

BIM in India

This white paper explores how technology that supports and accelerates building design processes is being received in India - a country experiencing a construction boom fueled by its own swelling technology sector.

India's Construction Boom

India's stable legal and commercial environment, combined with its government's economic liberalization policies has led to strong economic growth, low inflation, and significant increases in foreign investment. The growth of its technology sector - drawing on an abundant, well-educated, labor pool - is renowned. IT hubs are quickly being established in the suburbs of most major Indian cities, often likened to Indian Silicon Valleys.

This strong economic performance has resulted in a building frenzy, particularly in metropolitan areas. All types of construction - residential, infrastructure, industrial, and of course commercial - are booming. In their Q3, 2004 review of commercial property in India, Knight Frank Research reports that it's not unusual for developers to deliver fully fitted-out built-to-suit space at a rate of over 1,000 sq.ft. per day (or a 120,000 sq.ft. call center in under four months, for example).

Local architectural firms profiting from this building boom are racing to keep up with demand, but, at the same time, looking over their shoulders at foreign firms who are poised to swoop in and claim the profits for themselves if the local firms can't deliver.

BIM's Benefits for Indian Architectural Firms

India's large, relatively inexpensive labor pool decreases the value of productivity improvements that (building information modeling (BIM) solutions offer. More important is BIM's ability to reduce the size of a project team. Firms benefit from this in two ways: it lowers their IT infrastructure costs (fewer computers, software licenses, etc.); and it reduces the amount of office space required for staff, which - in a part of the world where real estate can be extraordinarily expensive (rents in Mumbai, for example, are comparable to those in Manhattan) - is a major consideration.

But BIM's overriding benefit is the substantial time savings and competitive advantage it can produce. In an environment of intense time pressure and increased global competition, BIM gives local firms the quick turnaround on projects that they need to match international competitors and stay on top.

The key issues challenging BIM adoption in India revolve around cost: software, additional hardware, and training. With labor a relatively smaller part of the cost equation, firms need to see very concrete benefits to justify the move to BIM. On the other hand, because

most firms are still using 2D drafting solutions (predominantly AutoCAD® software) instead of intermediate Object CAD-based modelers, they are starting with a clean slate - no intermediate technology investments to deal with and no legacy data issues.

Below are summaries of three architectural firms of varying size who have deployed Autodesk's purpose-built BIM solution, Revit® Architecture, and a brief examination of how BIM has affected their businesses. These firms already use AutoCAD, so moving to Revit (which integrates seamlessly with AutoCAD) on a working project was viewed as low risk. Therefore all of these firms have gone straight into production with Revit Architecture.

PMK Architects

PMK Architects, located in Bangalore, is a small firm with a staff of 10. Established in 1980, their landmark projects include the Bangalore Stock Exchange and a variety of projects for Wipro. They're currently using Revit Architecture on two large mixed-use commercial projects: a 75,000 sq. ft. commercial center (including four stories of retail space, a two-story parking garage and a 450-person auditorium); and a four-story, 25,000 sq. ft. medical clinic.

PMK has been using Revit Architecture for less than a year but have already found it particularly useful for visualizations and walkthroughs. According to PMK's partner, Prabhakar Kulkarni, "The visualization capabilities of Revit allow our clients to quickly 'see' their building projects early in the design stage – speeding up approval processes, and saving us all time and money."



Figure 1:

PMK Architects rely on Revit Architecture to produce high-quality visualizations for client and building committee approvals.

Ajit Bhuta & Associates

Ajit Bhuta & Associates (www.ajitbhuta.com), established in 1976 and headquartered in Mumbai, is a medium-sized firm with a staff of 20 architects, planners, and interior designers. They have delivered an array of projects of various types and sizes throughout India, and currently focus on fairly large building projects (exceeding 10 million sq. ft.).

Principal Ajit Bhuta considers himself first and foremost an artist. In fact, most of his building designs are inspired and take their shape from his paintings. He has been using technology (including AutoCAD and 3ds Max[®] animation software) since his early days in practice and relied on both his paintings and traditional CAD for conceptual designs. But traditional CAD technology didn't offer him the flexibility and versatility he needed for his designs.

Mr. Bhuta's introduction to Revit Architecture early this year has changed his opinion of the suitability of technology for expressive design and his firm is now using a combination of both Revit and AutoCAD as their primary design toolkit. According to Mr. Bhuta, "Revit is an excellent design tool, allowing us to quickly generate very creative designs, complete with supporting visualizations and coordinated documentation."

