

3D BIM Presentation & 4D Construction Phasing/Simulation



- 3D Modeling & Visualization
- 4D Construction Phasing/Simulation
- Pre-construction Site Logistics
- Marketing Presentations

COMMITMENT

We are committed to our core values and corporate mission:

- Maximizing client value by adopting the latest technologies and innovations.
- Improving project efficiency by streamlining workflow and providing services of superior quality.
- Saving time by using a large global team and leveraging time zone advantages.
- Reducing client's expenditure up to 15% by intelligent use of a dedicated workforce.



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Revolutionizing the AEC Industry

Proper planning and coordination are the keys to the successful execution of projects in the construction industry. Building Information Modeling (BIM) allows stakeholders to create and examine virtual representations of the Mechanical, Electrical and Plumbing (MEP) systems, and other utilities. The virtual construct can be used to generate accurate shop drawings and address design issues before construction begins.

Advancements in 3D technology and the advent of BIM have also revolutionized the Architectural, Engineering and Construction (AEC) industry.

Pinnacle Infotech has been acknowledged as the global leader in providing innovative BIM solutions. We have received several awards and recognition from both industry and government. Pinnacle received Deloitte Technology Fast 500 award in 2014 for 86% growth rate in Technology as per Asia Pacific Ranking and Deloitte Technology Fast 50 India

award in 2015. NASSCOM, the leading IT trade association, has named Pinnacle among the Top IT Innovators for 6 years between 2007-17. Our process orientation & quality control is as per ISO 9001:2015, ISO/IEC 27001:2013, and Environment Management System (EMS) 14001:2015 certified.

The successful completion of more than 5500 BIM projects in 40 countries has provided Pinnacle with a deep understanding of international building codes and procedures. Our global delivery system allows us to maintain constant contact with our clients making geographical separation meaningless.

We recognize the importance of effective work process management and regular communication when outsourcing services. We have developed an ideal mix of infrastructure, experience, global presence and commitment to excellence that has led to long-term relationships with more than 1150 clients worldwide.



Benefits

- **COORDINATION:** Streamline communication with 3D visualization among all stakeholders for quick decision making during design and pre-construction phase.
- **EFFICIENCY:** Eliminate RFI's, work stoppages and rework by checking the accuracy and completeness of drawings before starting construction on-site/off-site.
- **QUALITY:** Improving Quality by producing accurate Shop Drawings directly from the 3D BIM model which could also be used for pre-fabrication.
- **SAVINGS:** Pre-construction and Pre-fabrication reviews mean better use of manpower, better quality construction and reduced rework and wastage, all of which translate into lower costs.
- **PROJECT MANAGEMENT:** Detailed Material BOQ and Shop Drawings with 3D visualization enable a better look at "The Big Picture" and aid in the review, scheduling and monitoring of each project.

Our clients have reported cost savings up to 15% by successfully implementing BIM.

3D Modeling & Visualization

3D visualization allows all stakeholders including owners, users, designers and contractors involved in the construction process to share project image effectively and identify errors and inconsistencies in the early stages of construction. Pinnacle specializes in the virtual construction of 3D BIM models, using a range of inputs, including contract drawings, design documents, specification sheets, hand sketches and more. The team produces the model after resolving construction issues, generates RFIs & consults with project consultants. Starting from the abstract to photo realistic visualization, 3D visualization ensures a design vision, before the beginning of construction. 3D Rendering & Design Visualization software applications are used to bring life to BIM models. 3Ds Max & Revit are leveraged to make the BIM models meet the exact business requirement of clients with professional graded animation, rendering, modeling & texturing.

Benefits of 3D Modeling & Visualization

■ Coordination

Pinnacle streamlines coordination with 3D Visualization among all stakeholders for quick decision making during design & pre-construction phase. Drawing conversions from 2D to 3D BIM using AutoCAD and Revit tools help contractors to smoothly execute construction projects.

■ Bidding & Sales

3D visualization enables potential investors, buyers and owners to understand the layout & spatial interrelationships of a project. 3D photo-realistic visualization enables contractors to sell projects effectively by communicating the benefits of their plans in a better way. Communication uncertainties are eliminated through 3D BIM, saving business time and money that was earlier wasted through reworking on design.

