



HOW WE REINVENT THE CONSTRUCTION PROCESS

ADDING VALUE
AND INCREASING PRODUCTIVITY TO
CONSTRUCTION MANAGEMENT PROJECTS

corbisstudio

Integrating Project Management + Delivery

CONTENTS



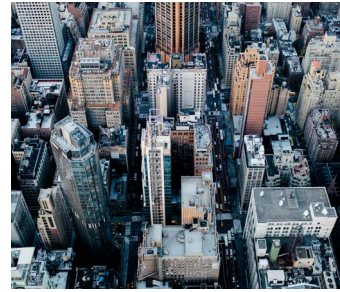
03

Identifying
Improvement Gaps In
Architecture Development



05

How We Seize The
Improvement Opportunities



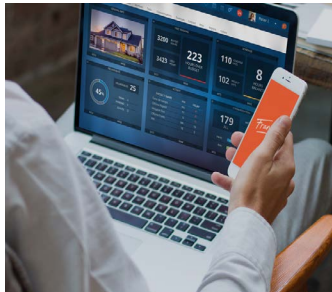
07

Our Scope Of Services



11

Construction Digital Prototype®



13

Integrated Management
Communications
Platform

IDENTIFYING IMPROVEMENT GAPS IN CONSTRUCTION DEVELOPMENT

We have been working in the Architecture, Engineering, and Construction for more than 17 years. That is quite a period of time and we took every chance we had to learn and take something out from the projects we were part of. During that 17-year journey, we witnessed the same **opportunities** in projects of all kind of sizes.

We are an **Integrating Project Management and Delivery** studio that has been helping project developments all around the world. The efficient work methodologies that we enhance by implementing our own Construction Digital Prototype® approach... We have been part of Project Management teams delivering a wide range of building developments.

But that's not the only **project management disciplines** with the place for improvement. We have also discovered crucial project management spots that are left unattended in BIM management, as well as Production Management, and Production Delivery. We have seen it even at a project Construction Management level.

All of these points almost always have a great impact on construction costs and result in delays in the schedule. Most of these costs and delays are not accounted for in the original plan, which is a strong foundation for successful development.

We, as a key player producing architecture and engineering work from Detail Design through the Construction Drawings stages, decided to step in and find efficient solutions to fill this **improvement gaps**.

THE OLD APPROACH IS GETTING... OLD

Identifying improvement gaps in architecture development

Project Management

At the [Project Management](#) level, it is essential to have strong planning strategies and strong quality definitions. If management lacks this, it prompts all consultants to start designing without [clear goals](#), a [precise schedule](#), and deliverables with [proper](#) and [agreed-upfront](#) acceptance criteria. As this is the starting point of a project, everything that comes after that point starts off with interferences that will increase the amount of time and effort put in the process.

The potential value we found out in this service lies in the deep belief that victory loves preparation, and that a [proper project strategy](#) defined up-front and well communicated to the complete team is the centerpiece of successful project delivery.

BIM Management

According to [BIM management](#) in project developments, we have witnessed a strong focus on producing drawings instead of leveraging technology to coordinate the process and increase certainty in the construction and operation process.

The nature and complexity of BIM have made this a major and key role in the project set-up process. [Consistency](#) and [solid experience](#) are key, as once the bearing is set, it becomes hard to change and a wrong strategy can create major complications as the project moves on to DD and CD stages.

Production Management

We have had a long time run in the Production Management of projects. The main potential value proposition identified is related to being dragged sideways by design principals driven processes. The outcome is a never-ending design exercise that, more often than not, loses focus on the development financial plan and agreed-on schedules.

Moving toward this service with a [process-driven](#) instead of a [design-driven](#) approach helps clients and consultants tackle the production burdens with a clear plan and goals, schedule and index of deliverables that can help [monitor progress](#) at all times and minimize the deviations that may arise due to design delays, changes or lack of planning.

Production Delivery

The Production Delivery service is [the engine that moves projects forward](#). Its success has proven to be a result of no shortfalls and AE consultants being able to catch up with the necessary pace to manage models and deliver drawings –let alone any improvement in the UX/UI of drawings to [reduce](#)

errors and RFIs.

Being a resource-demanding stage but with a strong technical focus, this service requires to [provide technical support](#) to create and deliver precise models and drawings in a timely fashion, to bridge the transition from schematic design to the construction job-site.

