VClass: e-learning application

TOPICS

- Virtual Classroom (VClass)
- Objectives
- History
- VClass Components
- Learning Environments in VClass
- Examples usage:
  - CanalAVIST – Virtual Education Project of Pakistan
  - UniChannel Project

Virtual Class (VClass)

A royalty-free e-learning application developed by Distributed Education Center, a subunit of Internet Education and Research Laboratory (intERLab) at AIT.

Virtual Class (VClass)

Specifically designed for delivering online course by three different methods: virtual classroom learning, virtual class-on-schedule and virtual class-on-demand.

- Virtual classroom learning : *Real-time lectures*
- Virtual Class-on-schedule : *Archived lectures*
- Virtual Class-on-demand : *Archived lectures*

Objectives

- Simple (to operate) yet provide useful functions for e-learning process.

- Low-cost
  - Open-source components
  - Platform-independent

- Standard in controlling and managing courseware
  - Sharable and Re-usable contents

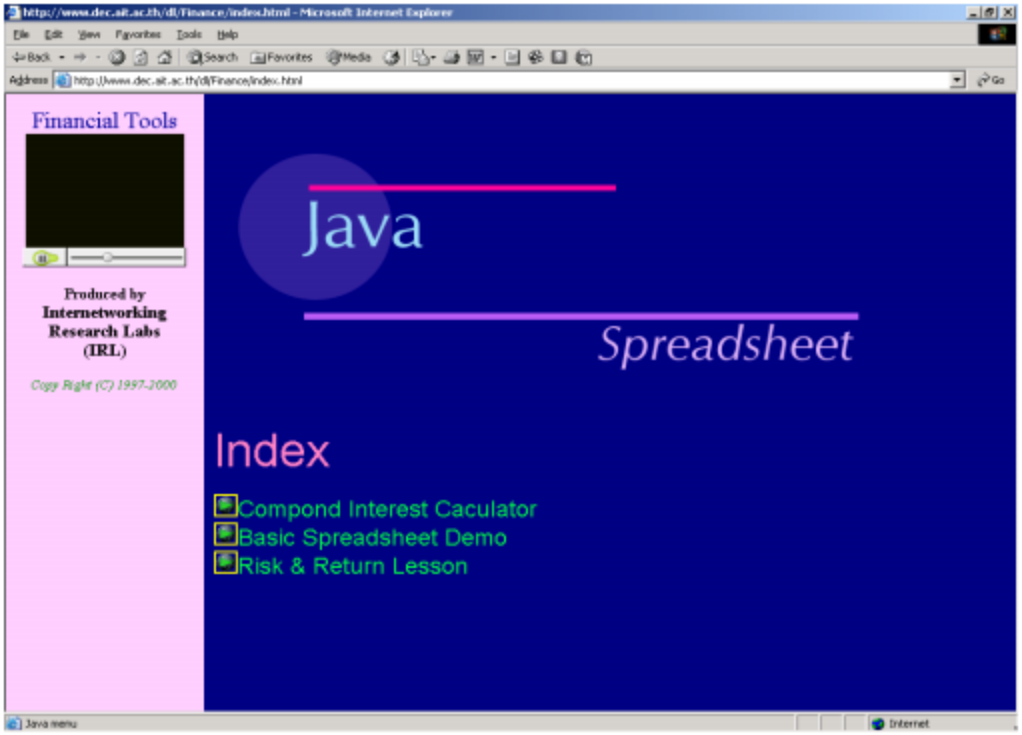
History

1998

Royal Thai Government contributed 3.3 million baht to AIT for test trials and dissemination of Institute's first open source e-learning software for organization based human resource development.

1998-1999

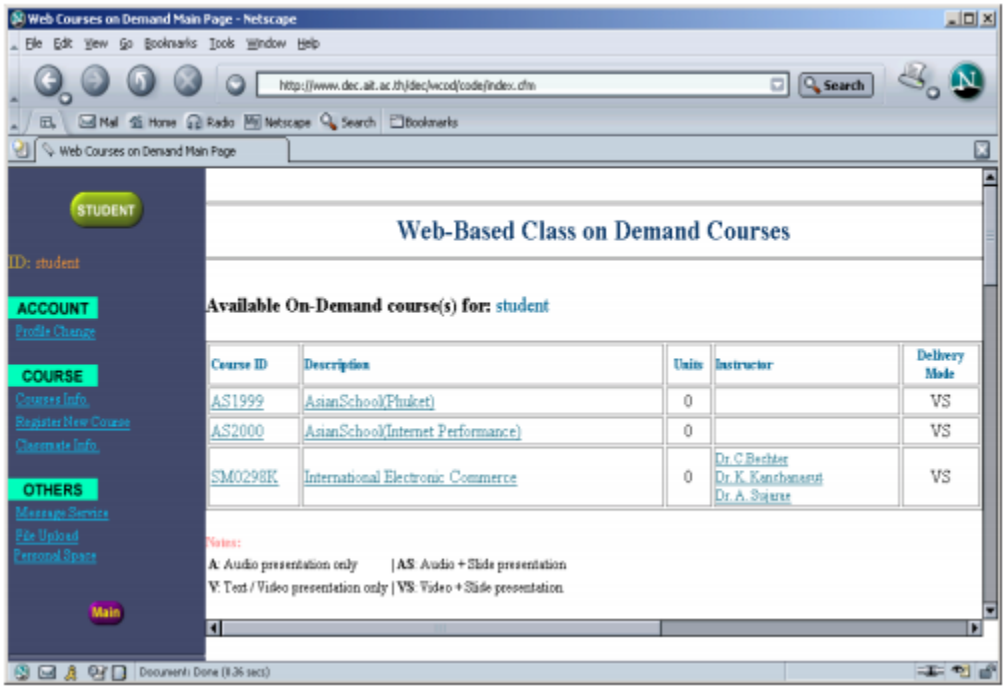
Experimenting on Video on-demand contents



- Content web page manually created
- Synchronization done using a command line tool via Real system

2000-2002

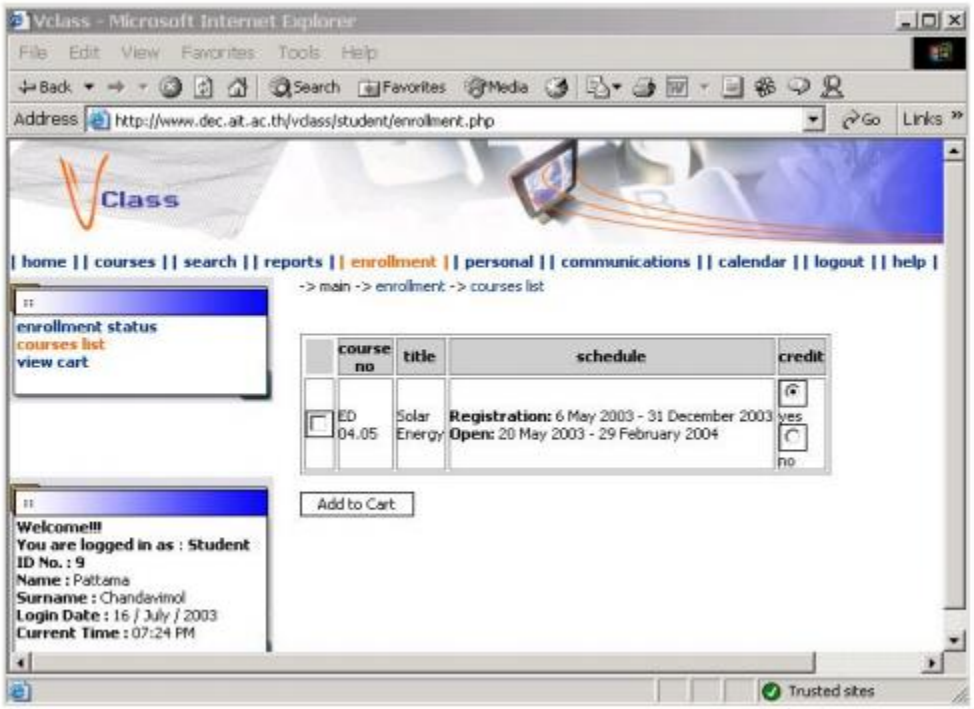
Web-base Class on Demand System (WCoD)



