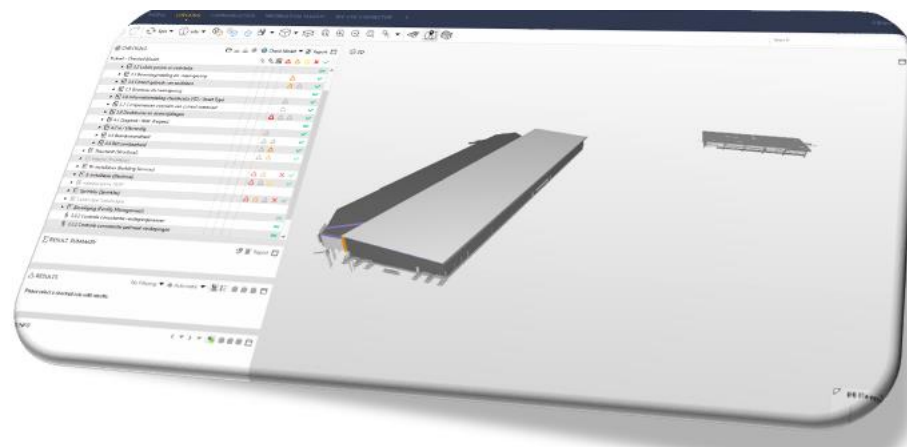team exceed expectations."

"As our 'go to' 3D survey & BIM supplier, the Cadline Engineering Services team exceed
expectations. DynamicAIM helps us digitise our stock and centralise data whilst working
towards conforming to the Hackitt report & new government guideline."

– Asset Management – Peabody Trust

We operate in the innovative and revolutionary changing field of design and engineering, construction, installation and infrastructure across the globe. We add value through our excellent BIM knowledge and experience, capacity and innovation.