During this stage, it is paramount to [keep track of the schedule to make decisions on time](#). Documenting decisions and avoiding unnecessary changes are the foundation of lean project delivery

Integration and Coordination

Regarding projects' [Integration and Coordination](#), our experience has demonstrated that when disciplines were underestimated, it resulted in unpleasant surprises in the job site with an expensive impact on the construction cost and schedule, eroding the collaborative spirit and creating dysfunctional teams.

This is a new role that all projects must cover, as [technology has become an integer part of the project life-cycle](#) with increasingly complex pieces that must work together. This results in avoiding the mentioned unpleasant surprises in the job site with expensive impact on the construction cost and schedule.

Construction Cost

[Construction Management](#) and [Construction Cost](#) are stages that more often than not, are neglected during the design process. It results in over budget designs that require iterations to fix losing time and financial resources, and information being prepared for design purposes and not for construction purposes, [losing the value that true BIM models can bring to the process](#).

From early DD days, having a [properly set up BIM system](#) is the base for real-time building performance monitoring. Connecting take-off databases with cost databases allows early detection of project budget deviations, and smarter decision making at the speed the project requires.

All of this called up for...
a new kind of scope.

HOW TO SEIZE THE IMPROVEMENT OPPORTUNITIES

We decided to fill in all the positions and spaces that held potentially great value. We propose a **new scope of work** for the different parties involved in the Construction process as a whole. By identifying the main actors and their responsibilities, we started the diagram that would tell us where was our place in the industry as an **Integrating Construction Management** Solutions provider.

The main ideas that served as our guide were: **Thinking, Delivering, Building** and **Integrating**. Those concepts represent the value we have the capability to provide to Project Owners and Developers. This enables us to act as representatives to Architecture and Engineering Lead Designers, and Architects of Record Consultants to make the transition from Concept and Schematic Design to the process-driven stages of a building process.

WHAT WE OFFER IS UP NEXT

How we seize the improvement opportunities

Project Management

The key to this service is to work alongside the owner to assist in early-on [planning](#), [scheduling](#), [selection](#) of design consultants, implementing a collaborative delivery approach, and set up project goals.

We assign a Project Manager that works locally with the client to ensure [immediate availability](#) during business hours for the client and the consultants. During early construction stages, the Project Manager may be located at the job-site office, provided minimum requirements are met. The back office team plays an important role by supporting this effort remotely when needed.

BIM Management

Acting as the owner's rep, we take the lead and set up the standards for all consultants, protocols to be followed, create the [BIM Execution Plan](#), audit deliverables along the way, and provide reports to the owner and each consultant specifying compliance with the BEP.

We bring our vast range of experiences in projects of different sizes and complexity to the table, to ensure the [BIM strategy](#) is well thought throughout the complete life-cycle of the project. We have a highly trained team of [BIM professionals](#) with both expertise and technical knowledge.

Production Management

Once the Schematic Design is approved, which includes compliance with the owner's program and all applicable codes and regulations an entitlement process, we [manage the production](#) and [ensure all deliverables are consistent](#) with the specified standards and deadlines are met.

Our main aim and responsibility are that all drawings and information packages are prepared with the construction [job-site needs in mind](#), for usability and for proper organization of the deliverables for ease of use during construction.

Production Delivery

Working alongside each consultant, we can build a team to create and manage the [Construction Digital Prototype®](#), a comprehensive BIM model that incorporates design input for drawing creation and for data/integrity purposes.

Our teams are very well prepared to tackle the challenge both with a strong understanding of the art and business behind delivering a project. This service is mostly carried out at our back office to provide optimum performance and cost balance.

Integration and Coordination

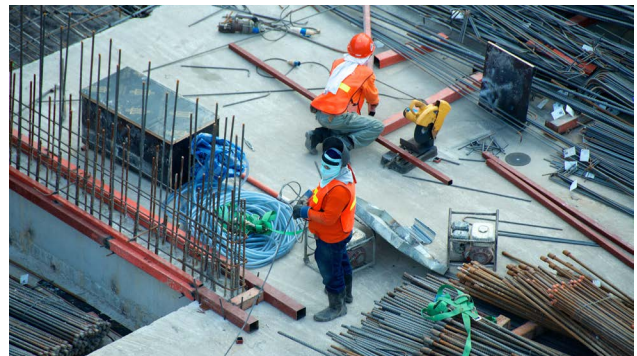
The value proposition of this service is perceived as a dedicated resource to [follow a strict schedule](#) of cross-checking and coordination of all disciplines, using [BIM technology](#) to perform visual and analytical clash detections at key stages. We are in front of managing and [reporting the BIM Room meetings](#) to foster a collaborative spirit in order to resolve all clashes in a timely fashion.