- **Manage & deliver courses created using Authoring Tool**
- **Manage course enrollment requests**
- **Maintain user accounts**

2003

VClass Learning Management System (VClass LMS)



- Support SCORM contents
- Communication Tools
  - ✓ Announcement
  - ✓ Calendar
- Score and Grading Tools
- Platform independent

2003 - Present

VClass Learning Management System

Supports Administrator ,Registry, Instructor, Facilitator and Student users
Student Tracking
Supports Multiple Nodes
SCORM 1.2 Conformant
- Support Package Import/Export
- Supports all Features on SCORM 1.2 Run Time Environment
- Passed SCORM LMS Test suite Version 1.2.7 (Self Test)

Assignment Submission System

File Manager
- Single or Multi Upload(Using Java Applet)
- Supports Unzip

Chat, Board, Calendar, Email

Virtual Class (VClass) components

Learning Management System

- User account management
- Student Registration/Enrollment
- Class Scheduling
- Performance Tracking
- Scoring/Grading
- Communication: Internet Forum and Email

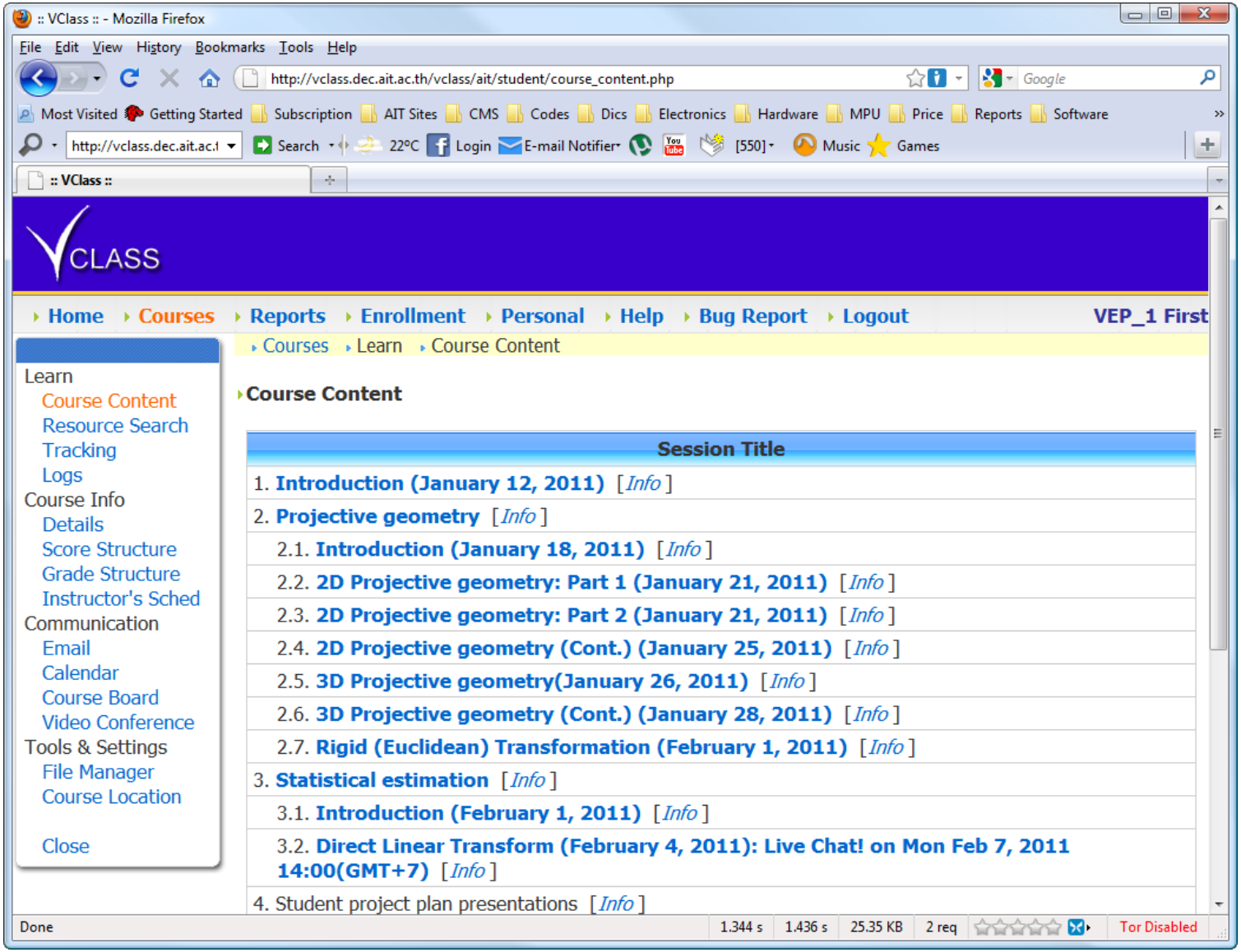
Web Conference

- Online chat
- A/V Communication
- e-Whiteboard
- Screen Sharing

Video Streaming

- A/V stream format : H.264, Flash, etc.