■ Bidirectional Associativity

Pinnacle ensures changes to any part of the building to be made only once. All annotations & graphics are correctly resized to ensure annotation decisions like changed sheet scale.

■ Efficiency

2D drawings are eliminated by generating CD sets from accurate & coordinated BIM Models. BIM helps to save time by allowing easy & accurate modeling of complex elements and irregular shapes and ensures that all 2D drawings are accurate and updated as per the current model.

■ Quality

Pinnacle ensures that all data, graphics, schedules, drawings, sheets and other details in the CD set are current & coordinated.

■ Conceptual Cost Estimate

Quantity Take offs from the model are extracted and linked with the prevalent rate of materials, labor & construction techniques to enable stakeholders prepare cost estimates.

■ Integrated Building Materials

Pinnacle's real-world materials drive detailed plan, section and elevation representations of building components to save documentation time. The integrated Accurerender, Raytracing & Radiosity engine use the same materials and save time & effort to produce visualizations.

4D Construction Phasing / Construction Sequencing

4D is an extension of 3D with the time, included in addition to other three dimensions. Pinnacle's 4d simulation helps all the project participants, including the architects, contractors, designers and the owners to visualize the whole series of construction events and understand the progress of construction activities throughout the lifetime of the project. The project construction sequencing or the schedule to BIM model is linked to show the real time simulation of construction sequence in an animated video. The clients can compare the planned vs. the actual construction schedule throughout the project life cycle, based on 4D presentation. They can explore 4D simulation for supporting construction planning and can assess the impact of proposed design on construction schedule and work process.

Autodesk Revit & Navisworks Manage software platforms are used to create a workflow for enabling project teams to plan construction operations effectively by identifying potential problems and evaluating alternatives. Using BIM models, construction planners are able to simulate construction activities in their planned sequence, detect clashes and interference problems, improve construction schedules, track materials and can manage supply chain. 4D phasing acts as a powerful communication tool between project team and clients, resulting in better understanding of project milestones and improved construction plans. Delays and construction rework are minimized as project managers can carefully plan and coordinate construction operations down to the last detail both in time and space through 4D Phasing. All design elements are collaborated onscreen in 4D and thus the construction team can improve accuracy in construction sequencing.

Benefits of Construction Simulation:

- Powerful Visualization of Construction Process (Problem Forecast before construction)
- Improved Construction Planning & Management (Better Understanding of Project Milestones)
- Effective Bidding Presentation (Winning New Projects & Clients)
- Streamlined Construction Productivity (Reduced Cost & Error)
- Competent Execution of Construction Process (Coordinating Detailed Construction Operations)
- Efficient Logistics Management (Safe work environment for all site workers)
- Effective Building Site Space Utilization (Resolving Space Conflicts)
- Effective Project & Risk Management (Monitoring Plan & Tracking the Actual Progress)

Pre-Construction Site Logistics

The pre-construction site logistics include a visual representation of comprehensive planning and implementation services for clients. Starting from the project conception stage, Pinnacle offers a dedicated planning and estimation. A careful project evaluation is made for offering customized logistic solution by collaborating with the main contractors and sub-contractors.

Pinnacle's logistic solutions ensure a safe and efficient work environment for all site workers. BIM Engineers submit site logistics plans to the master developers before the beginning of actual construction and site establishment. The plan details the access to the site & plot, lay-down, assembly area, loading area, hoisting area, crane placement area, bus pick-up & canteen area, security gates & concrete pump areas, truck discharge location and several other information, that get submitted to clients for approval.

Construction Equipment Used:

- Excavators, Pile Rig, Bulldozers, Hydraulic Shears, Rock-breakers, Dumper Trucks, Portable Concrete Mixers, Concrete Pump, Batch Plant, Track Mounted Crane, Crawler Crane, Tower Crane, Luffing Crane, Jib Crane, Hoist, Grader, Dewatering Trucks, Compactor/Road Roller, Asphalt, Brick Pavers.

Marketing BIM Presentations helps in winning the bids (3D/4D/5D)

Pinnacle helps clients to secure bids by creating Marketing Presentations of high quality 3D rendered images, 4D Construction Phasing, Site Logistics, Walkthrough Animations, Mock-ups, Quantity Take-off & Cost-Estimates. BIM is used in an innovative way to present an effective and accurate representation of the project.