The nature of this service is to assist the client in understanding the project technological needs, [assess the solutions available](#), determine the best fit within –or with new custom applications–, and [incorporate the software engineering to the project ecosystem](#) from the early inception of the project plan.

Construction Cost

Sitting in the table from day one, a construction manager brings a different angle and make constructibility reports, [lead the project cost/budget estimate](#), and represents the client in every interaction with the general contractor.

We provide this [unparalleled perspective to design and documentation](#), having the job-site needs in mind at all times. Delivering the project under this line of thought fosters a leaner transition to preparing bid/tender documentation and coordinating with procurement needs.



These are...
the main keys
for providing an efficient service



THE SUITED SCOPE OF SERVICES FOR A HIGH-PRODUCTIVITY PROCESS

The main approach CorbisStudio brings to the table is to integrate all management and technical roles using our **Construction Digital Prototype®** approach, working with the client and all consultants to cover all bases.

We base our services on 3 pillars: **people**, **processes**, and **platforms**. The key to perform is to start with clear roles, agreed protocols consistent information and data integrity plan that fosters **fast and lean collaboration** in projects of all sizes and complexities.

The ultimate goal is to provide the job site with **coordinated and timely information for construction**, properly coordinated and with consistent UX/UI for easy understanding of design and building requirements.

OUR APPROACH

Project Management

Project Program and Schedule

This scope includes [acting as the client interface](#) for all necessary issues, building up communication strategies, managing and reporting all meeting minutes, developing and maintaining a master program/schedule consistently throughout the project.

It is critical to implement and manage a [Responsibility Matrix](#). This enables to work with all involved parties to clarify the scope and responsibilities. At the same time, a [Project Quality Manual](#) preparation that establishes all the necessary protocols for designers and consultants, including documentation of key templates is a strong move.

We [manage the communications](#) and establish the protocols for all parties for information and documents flow and storage. This also includes setting up a cloud collaboration platform.

As regards the [Project Execution Management](#), we follow up on each component of the plan and reporting to all parties any deviation.

We [manage the procurement strategies](#), assisting the client in all procurement procedures, vendor qualification process, and contract awards.

We also get in charge of managing and coordinating the project [work-products](#), [technical deliverables](#), and [documents](#), in coordination with the BIM and Technology Management outcomes, to ensure the job site received the information needed in a timely fashion regardless of the technology selected for the project.

BIM Management

The scope of this service is specified by establishing the General [BIM Execution Plan](#) (BEP), as starting point to create a shared structure, glossary, and methodology for all BIM models to be integrated as per the requirements of the project and the construction program.

It includes setting up BIM Models on survey-based coordinates, managing all models coordinates to [geolocalize](#) all Delivery Models properly at the beginning of the DD phase.

We define the [collaboration](#) protocol, either cloud-based (C4R) or establishing a protocol to share, access and link models for coordinating and control.

By following our standard BIM protocol, we perform regular [audits](#), monthly reviews, and end-of-stages reports, so all delivered models are verified in compliance with the BIM standards and the BEP.

Work routines detections that can be integrated and [automated](#) with existing or to be developed tools, whenever applicable,

for efficiency and productivity increase and reduction of error margin, are also included.

Moreover, we develop [training](#) if and when appropriate, so all parties have a minimum shared understanding of the protocols and the use of the tools.

For the provision of this service, our [BIM Manager](#) will work locally with the client to ensure immediate availability during business hours for the client and the consultants.

During early construction stages, the BIM manager may be located at the job site office, provided minimum requirements are met. The back office team will support this effort remotely when needed.ecosystem from the early inception of the project plan.

Technology Management and System Integration

Our service includes the implementation of a [Technology Project Execution Plan](#), describing upfront the technologies that will be used for the project throughout the lifecycle, implementation and maintenance plan.

It comprehends [data governance and information management](#), pertaining to all databases and the connection between them, data integrity and back up.

[Software/API development](#), is also contemplated in circumstances where the project demands are not met by standard market tools, develop custom applications.

[Research and Development](#) are thought to assist the client in finding the best solutions for this project, platform/technology agnostic.

