A/V Integration at IIM-B

Remote Learning, by Technology!

Indian Institute of Management-Bangalore (IIM-B), one of earliest and premier higher learning institutions of management in the country, has set many a milestones in its journey of about six decades thus far. However, the prestigious seat of management learning found itself faced with a typical situation of managing a remote learning centre just as it does on its own premises in Bangalore. And how, leveraging technology- thanks to the advancements in the communication mechanisms! Office Solutions (OS) presents a case study!

When the Indian Institute of Management-Bangalore (IIM-B) formulated the distance or 'distributed' learning programme with a view to expanding its highly potential Post Graduate Programme in Software Enterprise and Management (PGSEM) beyond Bangalore towards preparing tech-savvy business leaders for next generations, the initiative looked as exciting as it was ambitious. With the enthusiasm running high, the institution went ahead and set up a 'distant' learning centre in Chennai.

However, managing two learning centres in two geographic locations, proved to be more of a logistic issue than of learning issue. Repeated shuttling of faculty and related study materials whatsoever wasn't proving to be a wise proposition. In such a situation, leveraging technology was the only, and ideal, solution. Simulating the teaching environment in Bangalore into the Chennai centre, and managing them simultaneously!

BRIEF, SIMPLY POWERFUL

A Technology that exactly replicates the teaching environment of one location in a geographically separated far off location, yet simple enough not to hamper the teaching processes

The idea looked exiting but equally challenging for a simple reason that the solution had to be powerful in that it replicates the exact teaching environment from Bangalore to Chennai yet had to be simple enough not to either hamper, or tamper with the teaching processes and interactions. It had to ensure seamless streaming of content - both data and video - without affecting the pedagogy of the professors. With the onset of communication formats like videoconferencing, setting up a communication channel that instantaneously performs interaction between two remote locations has more or less become a convention today, but creating a seamlessly streaming platform to provide unbroken experience (of learning) is still a challenge.

