Infratech mantra

Notwithstanding the debilitating impact of the global slowdown, the emphasis on infrastructure development in countries like India continues to be strong and progress continues to be guided by increasing application of Information Technology. SUSAN PHILIP reports on the trend.

INFRASTRUCTURE and Information Technology have struck a win-win relationship. While the software industry is bracing itself against the global slowdown, governments the world over are seeing infrastructure as the preferred escape route from the economic whirlpool. And in this, the two fields have found mutual salvation.

India joins the rest of the world in seeing infrastructure as the way to progress, and both global and domestic majors are getting into the act of bringing the country up to par in terms of facilities. Transportation and communication networks as well as housing, water supply, drainage and power generation are seeing increased activity. The infrastructure sector in India is expected to attract investments to the tune of $ 500 billion over the medium term while engineering and design services are sure to come into focus because of the demand-supply gap given the rapid growth of international projects.

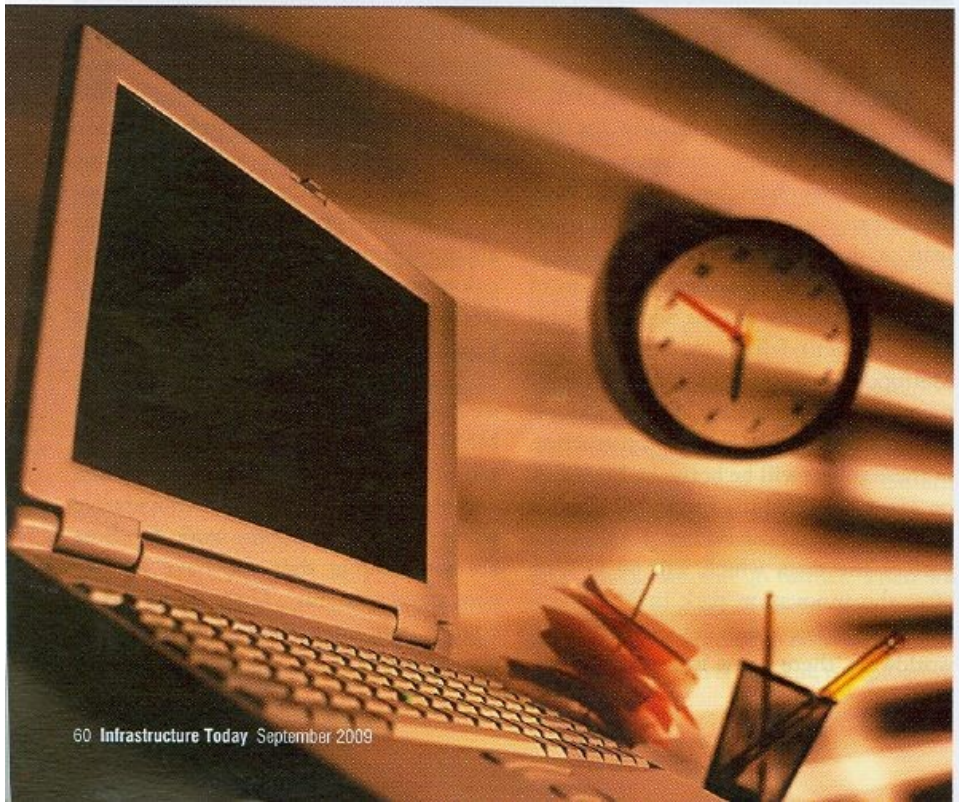
Indeed the infrastructure demands on cities in India are staggering. The population of many urban areas in India has doubled or tripled in the past 20 years, and will double or triple again in the next 20 years. The percentage of the population that lives in urban areas is increasing from 25 per cent today to 40 per cent in the next 10 to 15 years.