Sample VClass LMS screenshot



Menu Functions under Instructor Environment

Home

- Profile
- Inbox

Courses

- Course Content
- Tracking
- Logs

- Details
- Score Category
- Grade Structure

- Access Logs
- Work Summary
- Grades

- Email
- Calendar
- Course Board
- Video Conference
- Announcements

- Personal Folder
- Course Folder
- Import

Reports

- Grade Book

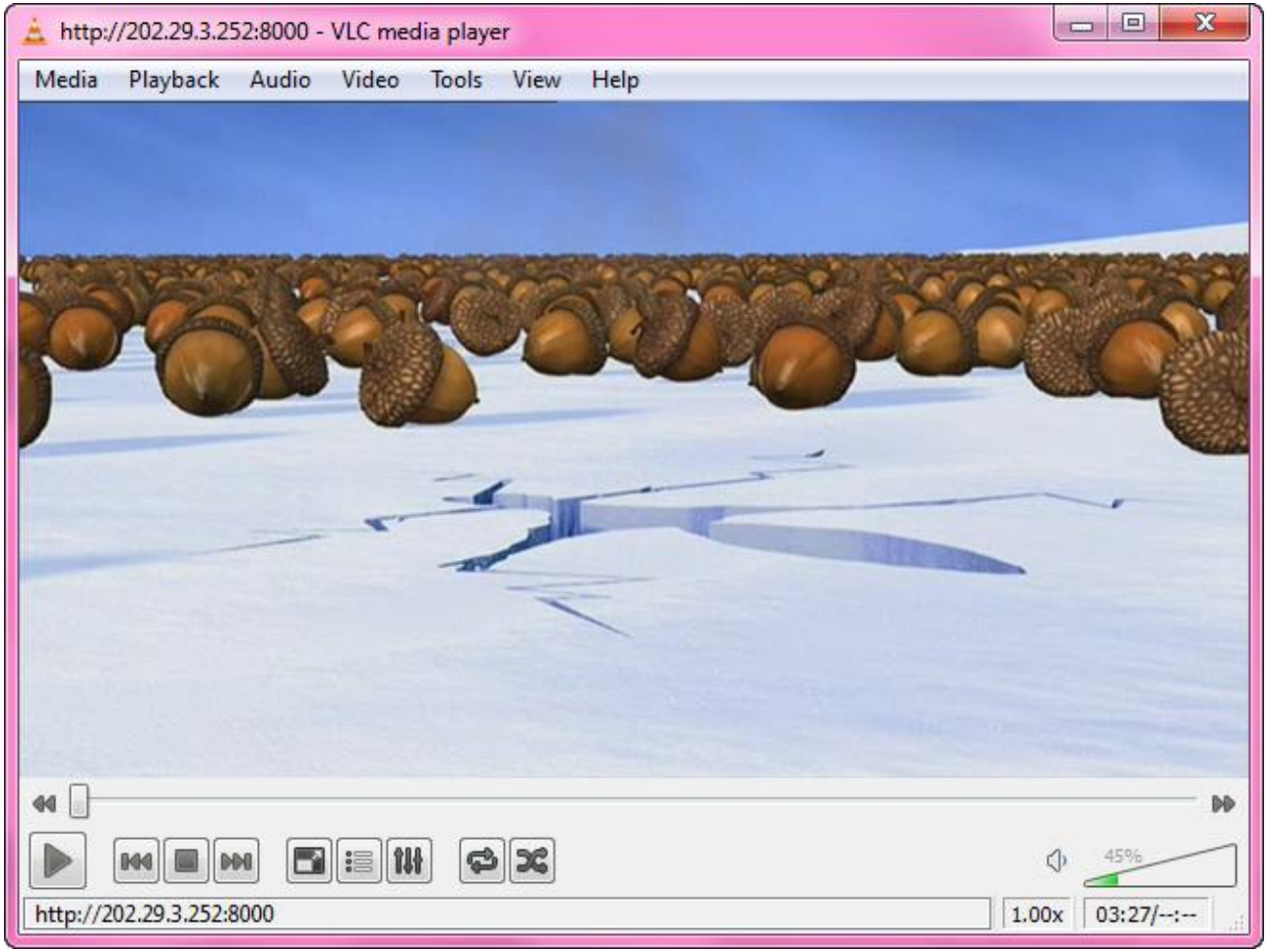
Enrollment

- Open Courses
- Request Status

Logout

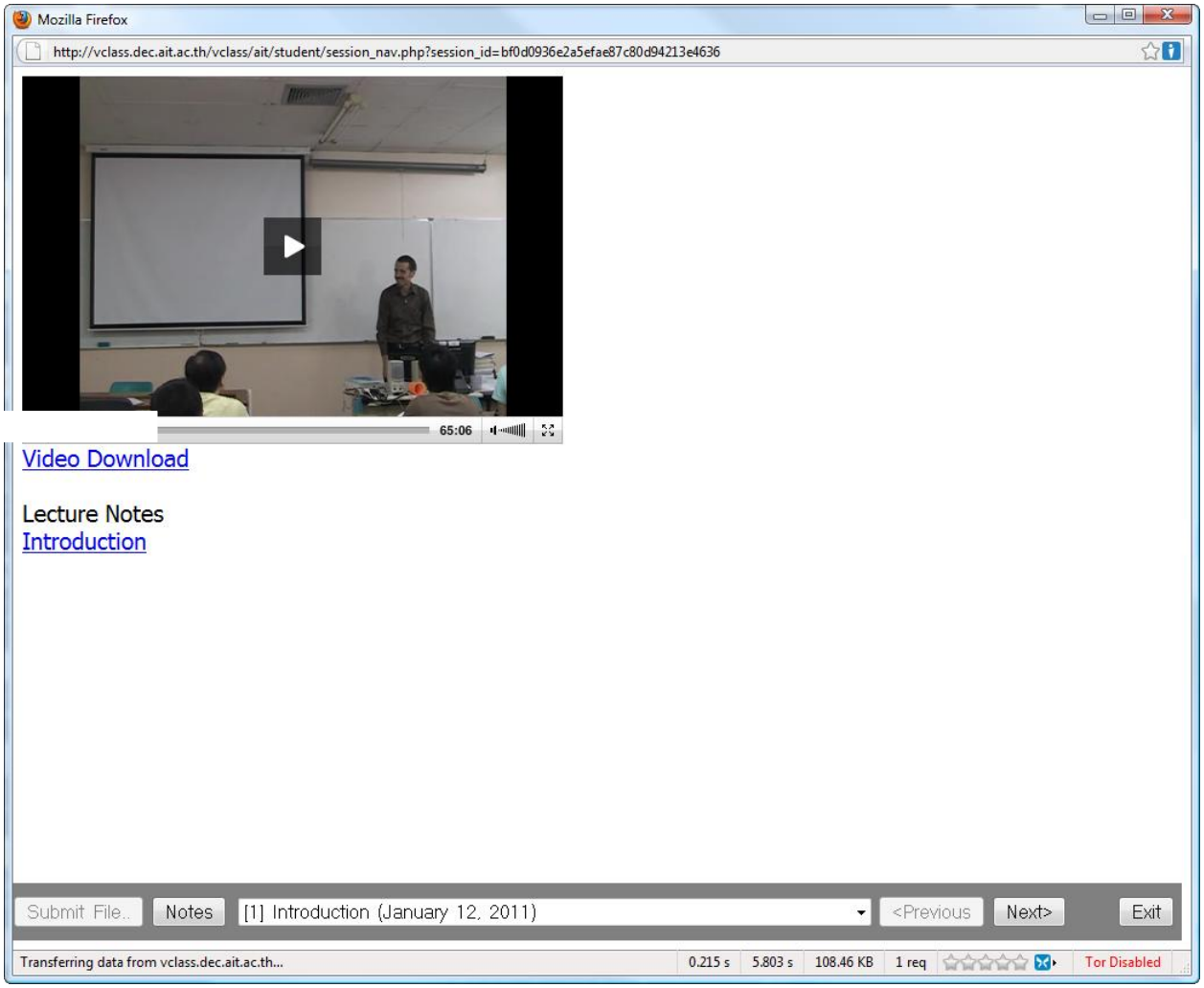
