

AVIBTTB (Audio Video Based Training Testing & Burning)

ConferenceXP-AVIBTTB (Audio Video Based Training Testing & Burning) Online Interactive Quiz Software CCTV IP PTZ Surveillance Security Cameras Infrastructure eCommerce P2P File Sharing Wi-Fi Blu-Ray HDDVDVR Integration

ConferenceXP-AVIBTTB (Audio Video Based Training Testing & Burning) Online Interactive Quiz Software complements the ConferenceXP in the way of facilitating the selection of archived AVI clips produced during the course of ConferenceXP sessions. It relieves the educator from repeating the same content over and over, enabling the educator and learner to playback existing clips, and focus on generating new content during the conference. The AVIBTTB (Audio Video Based Training Testing & Burning) Online Interactive Quiz Software is an AVI quiz authoring system that enables an educator to match AVI clips to quiz questions. This way a learner and or an educator can figure out areas of remedial learning, and custom playback download or burn AVI clips for each individual or groups of learners.

CCTV (Closed Caption Television) IP (Internet Protocol) PTZ (Pan Tilt & Zoom) Security Cameras Infrastructure Integration with & Burning) ConferenceXP-AVIBTTB, & a digital to analog bridge, may provide for analog intelligent integration. Such integration includes, but is not limited to DVR (Digital Video Recorders), similar to TIVO on steroids, DVD-Burning Jukebox Servers, Matrix switchers to cameras, including SD (Secure Digital) cameras onto 1GB Ethernet Platform, MPEG2 Codecs & 150 MS Delayed access from PDAs (Personal Digital Assistants) wireless phones, and stand-alone portable media recorders/encoders/players.

P2P (Peer to Peer) File Sharing WiFi Blu-Ray HDDVDVR (High Definition DVD Video Recorders, 50~ Gig per 5.25" disk) network server Integration, refers to Napster, Glokster and Bit-Torrent like networks for new content that has not yet established a market. Wi-Fi technology refers to a large number of wireless access points (5,000 or more) in multiple buildings (300), in multiple countries (100) across the world supporting more than 25,000 simultaneous Wi-Fi sessions for all university members. It has strong security features to prevent unauthorized mal-ware access from tapping into corporate networks. Combining these technologies with Wi-Fi "Hot-Spots" that proliferate in university campuses around the world, will provide quick and cheap distribution for unknown content, while at the same time provide eCommerce funding model for marketable content. These technology deployment may also invite corporate sponsors such as home-entertainment/theater consumer electronic show (CES) industries, on the one hand, and network infra structure carriers such as Telco's, routers, etc, on the other hand, extending the deployment to gaming devices such as the new Sony Play Station, with the Blu-Ray DVD-players and Microsoft X-Box.

AVIBTTB (Audio Video Based Training Testing & Burning) supplements the Microsoft ConferenceXP, which is "a shared-source research platform from Microsoft Research. ConferenceXP provides a simple, flexible, and extensible conferencing and collaboration platform that has the ability to take advantage of high-bandwidth networks and wireless environments."

AVIBTTB assists researchers and educators who want to develop new applications and solutions for research involving real-time collaboration, wireless-enabled classrooms, and distributed learning environments, by adding Audio Video Based Training & Testing. Using AVIBTT they can focus on new applications and solutions, while playing back existing applications and solutions from the AVI (Audio Video Archives). Archiving such DVD-VR on a SQL (Structured Query Language) WWW (World Wide Web) Server, can facilitate not only custom DVD-Burning, and distribution, but also an e-Commerce store front-end, and a business model that will fund additional R&D.

Such an eCommerce storefront can provide revenue sharing based funding to the educational institutions, the educators and researchers, as well as industry partners and government concerned with home land security. An automated rating system, based on clip web site hit rate, and download

rate, will help forge competition promoting and demoting authors, institutions, and content, strictly on a merit basis. Such a system will promote true and fair competition, leading to an automated AVI knowledge base construction, elevating a much focused view of experts in every conceivable specialty. The full motion video will help humanize such a system, providing authentication and automatic credit to these experts. Thus, further motivating them to provide their knowledge for free.