In the last place, [virtual and augmented realities](#) are meant to enable an integrated flow using the live 3d models and data models for AR/VR/MR applications to enhance the project value through the use of technology.

This stage is typically covered with a 2-week charrette at the client office. For the remainder of the project, the service is rendered from our back office unless there is a specific need that requires on-site or at the client office meetings.



Production

Production Management

When providing [production management services](#) we ensure the establishment of a framework for DD and CD phases, acknowledging that those stages are no longer design-driven but process driven, helping each consultant maintain the schedule and deliver their design and details on time.

We manage deliverables, as a starting point, to optimize the use of [BIM technology](#) with the construction process in mind. Create the Index of drawings –including 3D images of the project to facilitate the understanding of the construction crew.

Plus, we [set up shared graphics standards and drawings](#) checklists, so all consultants' drawings are consistent for the construction crew on the job site.

As part of our scope, we [manage design consultants deadlines](#) to ensure design input is provided on time for product delivery and coordination, as well as supervising submissions and versions of models and drawings so only approved versions are used for the client's approval, bidding and construction.

Lastly, we [review](#) and [cross-check drawings](#) to ensure they comply with the project standards and monitor compliance with deadlines and submissions as per the project schedule.

Production Delivery

When supporting the client with production delivery we get to work with the [AOR](#) and [EOR](#). From that process, we obtain the design intent and input necessary to build and manage the BIM Models using our [Construction Digital Prototype®](#) approach to ensure it is applicable in all project conditions. We work with consultants to resolve situations that may arise from applying such details throughout the project.

We assure all BIM models remain in [compliance](#) with the established BIM Protocols and generate [drawings](#), following design input and based on the true BIM models and in compliance with project standards.

Maintaining Delivery Models [data integrity](#), as per the BIM execution plan standards, to consistently execute take-offs and link to cost database for updating project budget projection.

We are in charge of the [graphics consistency](#) throughout drawings sets and the [coordination](#) of drawings with Specifications. We [inform](#) the client about progress and potential deviations for the proper course of action to keep the project on track.

Consultant Coordination

The scope of this service is to leverage the use of BIM technologies to improve coordination between systems during early delivery stages, to minimize construction problems and delays.

Being responsible for [consultant coordination](#) means we establish a specific schedule for coordination purposes, to identify the milestones where the coordination processes will take place and generate accountability on all parties to deliver their designs and models in timely fashion.

We receive and review of BIM models (if not performed under the Production Delivery Service) to ensure they comply with the [BIM Standards](#).

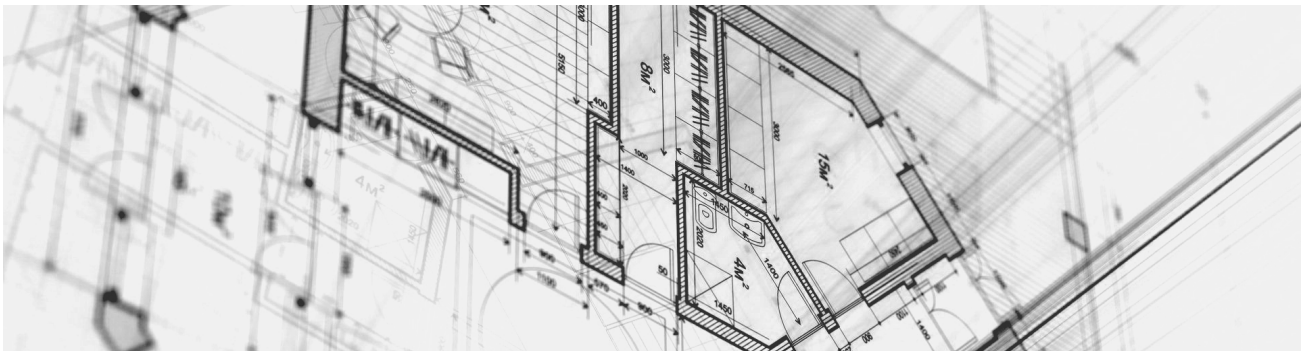
We also perform the analytical clash detection: setting parameters and using [Navisworks](#) with a proprietary interface to report and manage clashes between all disciplines.

The scope includes performing visual clash detection, using VR to walk around the building and identify areas where there may be potential conflicts (clashes, constructability issues, maintenance issues or other problems).

Additionally, we generate the clash report and manage the [BIM Room](#), working with all consultants to show the major clashes. It is important to note that this does not include solving the problems; this remains a responsibility of the [Lead Design Consultant](#) who signs and stamps the drawings.