VClass high bit-rate Video Streaming

Virtual Classroom learning and Virtual Class-on-Schedule



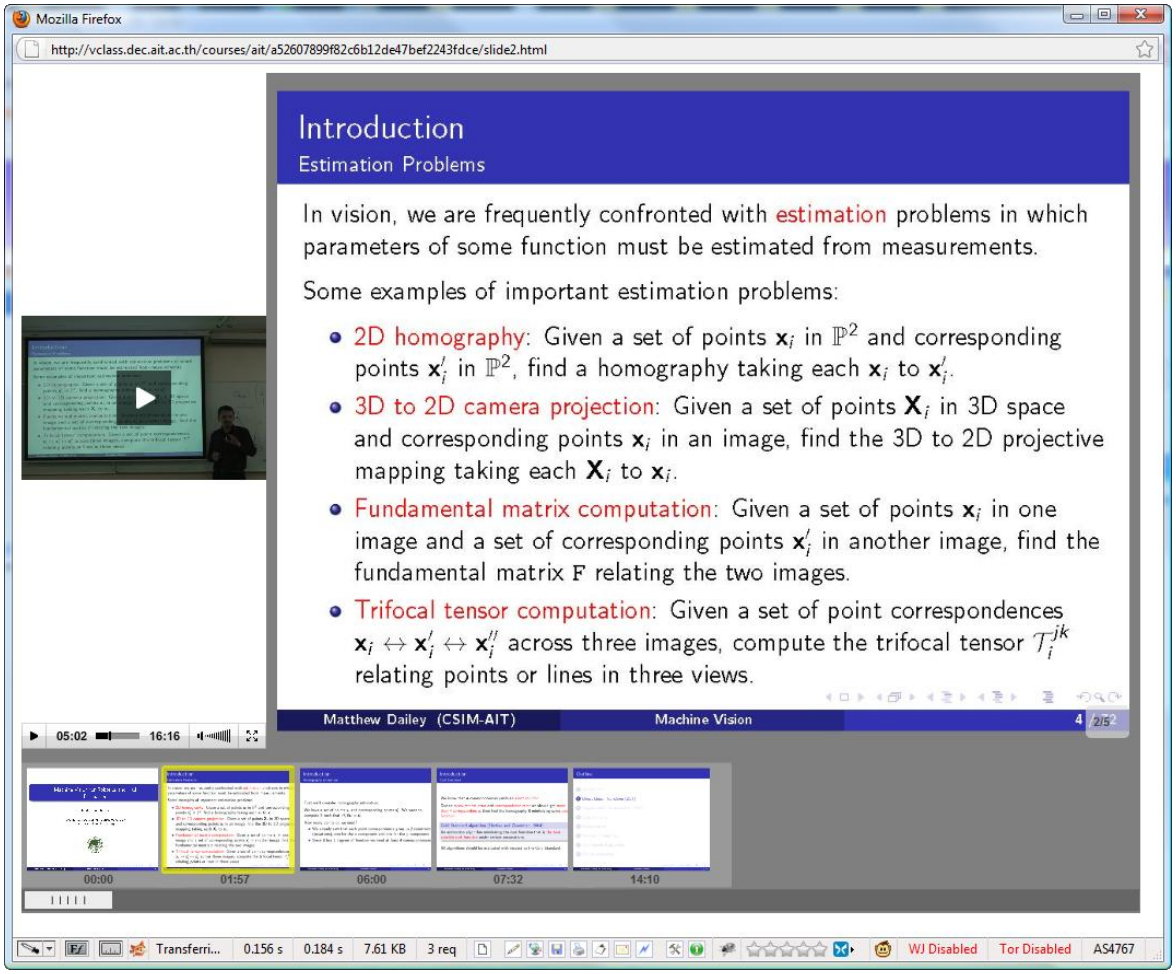
VClass HTTP Streaming

Virtual Classroom learning and Virtual Class-on-Schedule



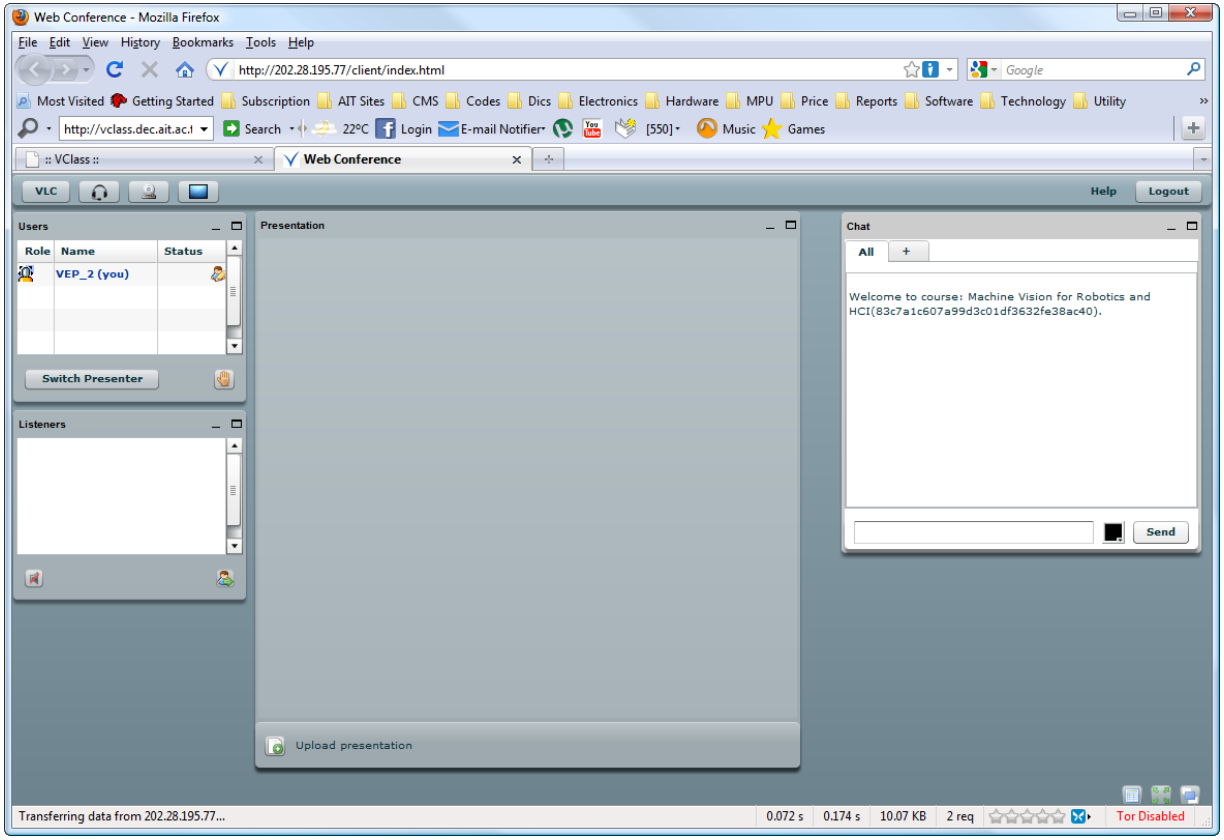
Low bit-rate video streaming

Virtual Class-on-demand



VClass Web Conference via BBB

- Showing lecture slides to learners
- Sharing lecturer's computer screen to learners
- Providing a communication mean for lecturer and learners