[Enhancing Reliability by Supporting Path-Diversity Overlay AVI DVD/Web Playback of Existing Contents Further Enhancing Backup Recovery Continuity during Graceful Bandwidth Degradation and Computer Failure.](#) AVIBTTB will provide DVDs of the contents of relevant prior ConferenceXP sessions, that can be used as a backup and recovery path, while the computer systems and the communication are suspended, down or degraded significantly, to the extent that only POTS (Plain Old Telephone Line) without any computer is available. In such a case the prior content of a stand alone DVD/CD player can supplement POTS telephone transmission and the conference can go on.

AVIBTTB Learning Environments

ConferenceXP provides the infrastructure that records AVI activities, and archives them. AVIBTTB helps customize the AVI archives to the individual or a group of learners. This way the learners can playback and listen to existing AVI clips, freeing the researcher and educators. Students, researchers, and educators can playback and listen to the AVI archives on a local computer, on a local host web server, over the WWW (World Wide Web) Internet, Intranet, or on a stand-alone, AVI DVD (Digital Versatile Disk) or CD (Compact Disk).

<http://www.webjobnet.com/>
http://s123801176.onlinehome.us/_2005SpringJa/CD1-2/Index.html

2 of 10,000 DVD AVI Clips for CD/DVD custom burning of a Java Business Programming Course with 1 URL telephone number title overlaid



Thumbnails 1 & 2

Thumbnails 1 & 2 Show how each clip has a URL and a phone number ConferenceXP activity can continue outside the classroom. In a typical academic 40 instructor contact hours and 3 academic credit hours a week, during a fall and spring semesters, a DVDVR (DVD Video Recording) of an average of 4 hours per AVI DVD-R (Recordable), 4.2 Gig, 4 hours playback per disk (SSSD, Single Sided Single Density), will produce 10 such DVDs. If we divide each 4 hours DVD into 100 Chapter clips, then the average per clip will be shorter than 4 minutes, and we will have a total of 10 DVDs x 100 clips per disk = 1,000 clips per course per professor. A typical professor may teach from 2 to 4 such courses, producing up-to 4,000 clips per semester. Students may not want to watch all these clips, this is where AVIBTTB quiz system will help them custom download only the clips they need to review, excluding all other clips that the students demonstrated that they understood and do not need to review. AVIBTTB could pick to clips to review play them locally, remotely, download them for later playback, or burn them to a DVD/CD on a local or remote burner.

Focus on new research collaboration and play-back of prior research collaboration

The ConferenceXP AVIBTTB provides training, testing and burning of a subset of the archived

AVI. AVIBTTB quizzes the users on topics covered by the prior ConferenceXP sessions. AVIBTTB records the incorrect answers and grades the students. Most importantly it provides the options of displaying the correct answers, and playing back the AVI clips of the instructor explaining the answers during the ConferenceXP session. The next phase will provide the user with an option to burn a DVD or CD of the clips for later viewing or listening on a plane flight or a bus ride. Likewise, AVIBTTB will let users download the subset of AVI clips to a hard-drive for later burning or viewing and listening. This is especially important when the high-bandwidth, multicast-enabled networks, slows down or is not available. The multipoint conferencing capability supports full-screen (640 x 480), real-time video at 30 frames per second, as well as collaborative applications like chat, shared presentation, and shared video, can be gracefully downgraded, relying on the local CD, DVD or custom download for continuous functionality.

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Thumbnail 3 & 4

Thumbnail 3 & 4 describe another 2 of 10,000 archived AVI clips describing the interaction of student and professor during the Java Business Programming class, to be custom burned or played back depending on AVIBTTB quiz results.

Archived DVD, CD Custom Downloads Blended With New Interactive Distributed Materials Conserving Band Width

By supporting an option of exclusively new real-time audio and video, as well as the full real-time collaborative applications, ConferenceXP can downgrade gracefully provides a more secure and flexible environment that can sustain low bandwidth distributed learning, and extend it to the stand-alone DVD and CD players, as well as to telephones, PDAs (Personal Digital Assistants), as well as multimedia play back devices that do not contain a computer.

AVIBTTB support a five-way recording of the ConferenceXP contents into an AVI hard drive, DVD/CD recorders in simultaneous multiple file formats included but not limited to DV, DVD+/-RW/RAM, CD, VCD, SVCD in MP3, MPG, MPEG, RAM, WMV, WMA, AVI, as well as to other removable digital storage such as memory sticks, SD-Cards, Smart Cards, etc.



Thumbnail 5 & 6

Thumbnail 5 & 6 describe white board instructors notes and another 2 of 10,000 video clips, to be custom downloads, playback, or burns.