■ Walkthrough Animations

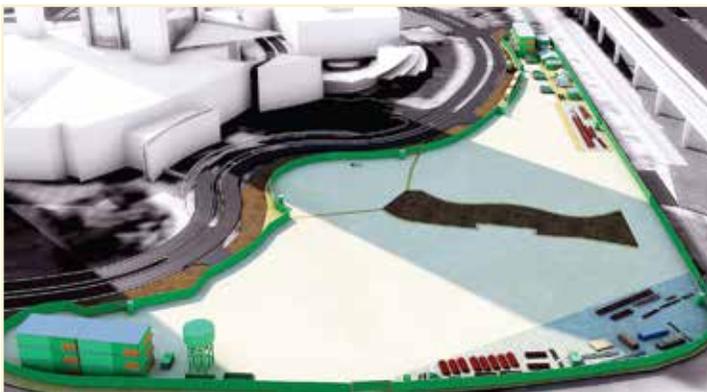
The animations are used for making construction phasing & photo-realistic presentations. The walkthroughs show every angle of the construction space, including landscaping, interior lighting, natural lighting, accurate material representation and moving objects. They not only offer an idea of the project to clients but help them navigate construction on their own terms. 3D Walkthrough makes a winning situation for the designers, homeowners, buyers, contractors and investors, by letting them experience a realistic feel of the building size and layout.

■ Site Logistics

BIM helps to verify site logistics & yard operations with tools for visually depicting job site space utilization through all stages of construction. Pinnacle incorporates various items into the model as a part of the logistic plan and uses a range of BIM tools to improve construction planning and monitor on-site health and safety measures. The presentations help in construction equipment placement, crane deployment, storage documentation, parking space allotment and concrete batching plant.

■ Virtual Mockups

Pinnacle facilitates design verification by ensuring that the design meets client's expectations through virtual mockup of various building components with equipment & finishes. A virtual tour of the proposed building (a detailed 360 degree view) is created, through detailed 3D renderings and walkthroughs on the fly. This helps in visualizing the project before it is built.



Logistics



Stadium



Office Building



Beach Resort

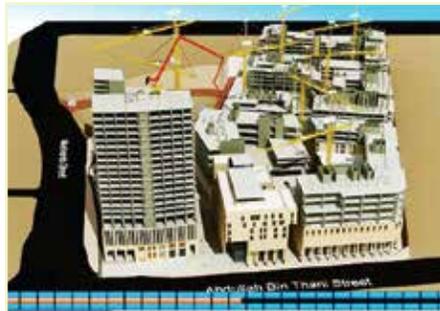
Mixed Use Residential Complex | Doha, Qatar

This residential complex situated at Downtown Doha, involves an ambitious plan to regenerate the part of city center of Doha in a sustainable way for the 21st century. Pinnacle has an engagement in the section of creating the 3D BIM Model and Architectural Shop Drawing with a 4D simulation video for this project.

Area: 400,000 Sq.M.
Scope of work: 3D Model & 4D Presentation



Initial Development Stage



Interim Development Stage

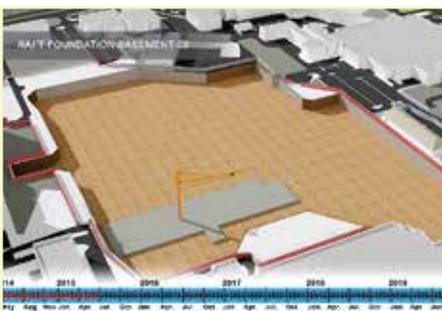


Completed Development Stage

Medical City | Abu Dhabi, UAE

The medical city will combine a general hospital with a level-one trauma center and women's and pediatric hospitals. Given the massive scale of this project, creating a hospitable sense of character and overall unity for the entire facility – while conveying a sense of identity for each individual hospital. Pinnacle involved in this project to create a 3D BIM Model 4D Construction Phasing and walkthrough for the purpose of bid presentation.

