SOI-ASIA Project

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SOI ASIA Project

- Purpose
  - Establishment of higher education distance learning environment to where the Internet infrastructure is not yet built.
- Problems to be solved
  - Environment that suits those area's requirement
  - Environment for multiple countries and areas by defining the minimum set of requirements
  - Towards sustainable distance learning environment by managing the environment by each site staff
- Distance learning environment through the Internet

SOI ASIA Project

- Challenges
    1. Development of the <u>Internet Infrastructure</u>
    2. <u>Applications and operation</u> for sharing classes among university classrooms in global environment, on-demand and realtime.
    3. Development of <u>educational contents</u> in English
    4. Establish <u>partnerships</u> among universities for future collaboration.
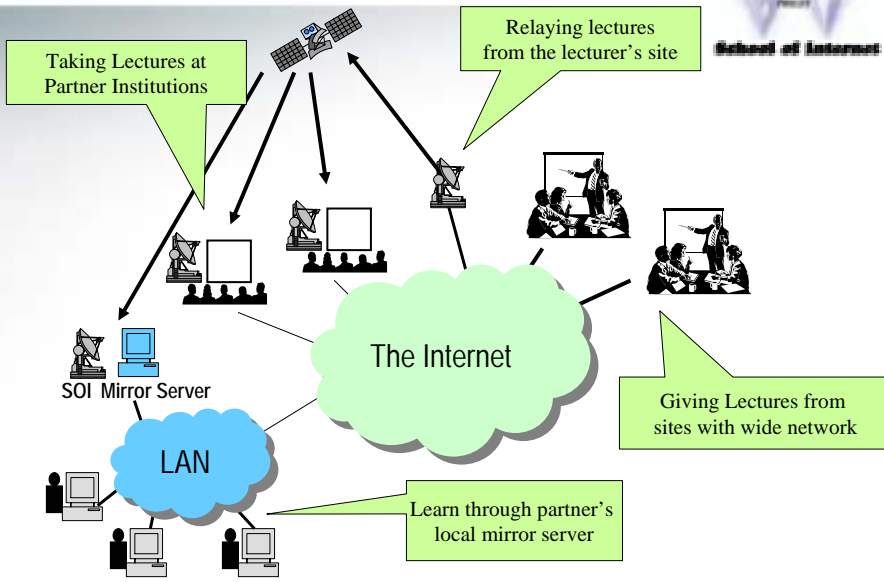   5. Designing operators workshop towards <u>sustainable educational environment</u>

Satellite communication as the infrastructure

- Satellite infrastructure can be build anywhere
- Definition of minimum environment will be easier with the spot building of the infrastructure
- In theory, 3 satellite can cover the world, and 1 satellite enables us to build our environment to wide area
- It has multicast function, so that variable lecture can be delivered to multiple sites

- Receive only satellite antenna does not cost much
    - Money, Getting the license
- Combination of satellite communication and existing terrestrial Internet infrastructure

Distance Learning Program

Taking Lectures at Partner Institutions

Relaying lectures from the lecturer's site

The Internet

SOI Mirror Server

Giving Lectures from sites with wide network

LAN

Learn through partner's local mirror server
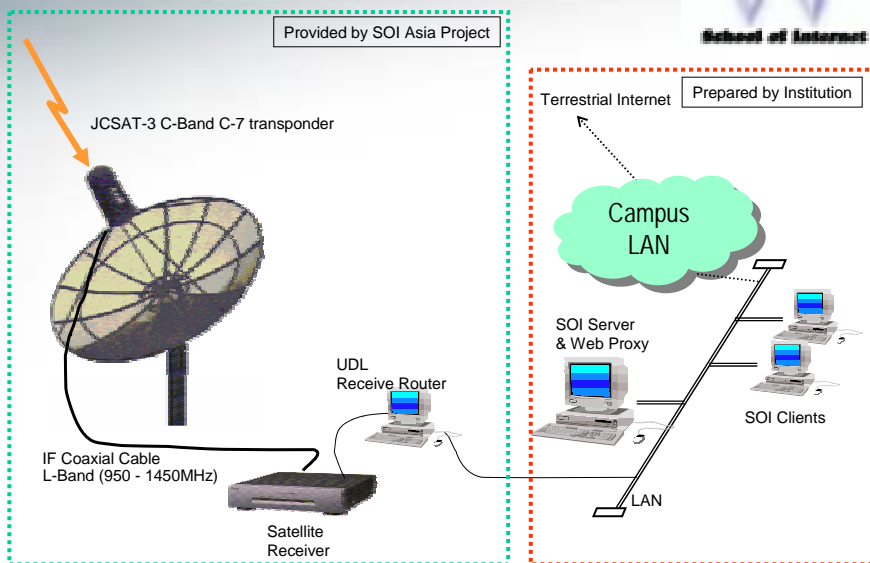

Internet Infrastructure

Internet Infrastructure

- Research partnership with the AI3(Asian Internet Interconnection Initiative) Project
- Utilized 6Mbps C-band
- UDL(Uni Directional Link) Technology

Site Configuration

Provided by SOI Asia Project

Prepared by Institution

JCSAT-3 C-Band C-7 transponder

Terrestrial Internet

Campus LAN

SOI Server & Web Proxy

UDL Receive Router

SOI Clients

IF Coaxial Cable L-Band (950 - 1450MHz)

LAN

Satellite Receiver

Application and Operation

Contents Distribution Software

- Application
  - Multicast file transfer application over the satellite
- Distributing archived lecture using multicast
  - Could be sent to multiple partners at a time
  - Not occupying much satellite network
- Sent Package #1 to the partners

Add New Data   List Current Data   List Current Member

Contents delivery exp.