Wireless-enabled classrooms

In addition to support for wired high-quality, low-latency audio and video, AVIBTTB provides efficient peer-to-peer wireless archiving, recording and playback. An instructor may hand write on a Tablet PC, projected on a large lecture classroom screen wall, while an encoder records the screen video, the instructor's image, and the class audio into a file on the instructors tablet PC. As soon as the recording of the clips has been completed, this clip will be copied to the staging server in the classroom on the instructors desk, and from it broadcasted to any wireless device in the classroom or beyond on the WWW.

http://s123801176.onlinehome.us/_2005Springja/CD3-4/Index.html **Thumbnail 7 & 8**

AVIBTTB Applications

Researchers can design and prototype collaborative and immersive applications that take advantage of the ConferenceXP platform and enhance the teacher, student, and mentor experience. For example, the following applications have been developed by partner universities.



Thumbnail 7 & 8 describe 2 more of 10,000 clips about Java Business Programming Course, to be custom playback, download or burn by AVIBTTB.

This capability can enhance traditional REALTIME methods of teaching and enrich the learning experience with distributed archived and near-real-time learning. For example, in a classroom equipped with a wireless network, when the network is down or is overloaded, students know that everything is archived and they can play it back later. They can receive and view the instructor's presentation on their own device in near real time, as a backup and add their own notes to the DVD at a later time as it becomes available. They can also play back and listen to the DVD collaborative learning applications to work on projects and solve problems with other students, just like going to the movies.

AVIBTTB Classroom Tester Presenter & Burner

AVIBTTB created Classroom Presenter, an advanced custom burned DVD presentation system for distance learning, education, and lecture environments.

With AVIBTTB Classroom Presenter, professors can project their AVIBTTB Quiz presentation to a projector screen as well as sending quizzes in real time to student notebooks and Tablet PCs. Professors can then add real-time ink on their AVI DVD Tablet PC presentation to highlight text, draw an illustration, or solve an example problem, scoring the class and custom burning a DVD just for the questions that the class as a group failed on the quiz. Then the AVIBTTB burns a custom DVD, on a DVD-Duplicator, or download it to student's tablets for later burning.

Students can receive the professor's presentation in real time on their devices and add their own notes during the lecture, and burn a custom DVD after the lecture for later viewing or listening. AVIBTTB (Audio Video Based Training Testing & Burning) Online Interactive Quiz Software is designed to complement existing projects that have been developed by others. The ReMarkable Text developed by Brown University is such an example, AVIBTTB can be used to supplement ReMarkable Text in a variety of ways. Lets look at such an example.

ReMarkable Texts

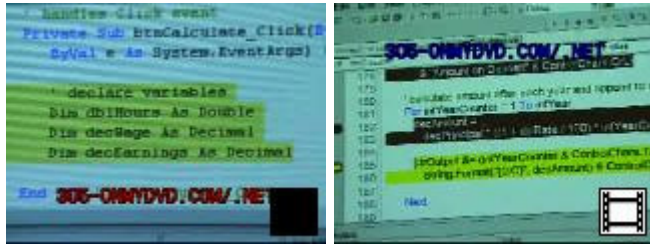
Developed by Brown University, ReMarkable Texts provides a compelling student experience. With ReMarkable Texts, students can view the archived custom DVDs, playing them back at the next class for a public discussion. This public discussion can be recorded as another layer over the original custom DVD. "Students can annotate their classroom notes with ink, hyperlinks, sticky notes, and audio, and then can later search their notes by annotation type."

Thumbnails 9 & 10



Guest Speaker CEO Classroom
Presenter of Company Software





Guest Speaker CEO Classroom Discussion of Company Software

Thumbnails 9 & 10 describe 2 more of 10,000 archived DVD clips to be custom burned by the quiz of AVIBTTB.

http://s123801176.onlinehome.us/_2005SpringJa/CD3-4/Index.html

Enhancing Reliability by Supporting Path-Diversity Overlay AVI DVD/Web Playback of Existing Contents Further Enhancing Backup Recovery Continuity During Graceful Bandwidth Degradation and Computer Failure Like Reliability by Supporting Path-Diversity Overlay Retransmission,

by Wenjun Zeng, PhD, of the University of Missouri at Columbia, investigates a path-diversity overlay retransmission architecture and mechanism to achieve more effective and reliable packet delivery in challenging network environments. This project investigates the retransmission architectures and mechanisms to achieve more effective and reliable packet delivery in challenging network environments. The more traditional IETF RTP retransmission protocol will be implemented and its performance will be evaluated. More importantly, a novel overlay retransmission architecture that exploits path diversity will be investigated to improve or complement the traditional approach.