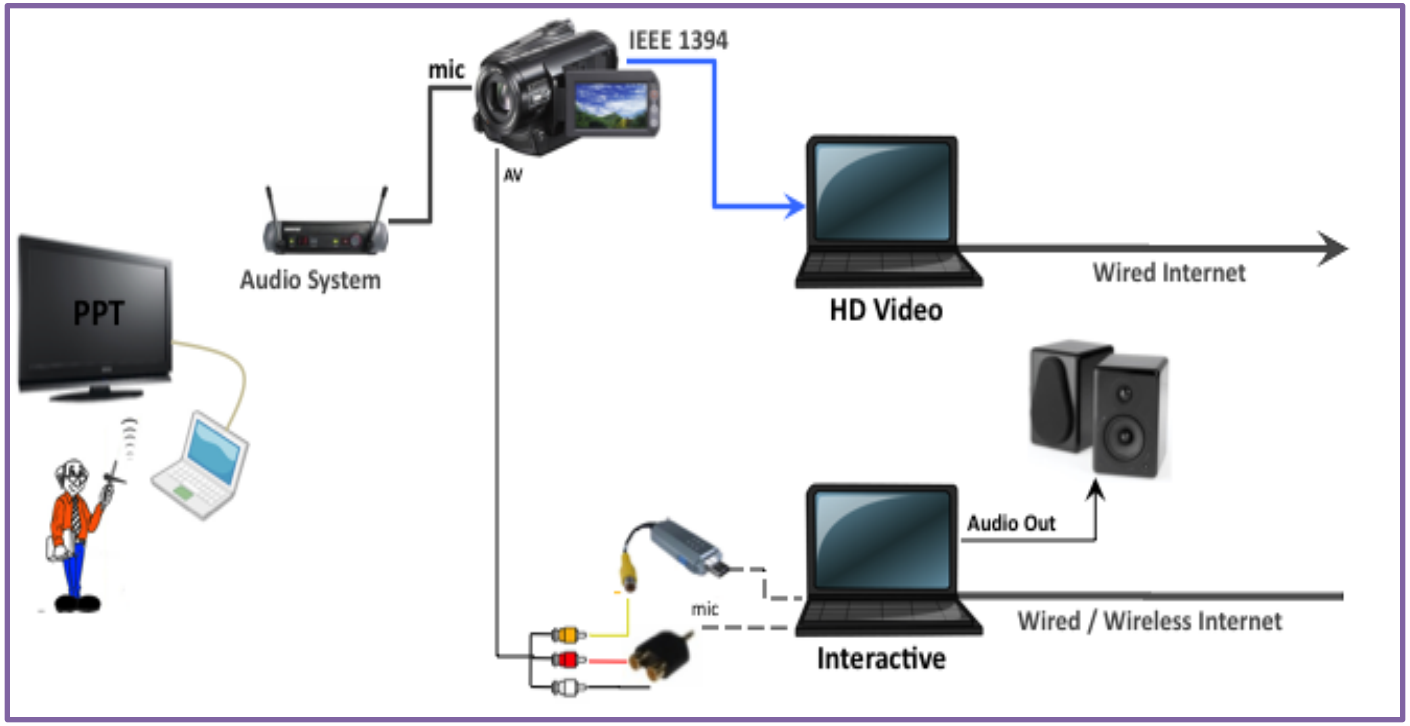


Learning Environments in VClass

- Virtual classroom learning : *Real-time lectures*
- Virtual Class-on-schedule : *Archived lectures*
- Virtual Class-on-demand : *Archived lectures*

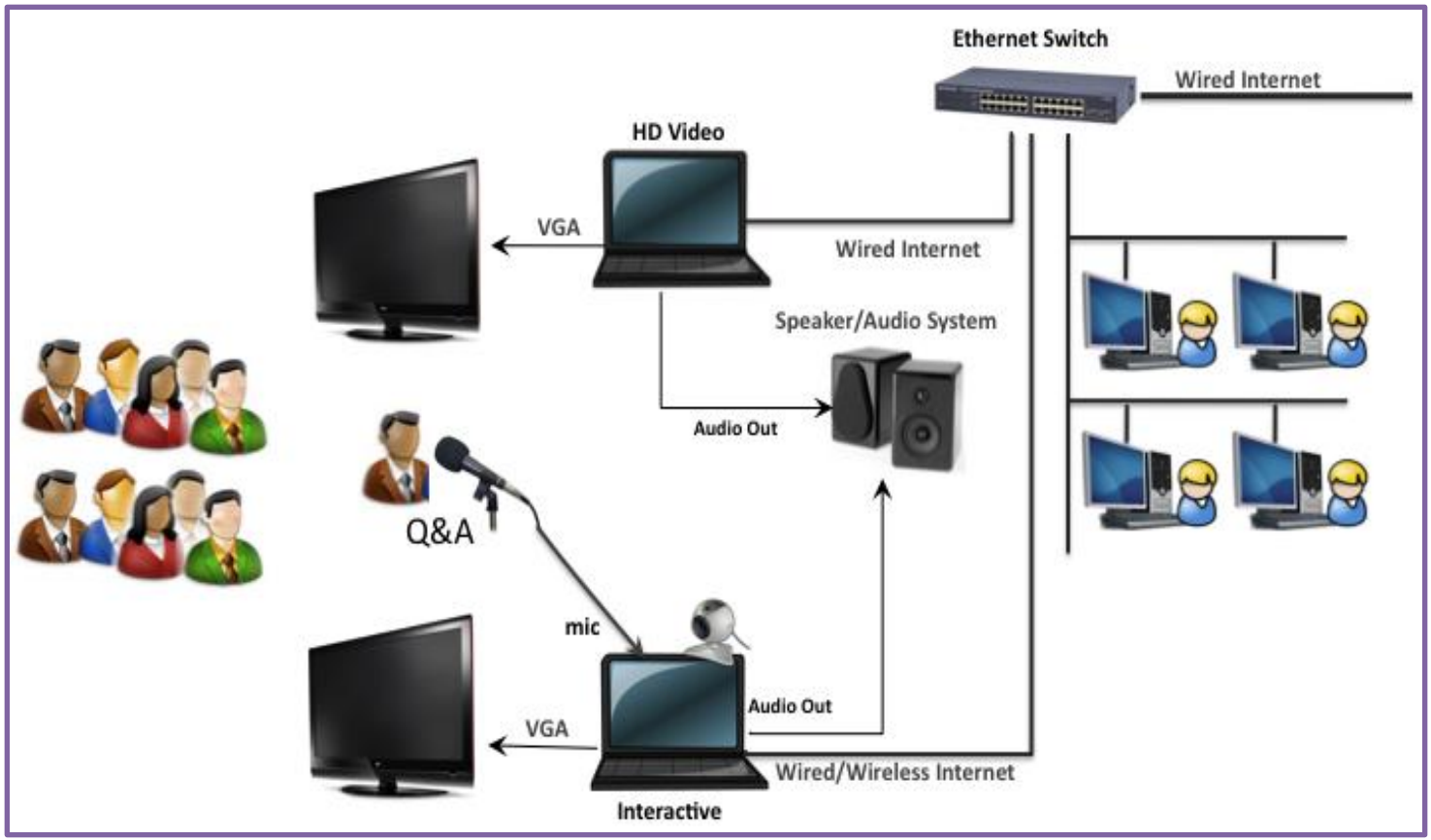
Virtual classroom learning : *Real-time lectures*