We prepare and distribute BIM Room meeting minutes, so all parties are made aware of the conflicts and the timeframe for resolution, as well as the resolved matters.

Inform the client if there are major critical unresolved issues or technical considerations that may have an impact on the development of the lifecycle.



Construction Management

Constructability and Procurement Strategies

When providing [construction management services](#) we develop a construction program [during Project Set Up](#), to ensure the schedule aligns with the financial commitments of the development.

We coordinate the take-off data from the models with the cost database to follow up the budget throughout the project design phases. We act representing the client in all interactions with the [General Contractor](#), to ensure transparency on the process and clarity on the numbers before the contract is awarded.

The scope includes performing the constructability analysis, to detect potential problems early on (starting at early DD), and to work with the design consultants to fix issues proactively. And working with the [Production Delivery](#) team to align drawings and packages with tender and construction needs.

Furthermore, we develop a bidding strategy, preparing packages and managing the tender process through a cloud-based platform for consistency and integrity, providing the client with reports for decision-making.

Construction Analysis and Strategies

Having developed the [Construction Digital Prototype®](#) as an integer BIM model with consistent data, the scope of this service is to maximize the use of BIM technologies during construction. The digital models contain the information needed to monitor and follow up on performance metrics, progress, and certificates, enabling a real-time connection with cash flow needs.

When providing [construction management services](#) we establish the contract conditions together with the client, ensuring the bidding conditions are maintained and incorporated to the contract.

We represent the client in all interactions with General

Contractors, to ensure transparency and clarity on the numbers during construction.

We establish a construction budget control, establishing cost center and cash flow, monitoring progress and alerting when deviations are detected.

The scope includes developing progress reports, throughout construction, measuring progress to certify interim and final payments, manage variations and claims.

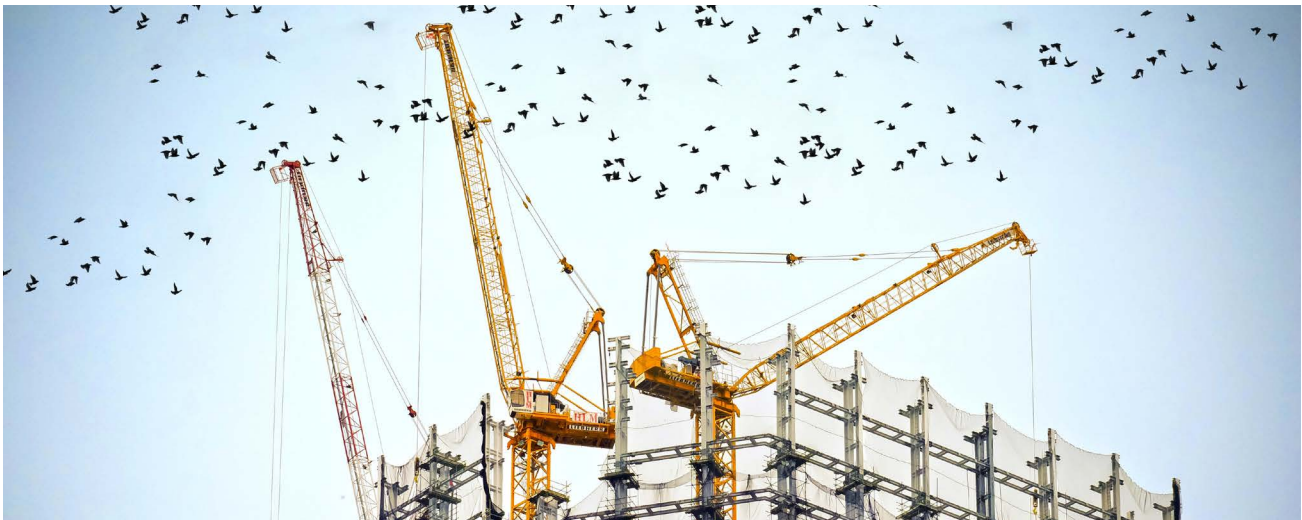
Management of Transition to Operation and Facility Management

At this stage, the BIM models can be used to prepare the building for operation and maintenance. The scope of this service is to incorporate the information of the BIM models to the O&M strategy and implement applicable tools for Facility Management.

When providing these services we coordinate the procurement of the O&M entity and work together to identify the requirements and define the best tools to operate and manage based on the information available in the BIM models.