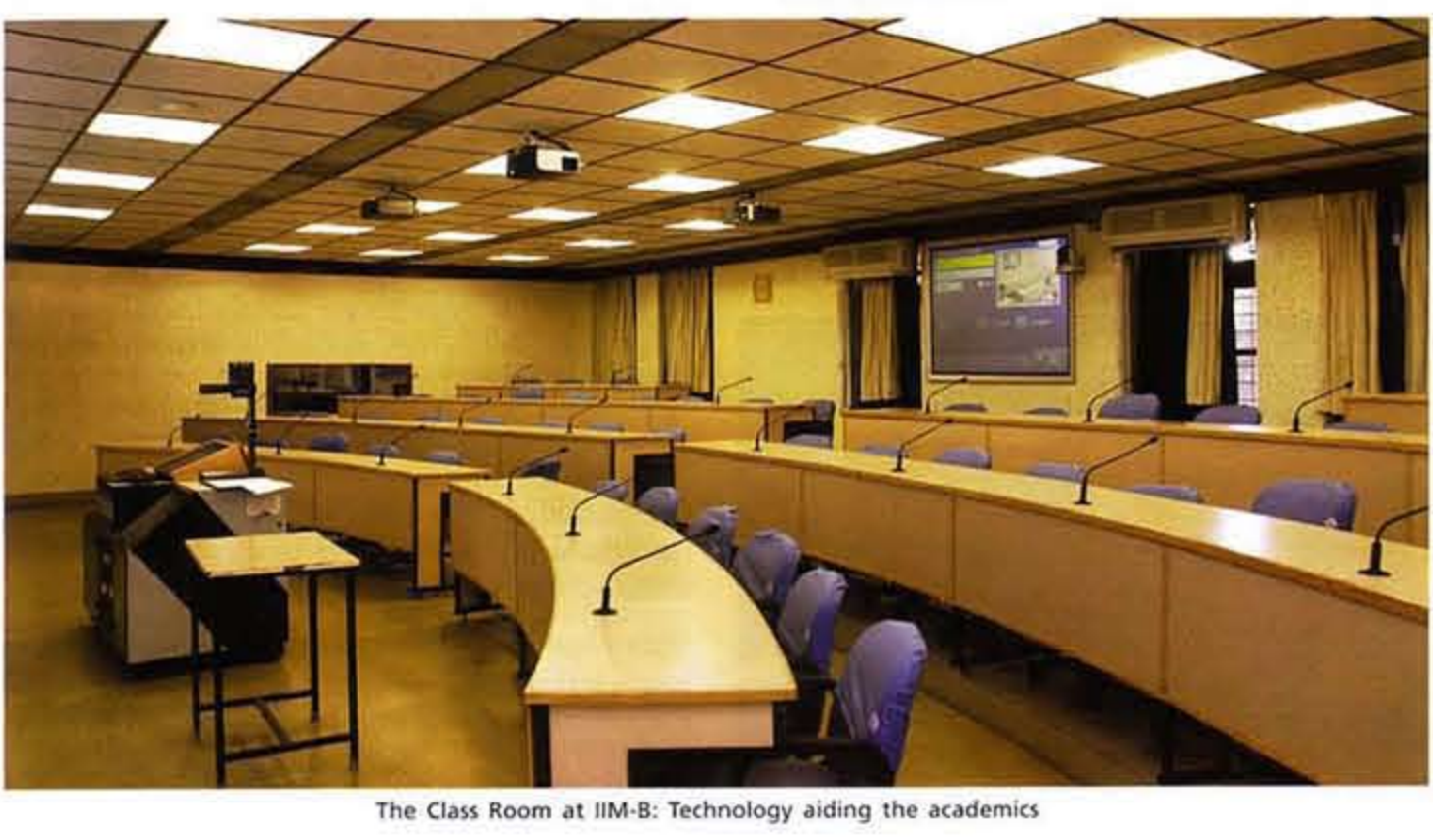
A Challenging Task

Mumbai-based leading provider of audio visual environment control technologies Actis Professional Services Group was entrusted with this task of ingenuity. The consultant-installer, having already crafted a name for handling such 'complex' situations, immediately got into the act. A meticulous study of the case requirements followed by several rounds of discussions with the IIM-B teams led the consultant to propose a solution that would allow 'zero-distance' interaction between the two distant group locations.

"The project brief was to have an audio visual set up that could facilitate interactive learning sessions between two geographically dispersed locations," explains Abhimanyu Gupta, director of Actis Technologies Pvt. Ltd. "The solution was to ensure real time, continuous presence between the two locations- Bangalore and Chennai,"Abhimanyu says, adding" students in Chennai should have the same learning experience as those in Bangalore."

More, it was essential too that the solution incorporated should be user-friendly, constraint-free and futuristic. The inferences thus were:

- Noise elements like acoustic echo or ambient noise had to be brought to nil
- Video reproduction of teaching / learning sessions with the instructors and students and the teaching material too was to be clear to perfection
- The tutorial had to be virtual and in real-time so as to facilitate interactive sessions between the teachers and the students from remote location
- 'Eye contact' to be maintained between the teacher and the students
- The naturality of the instructors' teaching methodology needed to be maintained
- The movement and speech of the instructor need to be captured and reproduced in the most accurate fashion



The Class Room at IIM-B: Technology aiding the academics

- Instant dissemination of computer presentations and documents between both the classrooms simultaneously in real-time

The consultant then came up with its specified design, as per which, IIM-B laid out two identical classroom environments in Bangalore and Chennai, with the expertise of the job coming from the consultant. The virtual classroom in Chennai was connected to the one in Bangalore through a satellite, streaming the academic sessions from the Bangalore campus to the students in Chennai.

The Solution - Simple, Yet Powerful

Three LCD Displays were installed in each class- two displays in the front showing the remote classroom, and the third at the rear displaying remote students for faculty. The displays in the remote classroom would show the tutor conducting the session.

A multimedia projector coupled with a motorised screen installed to display the presentations in sessions in detail without dimming the lights. A high-end video conferencing codec, and a combination of high-resolution 3-CCD cameras have been installed to transmit the video content. An intuitive camera joystick control is provided in the central control room tracks faculty that allows them complete freedom to move and interact with the students.