Equipment setup for sending online lecture



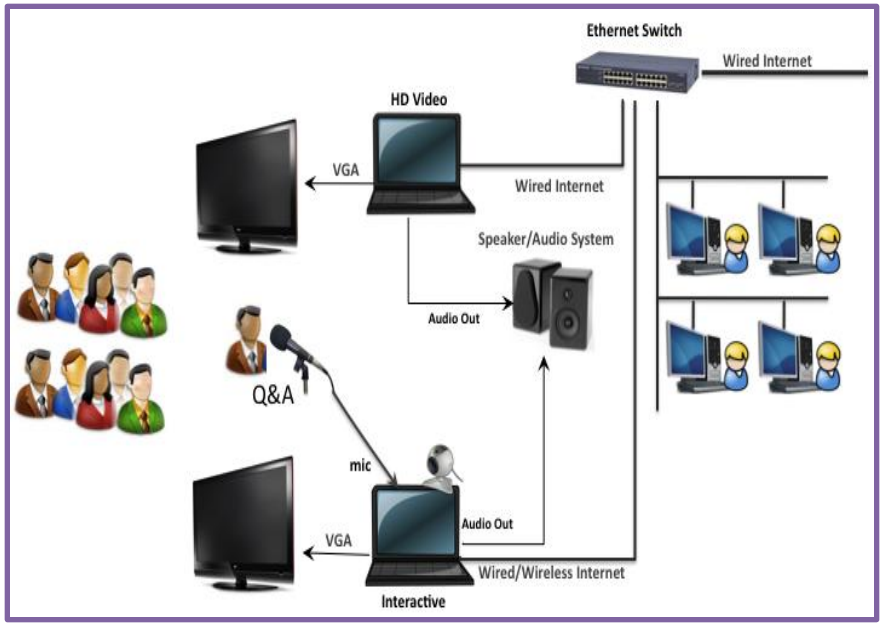
Virtual classroom learning : *Real-time lectures*

Equipment setup for receiving online lecture



Virtual Class-on-schedule : *Archived lectures*

- **Class lectures are pre-scheduled.**
- **Contents are stored on VClass server.**
- **Lecturer is standing by to reply if there is any question or comment from learners during online session.**



Virtual Class-on-demand : *Archived lectures*

- **Learning is carried out individually on need basis.**
- **Contents are stored on VClass server.**
- **Learners' questions or comments are communicated to lecturer via asynchronous communication tools.**

Examples Usage

Jan – Apr 2011 :
CanalAVIST – Virtual Education Project of Pakistan

providing distance courses for Virtual University Pakistan (Virtual Education Projects Pakistan)

Sender : Computer Science and Information Management program, AIT

Receivers : Virtual Education Projects Pakistan

- NWFP University of Engineering & Technology
- Balochistan University of Information Technology, Engineering and Management Sciences
- Institute of Management Sciences

Delivery technology:

BBB for both lecture streaming and interaction.

Courses :

- *Machine Vision For Robotic and HCI*
  - Scheduled broadcast of archived contents
  - Scheduled interactive session

- *Software Architecture Design*
  - Real-time broadcast with LIVE interactive session

Jun 2011 – present:
UniChannel Project

A project to develop a digital media channel of Thailand's Inter University network (UniNET).

The project aims at providing channels for education, teaching, conferencing and lectures in order to provide rapid dissemination and sustainable sharing of knowledge, information and data among UniNET members.

UniChannel relies of 2 components:

Network Infrastructure + **Hardware/ Software**

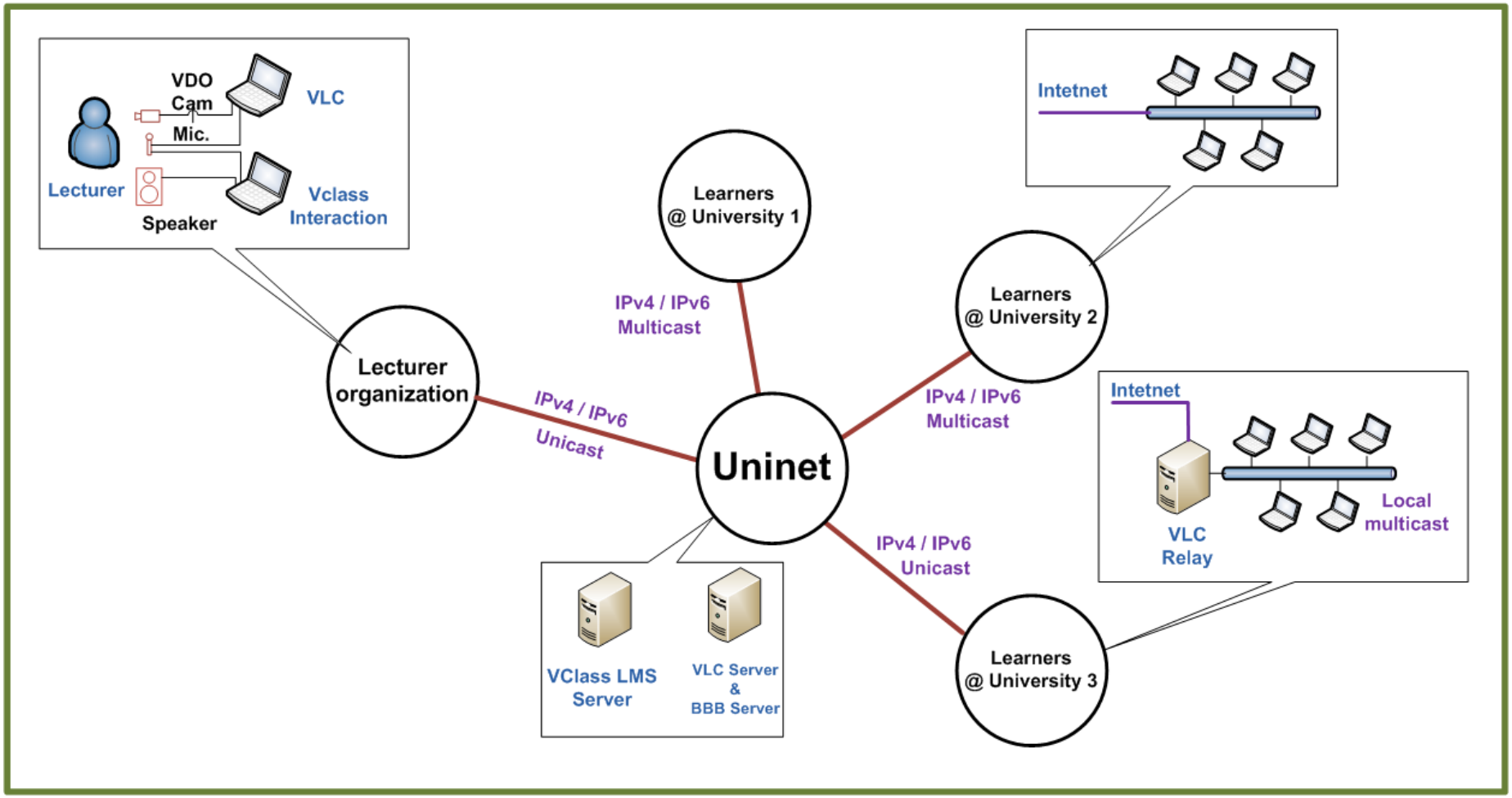
UniNET Network
- IPV4 / IPV6
- Unicast / Multicast

- VClass LMS
- Streaming (VLC)
- Interactive session (BigBlueButton)

UniChannel provides two modes of operations.