AVIBTTB (Audio Video Based Training Testing & Burning) Online Interactive Quiz Software takes another approach to enhancing reliability by path-diversity via DVD-VR of the ConferenceXP content, and distributing these DVDs to participants so when transmission fails, and until the retransmission arrives, participants can refer to the DVD-VR Archives, as a temporary alternative to real-time transmission.

In the proposed path diversity overlay DVD-VR Archive retransmission architecture, a very simple overlay local playback is enabled. Each receiver identifies a couple of relevant DVD-VR Archives, stored locally on a stand-alone DVD, hard drive, or a web server. Until such time that a good "retransmission nodes," which will retransmit/forward the packet they receive to the requesting receiver who experiences packet loss through a different path, the receiver can playback archived clips, resulting in grace-full continuous learning. The main thrust of the proposed overlay archive playback architecture is its ability to exploit path diversity, using even a stand-alone DVD player, and a POTS (Plain Old Telephone System) path of communication, until such time the computer system is back from the dead.

This is a back up and recovery approach, that will help to further reduce the perceived problem of retransmission delay and to avoid the potential need for the original sender to retransmit a lost packet multiple times due to a severely congested path. The

project is expected to significantly enhance the flexibility of the ConferenceXP platform beyond its current limitations.

Visual Information Manager, by Klara

Nahrstedt, PhD, of the University of Illinois at Urbana-Champaign, "design and implement a Visual Information Manager as an extension to ConferenceXP Platform that manages the screen display resource and coordinates the user interface presentation between video, presentation, and other visual channels." As they explain "Multiple visual information channels are presented on the ConferenceXP platform, such as video streams from live cameras, PowerPoint presentation, whiteboard, and Web cobrowsing. Therefore, the screen space for presenting the interface window of these channels becomes a critical resource that needs to be well managed. Today's ConferenceXP employs a simple tiled window mechanism to spread the video windows on the screen, which does not scale well in the case where multiple camera streams from multiple sites and other applications, such as PowerPoint presentations, are presented." AVIBTTB adds a stand-alone DVD/CD player to the mix. This way as the material is being recorded to the DVD-VR the participants have another video display to watch, relieving the stress from the computer monitor.

In this project AVIBTTB, propose to design and implement a Media Player or DVD player to supplement the Visual Information Manager as an extension to ConferenceXP Platform that manages the screen display resource and coordinates the user interface presentation between video, presentation, and other visual channels. Specifically, we focus on the following challenges. First, we will propose a model of integrating a stand-alone DVD-VR (DVD Video Recorder) in

addition to a DVD Burner on the computer. This will provide an additional display resource at each conference site.

Second, we will provide additional recording channels, such as a stand-alone MP3 Audio only recorder encoder hard-disk drive, another a stand-alone MP4 ASF (Advanced Streaming Format) AVI (Audio Video) recorder encoder hard-disk drive, all with their own mini display monitor. model each visual information channel in terms of its out display resource requirement, and the user interest level in each channel based on the type of information it provides over time. This way some users, may be interested in listening to the MP3 near real-time broad cast of the audio recording. So as soon as a short clip has been recorded it is copied to a staging web server for progressive download or wireless transmission.

Third, we will propose the deployment of media players display resource manager module that integrates a variety of codex, such as DVD, DIVX, MPEG, AVI file formats. Especially with respect to DVD VOB or RTAV (Real Time Audio Video Directories) of DVD-VR file structure, such as DVD+/-RW/RAN. Each such clip will have its own thumbnail image, displayed along with the time and date that it was recorded. It will display resource in real time so that visual channels that carry more interesting information will be selected and their interface windows are then composed into a nice screen layout.

Screen Shot 1: Windows Media Player Displaying DVD-R Chapter Titles 1-8: JButton to Clear The Component-Attach Listener and Respective Thumbnails for Java DVD#4

Screen Shot 1 shows a sample video DVD-R Video interface Displayed in Windows Media Player Displaying DVD-R Chapter Titles 1-8: JButton to Clear the Component-Attach Listener and Respective Thumbnails for Java DVD#4. It shows DVD Page 1 of 13 pages, displaying the first 8 titles and their respective thumbnails, concluding with the DVD navigation buttons, [Next], [Play], & [Previous].