We set up the operation, including building manuals and present options for FM software selection. And we take care of the implementation of the FM software, incorporating all project manuals and maintenance programs in the software for future use.

For all these services, our Construction Manager resides where the project is and works with our back office team to ensure all deadlines are met and to minimize the cost impact of travel and local expenses.



CONSTRUCTION DIGITAL PROTOTYPE®

A PARADIGM-SHIFT METHODOLOGY
TO ADDRESS WORK

OUR OWN METHODOLOGY

Construction Digital Prototype®

Our own methodology.

Architecture, engineering, and construction are **traditional processes**. Today, we have to be careful about how we approach the use of technologies around them. We have seen new companies born and grown to become Fortune 500 in less than 10 years and startups become huge enterprises in only a few years.

But why does it feel as if the AEC industry moved in slow-motion inside a movie that goes faster every day? Well, some things are just not easy to accelerate. A baby will be born 9 months later, no matter how much technology is around birth today. **Architecture, engineering, and construction** are traditional processes, and there has to be some care in how we approach the use of technology.

We are now pushed by **faster schedules** and arguably **lesser fees**, yes. But it is time we **add more value to the process**. It is time we realize we are part of a big machine called 'society' that needs to understand how we work, what we are planning to do, and how it will impact what is out there.

We need to rethink how the end-user, one that usually has little or no understanding of drawings and design, can be an **active part of the process** since day one. Our buildings are –except a few– built only once and in real scale.

We don't get to build prototypes over and over until we are sure everything works –at least not until now. The **Construction**

Digital Prototype® is more than just a BIM model. It is the opportunity to add value to the design-build process to solve problems before we hit the ground.

The Digital Construction Project represents the **ability to engage future users with the process**, so they have a say in the story.

Our work is for our communities and to make the life of those who use our buildings better.

Here are **3 paradigm changes** the Digital Construction Prototype® is creating:

- The design is an art that only the artist can conceive and won't have any meaning until finished. Let there be light, sooner rather than later.
- Consultants are islands that only need sporadic communication. Experience shows **savings of up to 25% in project fees** if they all work together since day one.
- Contractors ruin designs, so they'd better not interfere until the design is finished. Yes, in that 0.1% of projects that are unique and inspirational, it may be. But in the projects that our communities need, where investors need **clarity and precision, cost control**, and easy building maintenance, we need the design to have both feet on the ground.



The days of “DD and CD” are over.
**Welcome the era of the Construction Digital Prototype®
for a leaner, cleaner, and more integrated design-build process.**

A person is shown from the chest down, wearing a light blue shirt, sitting at a desk. They are using a silver laptop and holding a white smartphone in their right hand. The laptop screen displays a project management dashboard with various widgets. The smartphone screen is orange with the word 'Frank' written in white cursive. The dashboard on the laptop includes a header with navigation links (Communications, Financial, Contract, Risk, Reports, Gallery) and a user profile for 'Peter J.'. The main content area has several sections: 'TIME TRACKING' with '3200 BUDGET HOURS' and '223' (partially obscured); 'SCHEDULE' with '102 PROJECT DAYS' and '8 HOURS BALANCE'; 'DELIVERABLES' with a circular progress chart at '45%' and a list of '25' deliverables (4 DONE, 9 PENDING, 22 Q FILES); and 'COMMUNICATIONS' with '179 ALL'. A table titled 'ACTIVITY' is also visible, listing names and dates.

INTEGRATED MANAGEMENT COMMUNICATIONS PLATFORM

YOUR PROJECT LIFE-CYCLE
IN A SINGLE PLACE SINCE DAY ONE

Integrated Management Communications Platform

Frank Collaboration™ is a great platform that enables us to **centralize all processes**, task, and to-dos to follow the project schedule and **improve accountability**. We have financial oversight to know if the project has enough resources to complete all the required work.

This integrating platform **gives the client all needed support** regarding the project, accessing critical documents all at request. Also, it makes possible to have clear workflow management to track all issues to avoid delays and interferences.

Through our own project management platform, our clients can get a simplified **BIM management** as teams, models and project data are connected in a single environment. All of this complying with BIM standards.

The reasons why Frank is the **right integration system for your projects** lies on the fact that it allows owners and developers to make smarter decisions driven by clearer accountability. It **connects teams and processes in a single environment** resulting in better project outcomes. At the same time, it provides a single source for your projects financial needs.



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