1. **Contents Delivery**
   - Use VLC application to send , relay and receive lecture video streams among end-users, i.e., learners.
   - Use BigBlueButton (BBB) application to delivery/share slide presentations and to provide means of communication/ interaction between a lecturer and learner(s).
2. **Contents Management**
   - Archiving streamed contents and repackaging them for asynchronous viewing in low bandwidth end-users.

UniChannel System Overview

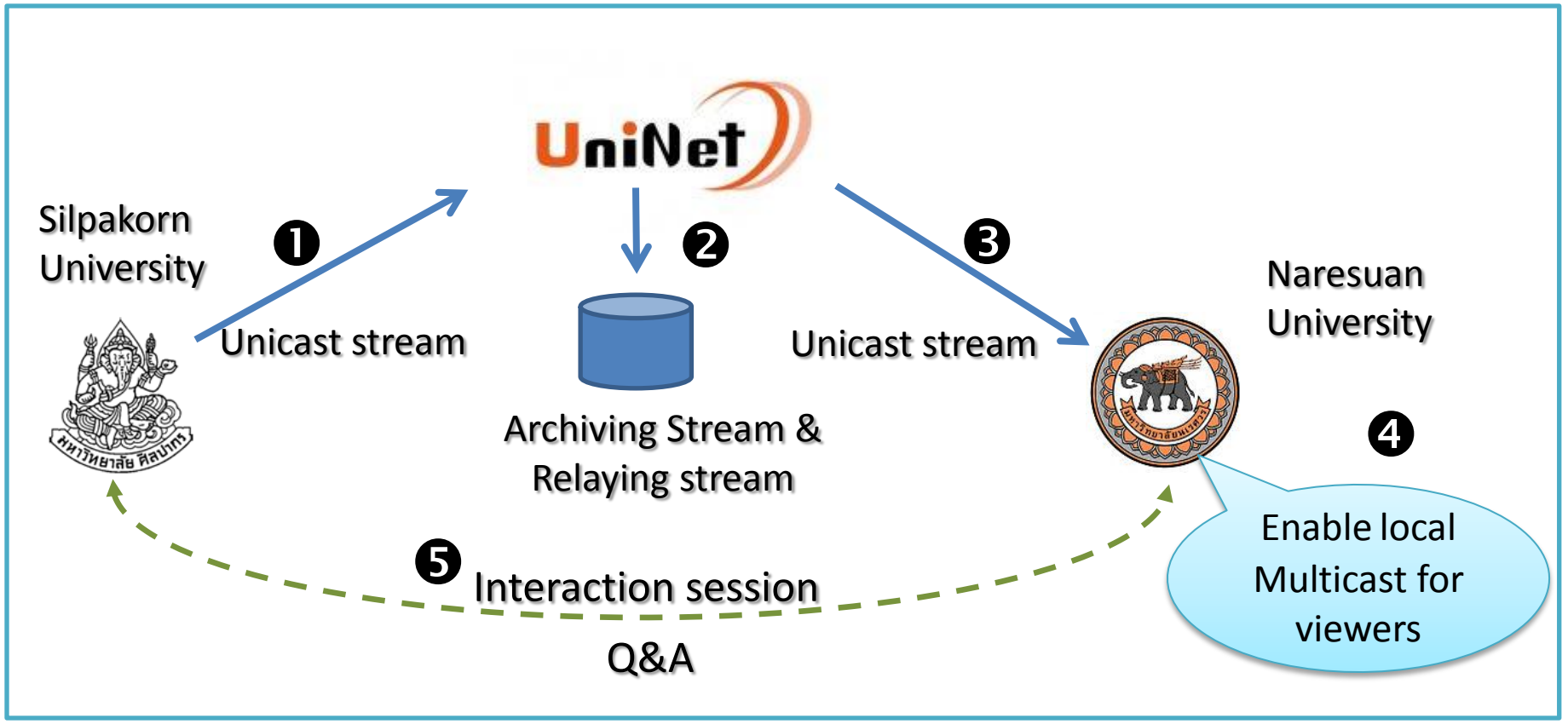


UniChannel's experimental online courses on UniNET

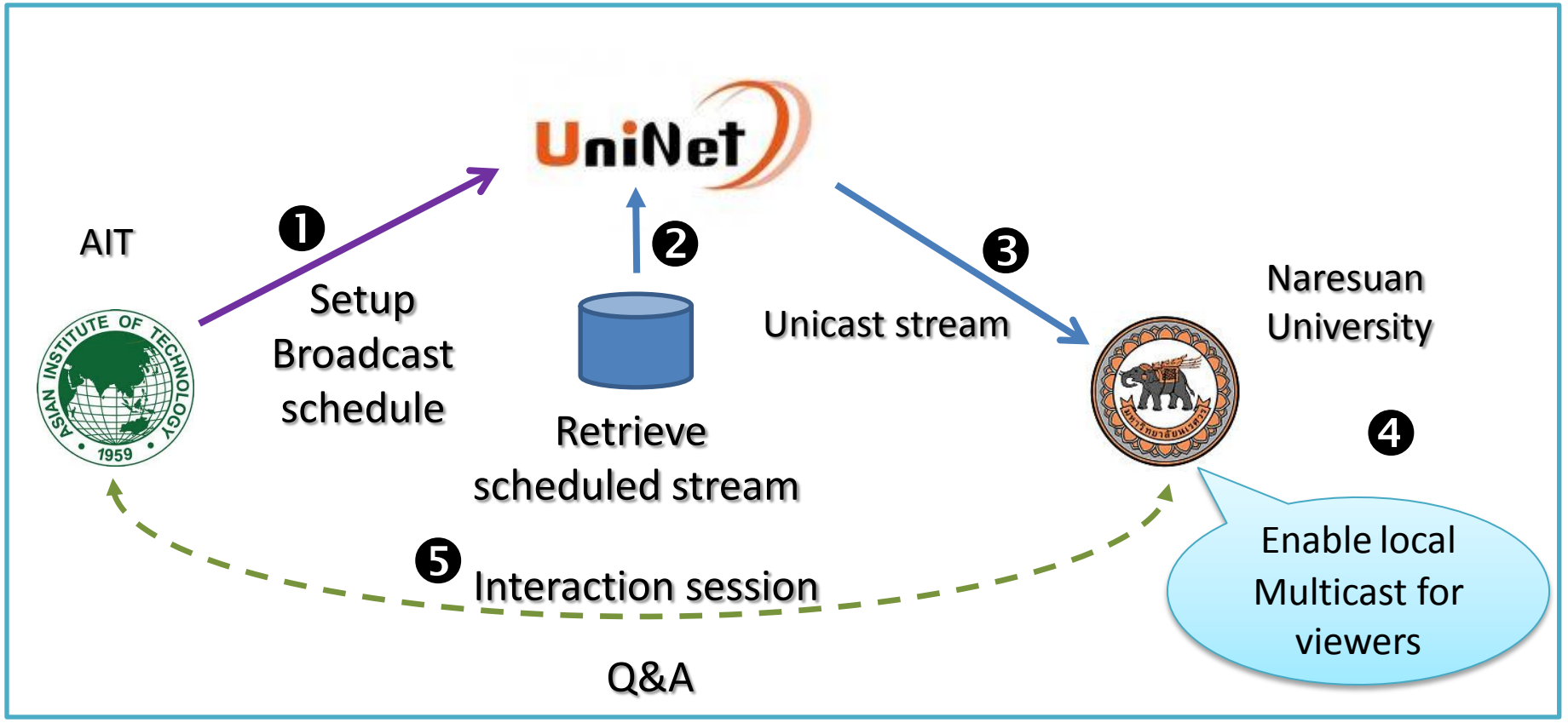
1. Virtual Classroom Learning
   - **Course name:** Data Mining
   - **Lecture sender:** Silpakorn University
     - ✓ Class size = 45 students
   - **Lecture receiver:** Naresuan University
     - ✓ Class size = 30 students