Area: 4,416,728 Sq.Ft.
Scope of work: 3D Model, 4D Presentation & Walk-Through



Initial Development Stage



Interim Development Stage

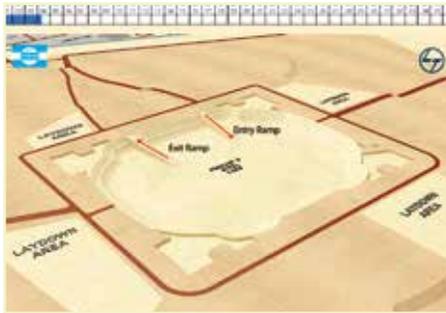


Completed Development Stage

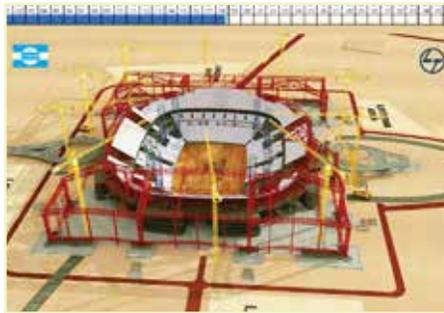
Stadium | Doha, Qatar

This stadium will have the capacity to host 60,000 spectators in 2022 FIFA world cup and fulfill all the requirements for hosting the matches through semi-final round. It will also have the retail space and restaurants but also landscaped paths for residents to use horse riding cycling and jogging tracks. Pinnacle has created a 3D BIM model and 4D presentation showing the construction methodology with a walkthrough of the entire project.

Area: 280,000 Sq.M.
Scope of work: 3D Model, 4D Presentation & Walk-Through



Initial Development Stage



Interim Development Stage

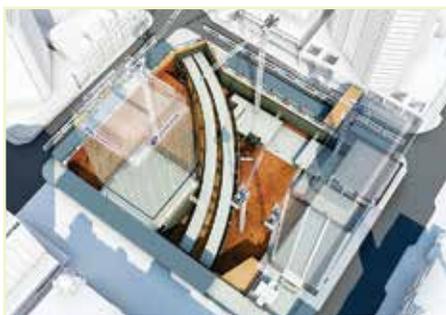


Completed Development Stage

Downtown Shopping Centre | Auckland, New Zealand

Downtown Shopping Centre is a smaller shopping centre with 12,417 m² gross lettable area in the Auckland CBD, Auckland City, New Zealand. Situated at 11–19 Customs Street West between Lower Albert Street and the Britomart Transport Centre, this highrise is planned for the site so that the future City Rail Link can go through the foundations of that building.

Area: 29880 Sq Ft
Scope of work: 4D Presentation



Initial Development Stage



Interim Development Stage



Completed Development Stage

International Airport | Kerala, India

The upcoming airport will be built on 2,500 Acres (1,000 ha) acres on a hillock located at Mattanur, 25 km away from Kannur district, Kerala, India. This is the fourth international airport in Kerala. The runway will be 3,400 m. The orientation of the runway will be 07/25, which permits obstacle free approach. The site preparation of this airport is very unique as the airport will be on a hillock. Cutting and filling of hilltop and reinforcing the soil by using geo grids was the most important part. Pinnacle provided its expertise for this project by showing the construction methodology in details along with a walkthrough.

Area: The airport will be built on 2,500 Acres (1,000 ha) acres 25 Km. from Kannur

Scope of work: 3D Model & Construction Methods, Walk-through



Initial Development Stage



Interim Development Stage



Completed Development Stage

MEP Rack Hoisting | Alabama, USA

In this project Pinnacle showed the process of hoisting and placing the MEP racks for the largest owner and operator of inpatient rehabilitative hospitals. Operating in 28 states accross the country and in Puerto-Rico.

Area: 300,000 Sq.Ft

Scope of work: 3D Model & Walk-through



Initial Development Stage



Interim Development Stage



Completed Development Stage

Why Pinnacle?

Pinnacle is the global leader in providing innovative BIM services. Our in-house team of 1500+ experienced Architects, Engineers, and BIM professionals provide end-to-end solutions to discerning clients around the world. We have 20+ years of global experience, during which we have collaborated with several leading contractors on BIM projects across categories such as specialty hospitals, stadiums, universities, dams, apartment complexes, hotels, casinos, large retail center, high school, airport, commercial buildings, convention center, high rise towers, and industrial projects.