Efficient sustainable infrastructure development to meet the needs of India's cities requires state-of-the-art information technology to plan for the entire infrastructure lifecycle, from design to engineering, construction, operations, and maintenance. This technology is critically important to completing high-quality projects on time and on budget, particularly given today's shortfall in new engineering talent entering the infrastructure professions. The country is witnessing increasing use of design and analysis tools in infrastructure projects such as airports, special economic zones, power generation, oil and gas, rail and transit, water and wastewater, and roads.

"The Union budget for 2009-10 by the Government of India has earmarked a staggering Rs 125,000 crore on building infrastructure which amounts to over 9 per cent of our GDP. This infrastructure development is massive and needs systems and processes in place to manage projects of this size, both for contractors and the government agencies. This has lead to an increased number of enquiries that we are seeing. Indian construction companies have realised that they must evolve or perish," says **Balaji Sreenivasan, Founder-CEO, Aurigo Software.** Aurigo provides web-based solutions for fields as diverse as architecture, engineering and construction and industry verticals. Clients are spread over the USA, the Middle East and India.

Balaji Sreenivasan, *Founder-CEO, Aurigo Software.*

Since liberalisation gained impetus, Indian infrastructure companies have been



using basic and middle-level stand-alone solutions to improve performance. But many realise that the time has now come to move ahead. The spotlight is on sophisticated software and integrated solutions, which will ease the pressure caused by mushrooming workloads and soaring standards. India has for some years been viewed by the West as the outsourcing destination of choice for software needs, and now, Indian companies too are increasingly seeing the merits of technology in improving efficiency in all spheres. Software majors are partnering with infrastructure companies to give India a big boost in the global arena.

Software solutions providers like **Bentley Systems, Rolta, Tekla, Autodesk** and **Aurigo Software** are excited about India. "We are seeing increased trac-tion and interest from almost every major construction house in India who want to replace their home-grown or stand-alone software investments with world-class products", says Aurigo's Sreenivasan.

Malcolm Walter, *COO, Bentley Systems*

Sreenivasan's sentiments are echoed by **Malcolm Walter, COO of Bentley Systems**, who feels "India holds great prospects today for our investments and software applications".

"India is a fast growing economy, making its position stronger in the global scenario. As we look around at other countries, Indian market is a promising one", Walter says, adding that people in India are making some long-term real investments in the infrastructure business and showing confidence in its potential. Bentley solutions and products are used throughout the entire lifecycle of infrastructure projects. For example, the design can be created in 3D, and that design can be used in a variety of downstream processes. After design and validation using various CAE tools, the design can be output as construction drawings, diagrams, and electronic data. When the infrastructure asset is delivered, the data can provide up-to-date information for operations and maintenance.

Solutions offered by Bentley, Rolta, Tekla, Aurigo and other such companies serve diverse purposes covering planning, scheduling and accounting, among other facets of the infrastructure industry. These solutions perform a vast variety of functions, like reducing man-hours, automating processes like project cost estimation, tendering, contract management and field inspections, cutting human error, providing data and document control and enabling better materials management besides boosting safety parameters. Coming down to specifics, they help in structural analysis and design, detailing, fabrication and streamlining of delivery systems, to name but a few benefits.