2. Virtual-Class-on-Schedule
   - **Course name:** Machine Vision for Robotic and HCI
   - **Lecture sender:** Asian Institute of Technology
     - ✓ Class size = none
   - **Lecture receiver:** Naresuan University
     - ✓ Class size = 30 students

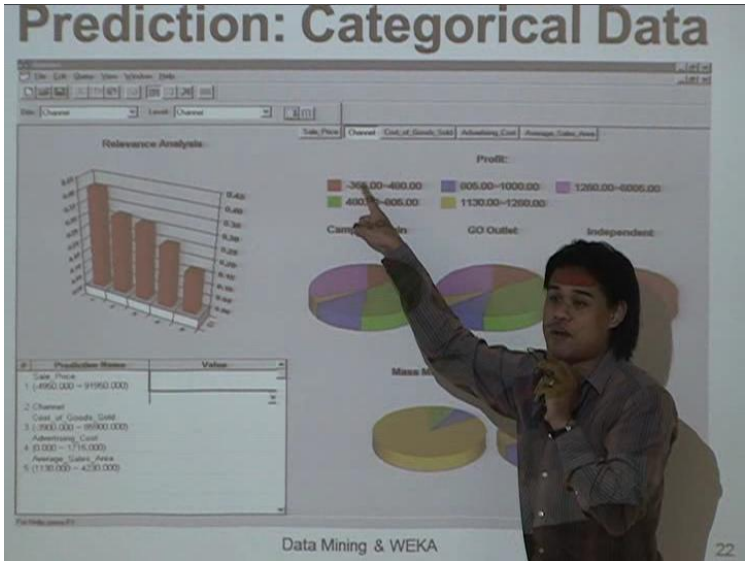
Virtual Classroom Learning Operational Flow



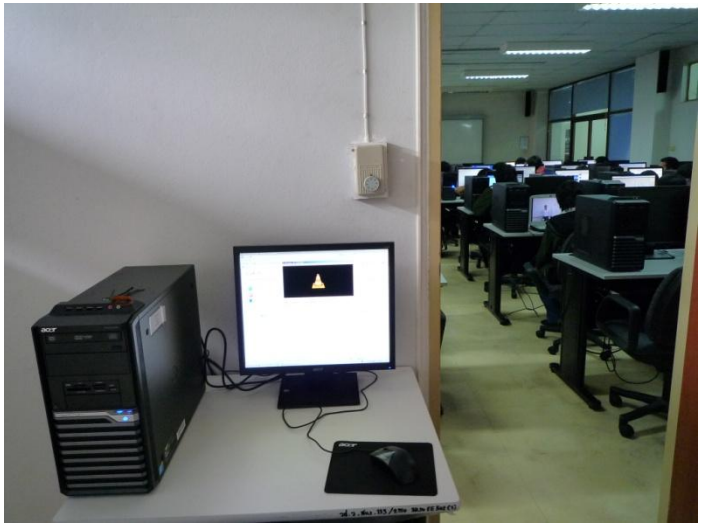
Virtual-Class-on-Schedule Operational Flow

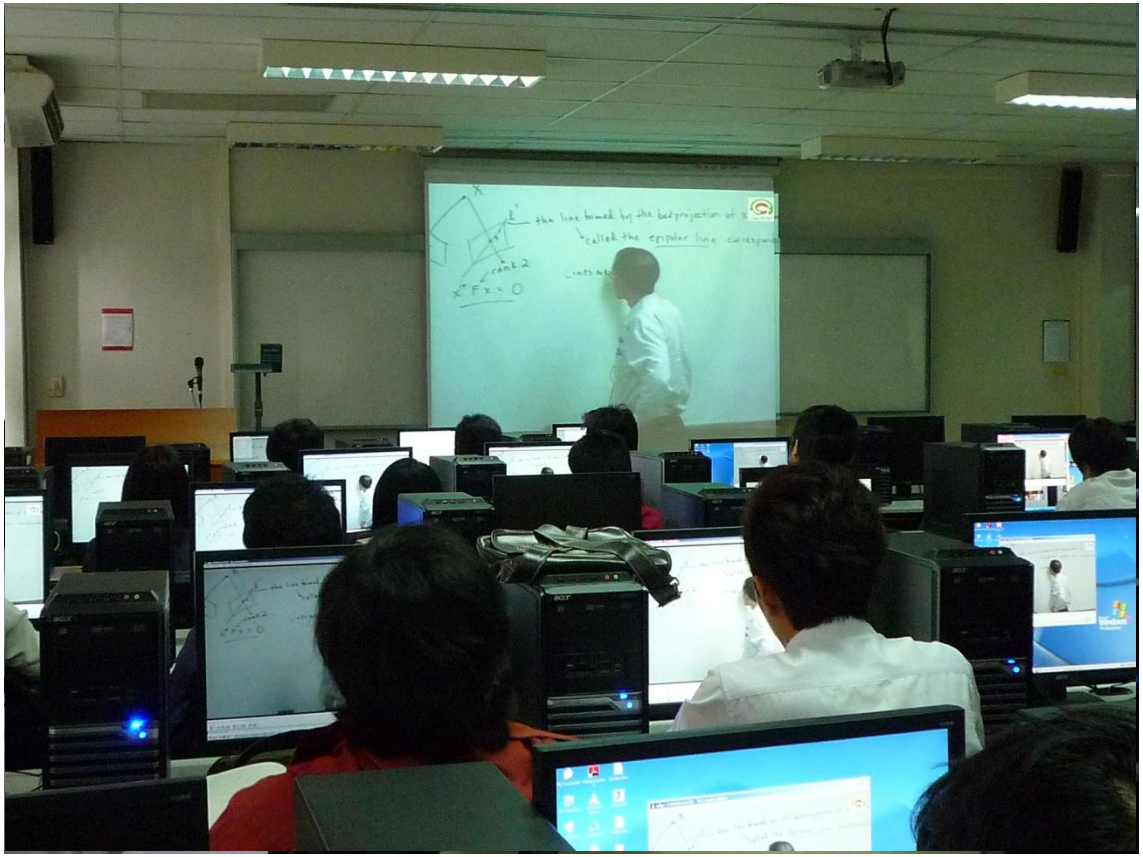


Images from sending site



Images from receiving site





Thank you ...