Quality Output

Our Quality Control Team is led by employees who have 20+ years of experience. Our process orientation & quality control is in line with ISO 9001:2015 and ISO 14001:2015 standards. Our Preconstruction & prefabrication reviews with RFI generation help clients make better use of manpower and improve the quality of construction, reducing rework and wastage. Detailed material BOQ & Shop Drawings with 3D visualization enable a better look at "The Big Picture" and aid in the review, scheduling, and monitoring of each project.

Fast Turnaround

Our skilled team of professionals can provide quick turnarounds on complex projects. Pinnacle has completed several large-scale projects across multiple verticals.

High-tech Infrastructure

Our 3,80,000 sq. ft. world-class production facility is equipped with high-end workstations, advanced servers with real-time backup, and a 24*7 high-speed data and voice network. We have an uninterrupted power supply and an advanced security system by CISCO to ensure a trusted and reliable client data protection mechanism.

Competitive Cost

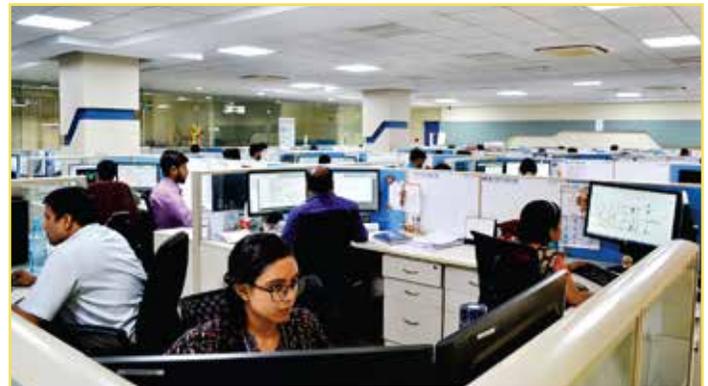
Clients rely on us for our top-of-the-line services at reasonable rates. We help clients assemble projects in a virtual environment for identifying and correcting potential problems before construction. We offer cutting-edge advantage in terms of Building Information Modeling services, facilitating project coordination, collaboration, asset management, risk mitigation, logistic planning and cost optimization.

Technical Strengths

We are software independent, our professionals use the latest BIM software: Autodesk Suite (Revit - all versions), AutoCAD Architecture, MicroStation, Navisworks, Inventor, AutoCAD Civil 3D, Plant Design Suite, Pro/Engineer, SysQue, All Plan, Adobe Photoshop, Adobe Illustrator, Adobe After Effects, 3DS Max, Tekla Structure, SolidWorks, Autodesk Fabrication Suite, SketchUp, Bluebeam, PIPENET, and other design software. As we have a deep understanding of global and regional codes and standards, we have ensured that our Quality Management System is as per ISO 9001:2015.

Global Presence

Pinnacle has offices around the world (SINGAPORE, JAPAN, USA, UK, UAE, ITALY, GERMANY, INDIA - Durgapur, Kolkata, Jaipur & Madurai) enabling us to serve our clients around the clock.



Communication

Pinnacle's Project Management team is available to clients through several communication channels including:

1. Global telephone networks for instant communication
2. Email (on Google server) for reports and interactions
3. Video and teleconferencing for presentations and conversations
4. Web conferences with US-based phone systems
5. Engagement of US-based Relationship Managers

Testimonials

"Working with Pinnacle is always a very pleasant and professional experience. Their team is extremely responsive and produces a high quality product. W.T. Rich is very happy to have partnered with Pinnacle on several projects, and we genuinely believe that the 4D animations created and used by our business development department are the highlights of our presentations to potential owner/clients. We look forward to the continued relationship with Pinnacle moving forward."

W.T. Rich Company, Inc.

"Pinnacle was able to meet our very tight and aggressive schedule. They provided us with a detailed site logistics animated model for a presentation and was ultimately awarded the project."

W.T. Rich Company, Inc.

"I found the experience with Pinnacle to be very satisfactory. We received the products promised when they were promised. It was very easy to make corrections and suggestions that were followed by the Pinnacle team. Given the quality and degree of detail in the PDF renderings that were given to Pinnacle, I think the finished product that they delivered exceeded our expectations. We are now working on another major project with the Pinnacle team and expect the same results."

Nordic PCL Construction, Inc.

"Pinnacle has been a real asset to the project. Their team is very knowledgeable and efficient at the BIM process and have provided an end product that is very useful to not only the construction coordination and installation, but also the end users of the facility."