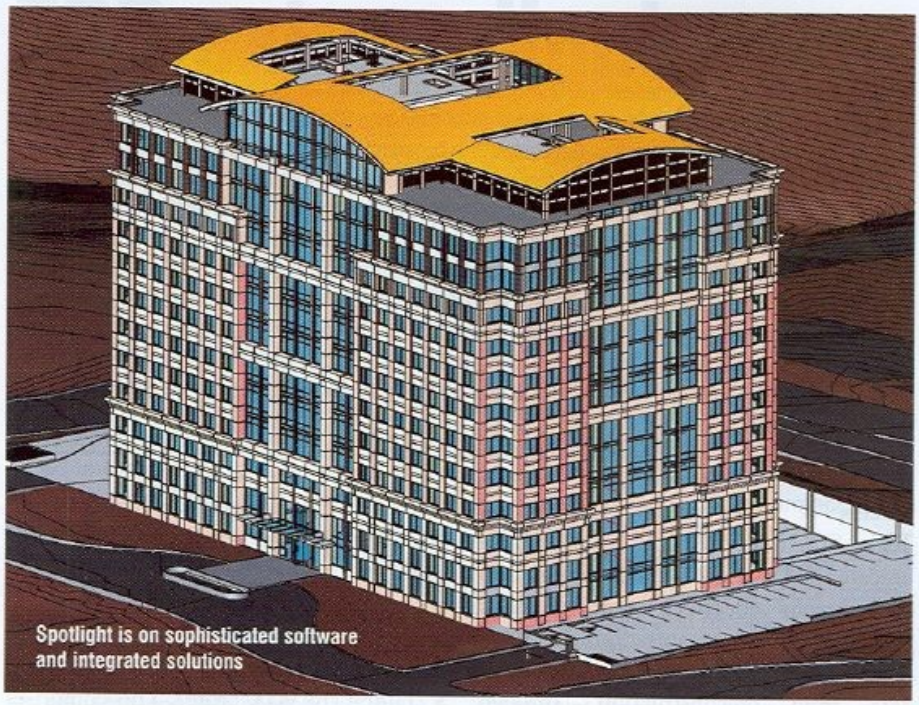
To take one area of burgeoning importance: Planners across the board are seeing the stupendous benefits of Geospatial and Geographic Information Systems (GIS). Up-to-date and accessible data and maps are essential for making effective decisions in sectors like telecommunications, electricity supply and water and drainage management. Such inputs impact both

BENTLEY SYSTEMS

Bentley subscriptions empower almost 90 per cent of world engineering design firms. Most of these companies have offices in India and use Bentley solutions and products. Among them are **Bechtel, Technip, Foster Wheeler, Fluor Daniel, Tecnimont, Mott McDonald, Scott Wilson, ABB, Alstom, MWH, CH2M HILL, Jacobs Engineering, Aker Group, UHDE,** and **Siemens**. Among the Indian companies using Bentley software are a number of plant consultancies and construction firms including **Larsen & Toubro, Engineers India Ltd, MECON, Essar Engineering, and Punj Lloyd**. Major owner-operators using Bentley software include **Reliance, ONGC, Essar, Hidalco, SAIL,** and **IOCL**. The Reliance Jamnagar Refinery is, of course, one of the many prestigious plant projects with which Bentley is associated. Bentley users also include **NHAI, MORTH, RITES, L&T Ramboll, Delhi Metro, MMRDA**, and a host of other MNC consultants. A few examples of prominant projects that relied on Bentley software include Golden Quadrilateral, Delhi Metro, and Mumbai Metro. Major airports like the Mumbai, Delhi, Bangalore, and Hyderabad have used Bentley solutions directly or indirectly through consultants they work with. **Airports Authority of India, L&T EDRC**, and **Mott McDonald** are major users in the building domain.

AURIGO SOFTWARE

Aurigo Software is a leading software product company providing solutions to the architecture, engineering and construction industry verticals worldwide. Their customers include state and local government agencies, large construction management firms, general contractors, transit authorities, power plant contractors, ship building and repair companies and real estate developers. Aurigo's software product suite BRIX automates the processes of project cost estimation, electronic bidding (tendering), contract management and field inspections. BRIX is an Industry add-on to Microsoft's ERP Platform, Dynamics AX. While there are over 300,000 implementations of Microsoft Dynamics AX worldwide and over 32 implementations on BRIX at some of the largest and biggest construction management firms, government agencies and real estate developers worldwide, the combined solution of Microsoft Dynamics AX and Aurigo BRIX was launched in India only in June 2008. Within a short span of under 15 months, the company has quickly garnered 7 customers on the combined solution including **Nagarjuna Construction Company** (India and Middle East), **Navin Housing** (Chennai), **RDS Projects** (Delhi), **IDEB** (Bengaluru), **WoodKraft** (Bengaluru), and **SNC Power Corporation** (Bengaluru).



Spotlight is on sophisticated software and integrated solutions

urban and rural development.