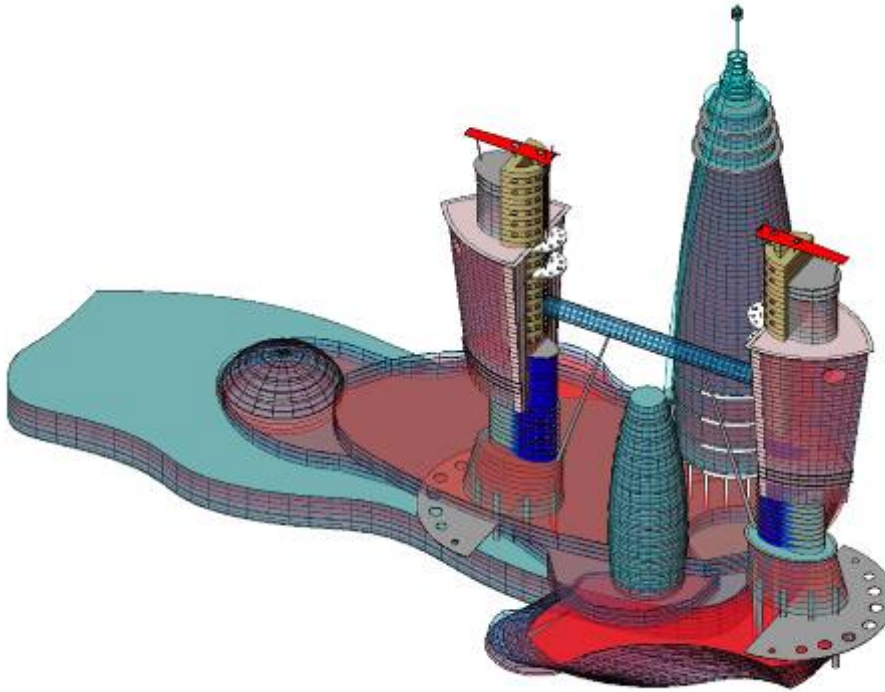


Figure 2:

Revit Architecture allows Ajit Bhuta & Associates to design very expressive structures such as this futuristic conceptual design for a mixed-use project in the United Arab Emirates.

Larsen & Toubro Limited

Larsen & Toubro Limited (www.larsentoubro.com) is India's largest engineering and construction conglomerate. Founded in 1944, their construction division has been part of the astonishing changes in the Indian building industry. Their landmark projects in India include Bahai Temple in Delhi and Cyber Towers at Hitec City, Hyderabad.

Their architectural group, located in Chennai, implemented Revit in 2003, and are currently using Revit on a variety of projects including: a 5-story, 250,000 sq. ft. call center (designed and built in just 9 months); and a facilities complex, just over 100,000 sq. ft, which includes a factory and cafeteria (designed and built in a little less than a year). Revit was used on both projects, in the initial stages of design for making conceptual views and

for a variety of elevation façade treatments. Larsen & Toubro's architectural group, EDRC (Engineering Design & Research Centre), found the software very versatile - allowing them to produce more design alternatives in a shorter amount of time.



Figure 3:

Larsen & Toubro are using Revit Architecture on large commercial and industrial projects, including this call center (above) and facilities complex (below).



Competitive Finesse

Indian architects are discovering that BIM helps them deliver high-quality projects quickly – providing them with the competitive finesse they need to vie with firms across the country and around the world. As PMK's Kulkarni puts it, "Time is of the essence and Revit is the answer."

About Revit

The Revit platform is Autodesk's purpose-built solution for building information modeling. Applications such as Revit Architecture, Revit® Structure, and Revit® MEP built on the Revit platform are complete, discipline-specific building design and documentation systems supporting all phases of design and construction documentation. From conceptual studies through the most detailed construction drawings and schedules, applications built on Revit help provide immediate competitive advantage, better coordination and quality, and can contribute to higher profitability for architects and the rest of the building team.

At the heart of the Revit platform is the Revit parametric change engine, which automatically coordinates changes made anywhere — in model views or drawing sheets, schedules, sections, plans... you name it.

For more information about building information modeling please visit us at <http://www.autodesk.com/bim>. For more information about Revit and the discipline-specific applications built on Revit please visit us at <http://www.autodesk.com/revit>.



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