Screen Shot 2: Windows Media Player Displaying DVD-R Chapter Titles 88-96: Exams to Optimize e-Learning Higher Demand For. & Respective Thumbnails for Java DVD#4



Screen Shot 3: Windows Media Player Displaying DVD-R Chapter Titles 1-8: Portable DVD-ROM Player 4 Monitor MP3 as Part of a DVD-Authoring Course

Much like, "Supporting and Enhancing

Cooperative Learning with ConferenceXP-powered I-MINDS," by Leen-Kiat Soh, PhD, at the

University of Nebraska, they "empower a computer-supported cooperative learning system called I-MINDS using the ConferenceXP platform," we empower a computer-supported cooperative learning system called AVIBTTB. **Similar to their** "long-range goal of our research is to improve teaching and learning through technology, in introductory CS courses (for example, CS1 and CS2)," we focus on CIS (Computer Information Systems) and AIS (Accounting Information Systems) courses. Towards accomplishing the above goals, we have developed and prototyped a new technology: Audio Video Based Training Testing & Burning Quiz Software (AVIBTTB). Though AVIBTTB has been prototyped and pilot tested successfully, it is faced with several inhibiting problems in terms of the enabling technologies for it to be deployed widely. These problems include the lack of readily stable and scalable conferencing capabilities, lack of security and firewall handling, inefficient digital archival of lectures and notes, and insufficient user modeling. Therefore, we propose to:

- Integrate AVIBTTB enabling technologies (that is, audio/video recording and archiving) with those of the ConferenceXP platform to obtain a stable and reliable conferencing and archiving backbone.
- Utilize ConferenceXP's infrastructure to enhance AVIBTTB user modeling capabilities to track collaborative activities such as testing and training.
- Deploy ConferenceXP-powered AVIBTTB in CIS to evaluate their impact on student learning performance gain, test our hypothesis that supporting students with cooperative learning technology such as AVIBTTB and ConferenceXP is able to provide personalized support to students with diverse backgrounds, and improve instructor ratings and evaluation by students, further motivating instructors to deploy these technologies. Further, the prospects of becoming instant DVD, CD authors may motivate instructors to try harder.

"Windows Media Transcoding Using ConferenceXP Archive Service Data," by Fred Videon, of the

University of Washington, Develop tools to transcode ConferenceXP Archive Service data including audio, video, and presentation into Windows Media format. We propose to supplement it further, developing alternative methods for similar and additional transcoding. For example, supplement software transcoding with hardware transcoding, and further enhancing the flexibility of choosing either methods or both for higher robustness, and backup, in case one of the methods fails, then the other method can be deployed, instantly. Further, we proposed to add additional transcoding methods, using additional formats,

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such as MPG4-ASF (Advanced Streaming Format), VOB (Video Objects), RTAV DVD-VR (Real-Time Audio Video DVD Video Recording), which can be played back in a computer DVD Drive, computer hard drive, and stand-alone DVD CD player without any computer attached. Other transcoding formats include audio only formats, such as MP3, and AVI optimized for automated computer translation, transcription, and caption for the hearing impaired. Conferences and classes archived by the ConferenceXP Archive Service will gain value if they can be viewed in a scalable fashion by clients with lower network bandwidth capabilities, and by disconnected clients, from stand-alone devices such as DVD/CD Players. The preferred archive format for these scenarios is Windows Media, Audio and Video, WMA/V file formats, except that very few stand alone devices can playback such file format, compared to standard DVD and CD format. This project will address the transcoding of data stored by the ConferenceXP Archive Service into Windows Media formats, as well as other formats such as MP3, AVI, VOB, VRO (Video Recording Objects). The output of the transcoding process will include not only audio and video, but also presentation slides, navigation, and ink, and will interoperate well with existing applications, such as Classroom Presenter and ConferenceXP Web Viewer.

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AVIBTTB Community Web site (<http://www.WebJobNet.com>) serves as the primary means of support for people engaged in AVIBTTB -based research and development. The community site also provides a venue for learning about AVIBTTB, downloading source code and binaries, and interacting with other people involved in similar activities.