Companies like Bentley and Rolta offer advanced Geospatial services. Public utilities, government agencies, communications providers, mapping organisations, and consulting engineering firms use these solutions to plan and execute urban environments, set up transportation corridors, analyse land use, assess geological hazards, and manage and operate geospatially placed infrastructure.

Rolta, for one, claims credit for establishing a unique approach and architecture for its Geospatial/GIS offering – Rolta Geospatial FusionTM. The company describes it as a "platform-neutral architecture that incorporates state-of-the-art GIS technologies, business intelligence tools, and Services Oriented Architecture (SOA) middleware for an enterprise level integrated solution".

What is different about Geospatial FusionTM is that it enables users to work easily with a variety of GIS platforms, and integrate non-GIS databases for an enterprise-wide solution. With this approach, Rolta is in a position to offer a complete stack of services that can be addressed not only to the GIS manager, but also to the "C" level executives in customer organisations.

Rolta's delivery centre in Mumbai is one of the largest GIS facilities, and is staffed by a highly skilled team of over 2,000 professionals, equipped with state-of-the-art GIS workstations, software and photogrammetric mapping suites. The company's share of the GIS and photogrammetric mapping market in India is over 70 per cent and clients in the country include **Airports Authority of India, BES&T, BSNL, Forest Survey of India, Geological Survey of India, Gujarat Pollution Control Board, Government of Mizoram, Indian Institute of Remote Sensing** and **ONGC**. It also has an impressive list of clients abroad.

Realising the value of integrated services, Rolta has made a mark in the engineering design automation domain too, through its Engineering FusionTM which is also billed as a unique product. The company enjoys a market share of over 85 per cent, in India and is one of the major service providers, worldwide as it provides complete engineering, procurement and construction Management (EPC) services.

Some of its products in the Civil/Structural discipline toolset are Ace Frameworks Utilities, Base Plate, Frameworks Plus, INROADS, LPILE, PCA Mats and Columns, PDMS, Staad Pro, SDS-2, PDS and SmartPlant3D.

The AutoCAD design and documentation software, one of the world's leading 2D and 3D CAD tools, is another hot favourite. It allows you to speed documentation, share ideas seamlessly, and explore ideas more intuitively in 3D, according to Autodesk. With thousands of available add-ons, AutoCAD software provides the ultimate in flexibility, customised for specific needs, the company says.

In May this year, Autodesk India launched new infrastructure modelling software products to help the utilities and telecommunications sectors and government agencies improve design and manage their infrastructure better. Autodesk's portfolio of products-including AutoCAD Map 3D 2010, AutoCAD Raster Design 2010, Autodesk MapGuide Enterprise 2010, and Autodesk Topobase 2010-provide users with an intelligent and comprehensive solution for designing, visualising, simulating and analysing infrastructure assets and development plans.

"Infrastructure Modeling helps professionals build an integrated digital model and make better, faster decisions, whether they are designing smart electric utility grids, planning city projects, or managing complex telecommunications networks," said **Manideep Saha, Head-AEC & Geospatial Solutions, India and SAARC**, had said. "Because Autodesk provides both design and asset management solutions, it is uniquely positioned to support the entire Infrastructure Modeling process."

Aurigo caters to all sections of the construction industry, providing solutions to small, medium and large enterprises. Talking of Aurigo's products, Sreenivasan says the company has joined hands with **Microsoft** to cater to specific business automation needs of

Manideep Saha, *Head-AEC & Geospatial Solutions, India and SAARC*

the construction and real estate sectors. The products leverage the flexibility and ease of use of the Microsoft AX platform and the industry best practices of the Aurigo BRIX Construction Management and Field Inspection Systems. The Aurigo BRIX 2009 solution suite comprises the BRIX Estimate, BRIX Contract, BRIX Inspect, BRIX Map and BRIX Land.