The Whiting-Turner Contracting Company

"I have enjoyed working with Neel and his team on this project. They were very professional and timely."

Hoar Construction

"Working with Pinnacle team worked very well. This was a fairly small marketing project with a short deadline, and your team provided us exactly what we needed in the time period that was necessary. We are still waiting for the client to make a final decision, however, if they do proceed with our company we most likely will be working with Pinnacle for some of the MEP trade coordination."

Wright Construction Group

"It was just a little difficult to communicate changes based on the time zone difference but overall you did a great job."

Rycon Construction, Inc

"The CDR's were very well presented and intuitive. This basic clash detection process was perfectly executed on time and without fuss. Pinnacle is an ideal BIM partner, allowing the principle design team to dedicate their resource to design tasks."

Willmott Dixon Construction

"Teams are very cooperative and friendly. We are happy and looking forward to work with Pinnacle in future."

Obayashi

"We highly appreciate the quality, responsiveness shown by the team all the way till the tender submission. We hope to continue the relationships in future projects."

Drake & Scull International LLC-Oman

"The team has the capability to deliver to the required standards, however regular follow-ups and continuous guidance is required for them to deliver the requirement. They are reactive not proactive."

Larsen & Toubro Limited

"I value Pinnacle as a one of the best BIM service providers worldwide. I met some of your leaders at conferences and we are friends. I will continue to look for ways to partner with Pinnacle on projects because of the quality of your services."

VDCO Tech

Project Snap Shots

SECTOR LOCATION	CLIENT	PROJECT NAME DETAILS	TIME	PROJECT AREA MANPOWER
Mixed Use Residential Township Doha Qatar	Conspel and Obayashi Corporation and HBK Construction	Msheireb Downtown Doha Scope for this project was to create Architectural and Structural 3D Modeling, MEP-FP (Mechanical, Electrical, Plumbing, Fire Protection) Modeling; Along with Coordination services, Shop Drawings creation, Constructability Report generation, Quantity Take-Off, creating 3D Mock up and 4D Phasing/Scheduling.	July 2013	374,541 Sq.M. 45 MEP Engineers, 16 Architectural and Structural Engineers
Airport Abu Dhabi UAE	L&T Abudhabi	Abu Dhabi International Airport Scope was creating a bid presentation model for Abu Dhabi International Airport. Both interior and exterior architectural and structural elements as well as the MEP items were taken care of in the presentation. An AVI presentation of the 4D phasing for the entire project was delivered.	July 2013	60 Sq.Km. (15,000 Acres)
Shopping Mall Doha Qatar	General Contractor	North Gate Mall Providing a clash free 3D BIM model (Architectural & Structural) for the entire mall area along with the office building. Creation of a walk through presentation.	November 2011	417,500 Sq.M. 32 Architectural /Civil Engineers
Hospital Salalah Oman	Danis Construction	Miami Valley Hospital South 3D model & 4D Presentation for the new expansion.		60,000 Sq.Ft.
Hotel Hanoi Vietnam	General Contractor	JW Marriot Hotel The scope was creating the site model, structural, and architectural and creation of a nice fly-thru rendering view. The most important thing was to create phasing sequence for construction phasing. The model was used for visualization purposes only.	March 2010	92,600 Sq.Ft. 10 Architects
Residential Complex Doha Qatar	UCC (UrbaCon Trading & Contracting)	ISF Camp Undertaking basic 3D modeling of Architecture, Structure, Site and Site logistics for presentation 4D construction Simulation with video.	June 2013	427,079 Sq.M. 20 Engineers
Information Technology Campus Kochi India	TCS	TCS IT Campus 3D Model creation for Architecture, Structure and MEP FP services. Coordination work between all the trades and generating clash reports. constructability review and design intent presentation from the model. Created rendered images of key areas, Walkthroughs, value engineering, 4D Construction Sequence and Topological grading (Civil site).	November 2011	98.25 Acres
Roadways Infrastructure Muscat Oman	Larsen & Toubro LLC.	Wadi Kabir Highway Project Delivering a precise 3D model embodying architectural and structural elements made for bid presentation. Depicting different stages for construction of flyover and underpass for construction management.	February 2011	2,776 Meter 8 Architect



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