- Trial distribution
  - 5 contents to 5 sites
  - Well delivered to stable sites but not delivered well enough to non-stable site.
  - Receiving Machine CPU-Power required

- Improvement
  - Porting file transfer programs from FreeBSD(UDL Router) to Linux (SOI Server)
  - Performance measurement
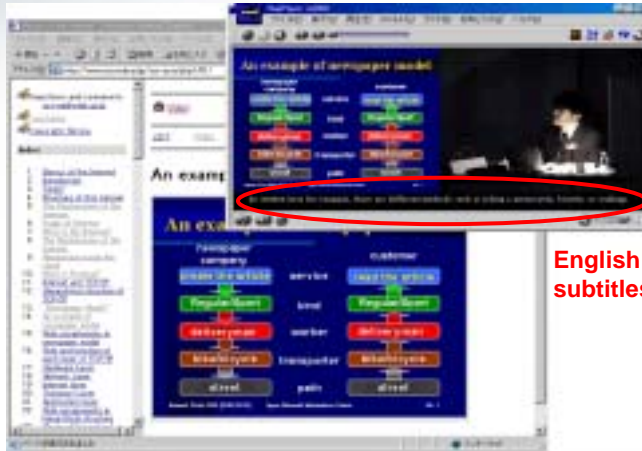 - Better method for SOI Server installation

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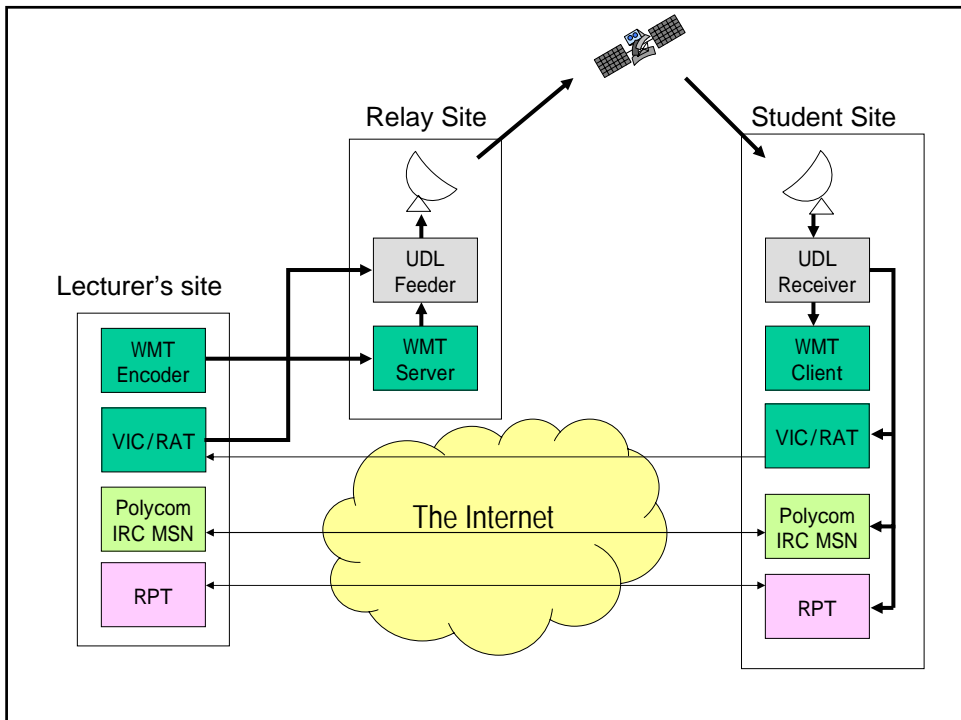## Archived On demand Lecture
SOI ASIA CONTENTS PKG#1

http://www.soi.wide.ad.jp/soi-asia/pkg1/

No.	Type	title	lecturer	Subtitled / dubbed
01	Internet Week 2000	Introduction to Internet	Takayasu Matsuura	Dubbed
02	Special Lecture ('01)	Intercept and Intelligence Hopefully Lawful	Fred Baker	Subtitled
03	Special Lecture ('99)	The Future of Internet	Vinton Cerf	Subtitled
04	Special Lecture ('99)	Making the Dream Real	Jawad Khaki	Subtitled
05	Internet Week 2000	Introduction to IPv6	Takaharu Ui	Subtitled
06	Internet Week 2000	Introduction to Routing Protocol – Basics of the Network Design	Jiro Yamaguchi	Subtitled
07	Internet Week 2000	Introduction to Internet Security	Seiji Kumagai	Subtitled
08	Internet Week 98	Internet Architecture	Jun Murai	Subtitled
09	Internet Week 99	Introduction to Domain Name and IP address	Masahiko Hakoda, Yoshiko ChongFong	Subtitled
10	Internet Week 98	DNS and Mail	Motonori Nakamura	Subtitled

