

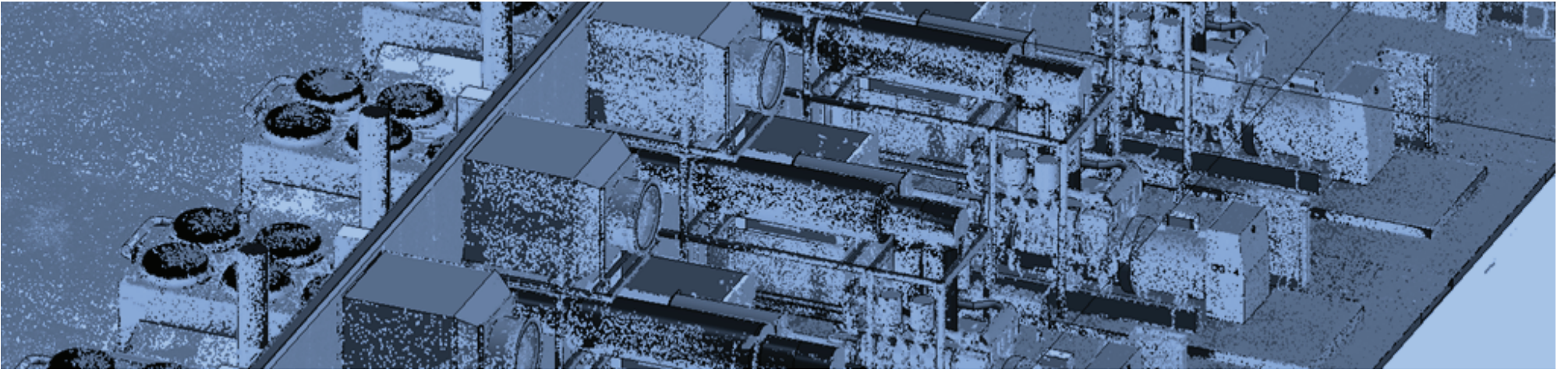


Airport BIM Modeling:

How we leveraged the integration of an asset-focused BIM Model with a Digital Twin to enhance planning

CLIENT BACKGROUND

Our client, an Architectural Engineering Construction firm, approached us with a project to create a comprehensive 3D Revit model of an airport facility. The goal was to achieve a high level of accuracy using laser scan point cloud data and adhere to BIM standards (LOD-300). Beyond just a structural undertaking, the project was also a strategic move, reinforcing their commitment to robust asset management and ensuring seamless expansions in the future. The resulting model would not only serve their immediate design and management needs but would also be a showcase piece in their portfolio, demonstrating the merger of cutting-edge technology with expert architectural engineering.



Scope of work

Comprehensive 3D Modeling:

Develop a detailed 3D Revit model capturing the airport's architectural, structural, and MEP systems, based on laser scan point cloud data.

Utility and Infrastructure Integration:

Incorporate all utility buildings, on-site developments, and underground utilities within the model.

Standard Adherence & Integration:

Apply Cobie standards and ensure seamless integration of the BIM Model into the Digital Twin Platform.

Real-time Asset Data Collection:

Conduct on-site visits for live data gathering and simultaneous implementation into the BIM model.

CHALLENGES

- Meeting the demanding timeline while ensuring an intricate BIM model, balanced between quality and speed, with an exacting accuracy of +/-10mm from laser scan point cloud data.
- Integrating vast architectural, structural, and MEP details cohesively, maintaining both data integrity and adherence to specific standard families and naming conventions.
- Addressing data discrepancies between on-site asset data collection and the ongoing BIM model evolution, necessitating real-time adjustments and validations.
- Overcoming technical nuances associated with Cobie standards, ensuring seamless BIM model integration into the Digital Twin Platform, and handling any software-related challenges.

SOLUTION

Advanced BIM Modeling Assembly:

We deployed a handpicked team of BIM Engineers, each equipped with domain-specific expertise in aspects like parametric modeling, data layering, and MEP system integration. Their deep knowledge of Revit's family creation, parameter setting, and clash detection ensured that the model's granularity met the highest industry benchmarks.

Modular Phased Execution:

Adopting a modular approach, we segmented the project into micro-tasks within our agile framework. This enabled parallel processing, efficient load balancing, and granular quality checks using tools like Autodesk Navisworks for clash detection and resolution.