The need of the hour in India for both government agencies and infrastructure houses is to measure, track and control the costs and progress associated with each project. This leads to transparency, higher visibility, reduced project costs and faster completion time. BRIX 2009 is a world class product which helps measure, track and control costs and progress, and thereby contributes to transparency and quick turnaround times, says Sreenivasan.

It's just over a year since BRIX was introduced in India, yet, the product has gained enviable acceptance. The **Nagarjuna Construction Company** uses it for its projects both in India and the Middle East while Chennai-based Navin Housing, RDS Projects of Delhi and Bengaluru's IDEB, WoodKraft and SNC Power Corporation are all satisfied clients.

Time and money are of essence for companies working to budgets, especially in the context of the current financial downturn. The infrastructure industry has found that top-end software provides excellent Returns on Investment (RoI).

Building Information Modelling (BIM) solutions such as those provided by Bentley and AutoCAD are proving to be boons to design and construction sectors through various stages of the planning and execution process.

Tekla's BIM solution, Tekla Structures, is an innovative tool that facilitates open integration while supporting the end-to-end construction process, the company says. Tekla models can be used to cover the entire building process from conceptual design to fabrication, erection and construction management.

Managing the fragmented project planning and performance data is a challenge in streamlining the delivery process of construction organisations. Tekla Structures helps to plan, communicate, and manage project information and thereby effectively supports BIM. According to the organisation, the Tekla model can be used to store all structural data from preconstruction, through construction planning to site management and to monitor performance from design to supply and installation.

At the pre-construction stage, Tekla Structures combines building geometry with its element-specific properties to help construction managers reach understand the aspirations of clients and interpret design intent. At the next stage, the solution helps centralise and visualise project data. It enables good control over planning and performance data, thereby helping better scheduling and cost estimation and aiding decision-making.

Tekla Structures can process large amounts of model and non-model data regardless of the source, the company says. The software can be used to leverage the critical transfer of design information and planning data between design and construction teams. The product can also be customised to suit segment-specific needs of the construction industry.

Companies such as Rolta are also seeking to provide end-to-end services, and also offer support like supplier qualification, purchasing, source inspection, supply QA/QC, expediting, logistics and field warehousing.

Sreenivasan points out that the architecture, engineering and construction (AEC) industry is worth a trillion dollars worldwide and is the backbone of several economies and countries. He goes on to quote Gartner as pegging the worldwide AEC applications software market at over $ 2billion (Rs 9000 crore). This comprises design software, GIS and business productivity software such as scheduling and construction management. "While the overall industry is growing at a rate of 4 per cent annually during these times, the APAC AEC market and a few other emerging economies investing heavily in infrastructure and power are witnessing growth of almost 13 per cent", he adds. Surely, these are figures to gladden the heart of global top-class software solutions provider.

Like Sreenivasan, Walter is upbeat about prospects too, and India holds a definite importance in Bentley Systems' plans. It sees even lacunae like the lack of integration between AEC projects and 3D Modelling as opportunities rather than hurdles. The company has targeted government sectors and industry to promote software development for civil engineering, geospatial and other similar spheres. Providing technical support and professional services, user training programmes and sales events and industry conferences are all on Bentley's India Agenda.

Walter speaks for the rest of the IT solutions suppliers when he says: "If you like infrastructure this is the place to be." IT

AUTODESK

Autodesk, Inc. is a world leader in 2D and 3D design software for the manufacturing, building and construction, and media and entertainment markets. Since its introduction of AutoCAD software in 1982, Autodesk has developed the broadest portfolio of state-of-the-art Digital Prototyping solutions to help customers experience their ideas before they are real. Fortune 1000 companies rely on Autodesk for the tools to visualize, simulate and analyse real-world performance early in the design process to save time and money, enhance quality and foster innovation. Autodesk's Infrastructure Modeling software products provide users with world class design, mapping, data aggregation and management tools they need across the infrastructure design and management workflow. In May this year Autodesk announced AutoCAD Map 3D 2010. For the infrastructure Modeling process, AutoCAD Map 3D 2010 brings together geospatial, civil engineering, and utility network data into a common CAD environment.