A visualiser imaging device was incorporated in the system to capture and transmit sharp images of documents, 3D objects and slides to both classrooms in real-time. This would not only enable the lecturer to display his/her presentations without restraint but also go beyond the presentation for further explanation by using the interactive whiteboard which was designed so as to capture the instructor's writing and transmit the same in real-time to the remote classroom on another projection system installed there. The lecturer's desks were also fitted with connectivity ports to connect laptops to the AV system.

The Composition of Equipment

- Multimedia Projectors, EPSON EMP830
- Motorised Screen, Da-lite 100"
- LCD displays, Clatiy Bobcat & Samsung Syncmaster 151 and 730MP
- Video Conferencing, Sony PCS-G70 & PCSA-DSB1S
- Auxiliary Cameras, Sony BRC-300
- Joystick Camera Control, Sony RM-BR300
- Visualiser, Wolfvision VZ-8 plus
- Gooseneck Microphones, Shure MX412S/C
- Wireless lapel and Handheld microphones, Shure
- DSP Audio Processor with Acoustic Echo Cancellation, Biamp Audiaflex CM
- Monitor Speakers, EV
- Audio Amplifier, Crown XLS402
- Matrix Switcher, Sierra Pro 1616V2S
- Connectivity Face Plates, Actis
- DVD Recorder, Panasonic
- Multi-system DVD / VHS player, Samsung
- Interactive Whiteboard, Mimio XI
- Lighting Control System, Lutron GXI-3104-T-CE-WH
- Touch Panel & Control System, Crestron TPS-3000 & AV2

While Satellite-based IP connectivity is taken from EDUSAT of ISRO, to limit the redundancy to minimum, an ISDN connectivity over PRI has also been brought into place. For the purpose of transmitting computer presentations, NetMeeting was brought into play. The students desks feature slim gooseneck microphones as to enable them interact with their remotely located tutor, whereas wireless lapel microphones are provided to the tutors to respond to the remote calls and interact with them real time. A DSP audio processor with acoustic echo cancellation has also been specified for transmission of audio to the remote classroom with optimum clarity and omission of impertinent noise.

"An interesting feature here is a unique voice-tracking system,"explains the Actis' director. "The system enables the camera to instantly focus itself on the student interacting with the tutor, and transmitting their image to the remote classroom in real-time."

Further, monitor speakers have been fixed with a view to enhancing the speech audio - both programme audio and the 'far end' voice - continuously in the local classroom. An attached DVD recorder would perform the task of record, archive and playback the lectures as and when required.

With a lighting control system to create a conducive room lighting ambience, and a touch panel to effortlessly activate and control the audio-visual

Another view of the class room

mechanism, the system was complete and efficient to showcase the desired result.

The most interesting feature of the whole configuration, however, is that the technology is hidden away in a central control room where a combination of LCD monitors and control system would enable the IIM-B session scrutinisers to preview and control the content intended for transmission to remote location.

Says Abhimanyu: "A seamless interaction between the two locations has thus been achieved thorough the collaborative efforts of many players. The previously existing communication gap has been successfully addressed through a regular online interaction between the two remote classroom setups."

According to him, the solution incorporated was "a great leap forward" since distance learning in the country was hitherto conducted using desktop cameras or web conferencing which would encompass only a few students on both ends; what's more, the audio-video quality was relatively poor. However with video-conferencing, a large number of students and faculty are now able to participate, without any restrictions.

The additional benefit of this video-conferencing solution is that, apart from the faculty, the students can also avail of this tool of education for group discussions, debates, sharing of data, video content, images etc.

Though the investment that the project involved is not disclosed, it is indicated that the entire install was done at a cost of around Rs 60 lakh per node.

Now that the venturesome experiment proved to be a great success, IIM-B, which already has drawn up plans to expand the PGSEM to Hyderabad and, reportedly Pune, intends to loop both the upcoming branches with the newly incorporated system.

Any compromises?

"We have not made any compromises," asserts the Actis head honcho who had been apparently involved in the project at every critical stage. "Every step has been carefully thought out through, and the whole system had been designed meticulously," he clarifies.

"However if we could replace Standard Definition Video Conferencing with High Definition Video Conferencing, it would have given even better results."