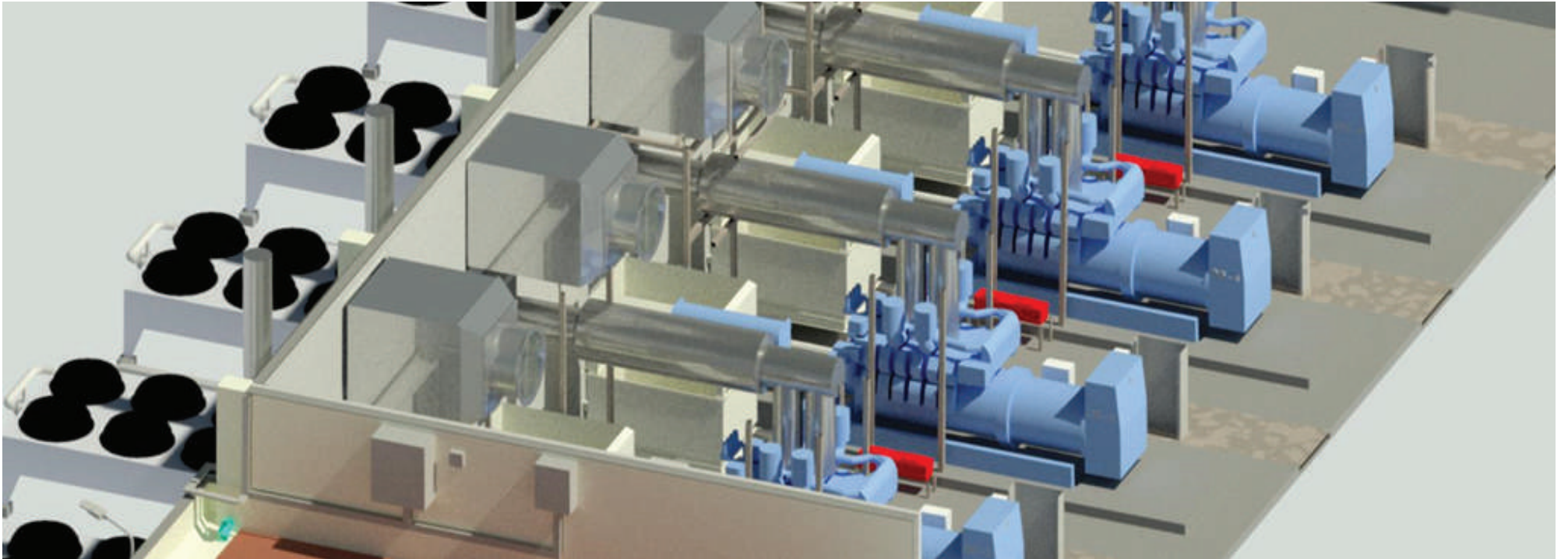
Advanced Toolchain Deployment:

A sophisticated suite of tools, including Autodesk Revit, Autodesk Recap, and Leica Cyclone, was harnessed, streamlining the modeling process and ensuring data fidelity.

Integrated Workflow:

With Autodesk Navisworks at the helm, we established an integrated modeling workflow. This approach guaranteed seamless transitions between phases and the efficient convergence of diverse data sources into a unified BIM model.





OUTCOME

The insights and solutions provided by our team had a significant impact on developing an accurate as-built BIM model from the laser scan data. The resulting 3D Revit model provided the Airport Authorities with invaluable insights for asset management and future expansion plans, enabling them to proceed with expansion, renovation, and maintenance without disrupting the existing facility.

CONCLUSION

Our airport BIM modeling project was successful, delivering a comprehensive asset-centric BIM model that met the client's requirements and objectives.

Despite the challenges of achieving accuracy from laser scan data and meeting a tight turnaround time, our dedicated team of BIM engineers utilized their technical expertise and efficient modeling methodologies to overcome these obstacles.

We are proud to have played a significant role in enhancing the Airport Authorities' ability to manage their assets and plan for the future.

The successful completion of this project showcases our commitment to delivering high-quality BIM modeling services and providing innovative solutions to meet our clients' needs.