Archived Lecture
SOI ASIA CONTENTS PKG#1

English subtitles

Relay Site

Student Site

Lecturer's site

UDL Feeder

UDL Receiver

WMT Encoder

WMT Server

WMT Client

VIC/RAT

VIC/RAT

Polycom IRC MSN

The Internet

Polycom IRC MSN

RPT

RPT

Real-time Class Operations

- Student Site Interaction Type
  - Full interaction – 1
    - VIC/RAT , RPT, Polycom, BBS
  - Semi interaction – 4
    - WMT, RPT, Polycom/Netmeeting, BBS
  - Text-based interaction – 1
    - WMT, MSN, BBS
  - Email only interaction – 1
    - WMT and EMAIL
- Relay site
  - Keio University, Shonan Fujisawa Campus
- Lecturer's site
  - Temporary, can be made anywhere

Proof Experiments

SOI Asia Partners

Organization Name	Country
Chulalongkorn University Asian Institute of Technology	Kingdom of Thailand
Laos National University	Lao People's Democratic Republic
Brawijaya University Hasanuddin University Sam Ratulangi University Institute of Technology, Bandung	Republic of Indonesia
University of Computer Studies, Yangon	Union of Myanmar
Asian Youth Fellowship	Malaysia
Advanced Science and Technology Institute	Republic of the Philippines
Institute Of Information Technology	Socialist Republic of Viet Nam

Chulalongkorn University (Thailand)

Name	Chulalongkorn University (Thailand)
Counter Part	Computer Science Department
Internet Connectivity	Semi Interaction site
	10Mbps Stable network using local ISP
Lecture Environment	• Using VIC(500kbps)/RAT for video/audio transmission from Japan. No delay. •Using polycom for video/ audio transmission from Chula. • Realtime question and answer session is possible. • 3 screens. PPT, realtime video using VIC. Chula's video using Polycom • PowerPoint is distributed to Thailand and will be synchronized using RPT. Chula participants can see the move of the mouse, too. • Printed out version of the PPT is also available
Mailing List	soi-asia-chula@soi.wide.ad.jp

University of Computer Studies, Yangon (Myanmar)

Name	University of Computer Studies, Yangon (Myanmar)
Counterpart	Whole University
Internet Connectivity	E-mail only interaction site -> Full Interaction site
	No terrestrial network. -> Leased line (128kbps)
Lecture Environment	•Sending video/audio with WMT (500kbps) from Japan. 10-15 sec delay using WMT Encoder server • Use BBS to get questions from Myanmar. Use WMT to answer the question • 1 screen
Mailing List	soi-asia-myanmar@soi.wide.ad.jp

National University of Laos (Laos)

Name	Laos National University (Laos)
Counterpart	Computer Science
Internet Connectivity	Text based interaction Site
	28.8kbps dial up line using the modem
Lecture Environment	• Sending video/audio using WMT (500kbps) from Japan. 10-15 delay through WMT Encoder Server. • Use dial up line to communicate with Japan using chat, and transmit video/audio from Japan to answer questions.
Mailing List	soi-asia-laos@soi.wide.ad.jp

Brawijaya University (Indonesia)

Name	Brawijaya University (Indonesia)
Counterpart	Whole University
Internet Connectivity	Semi Interaction site
	256kbps leased line Not good enough since it is used by the whole campus.
Lecture Environment	• Transmit video/audio using VIC/RAT from Japan. • Transmit video/audio using Netmeeting from Brawijaya • Realtime bi-directional question and answer session • Printed out version of the PPT • PowerPoint is distributed to Brawijaya and will be synchronized using RPT. Brawijaya participants can see the move of the mouse, too.
Mailing List	soi-asia-brawijaya@soi.wide.ad.jp

Sam Ratulangi University (Indonesia)

Name	Sam Ratulangi University (Indonesia)
Counterpart	Whole University
Internet connectivity	Full Interactive Site
	128kbps leased line Good quality since the network is used only by one building.
Lecture Environment	• Transmit video/audio using VIC/RAT from Japan • Realtime question and answer session using Polycom • PowerPoint is distributed to Sam Ratulangi and will be synchronized using RPT. Sam Ratulangi participants can see the move of the mouse, too. • Printed out version of the PPT is also available
Mailing List	soi-asia-unsrat@soi.wide.ad.jp

Hasanuddin University (Indonesia)

Name	Hasanuddin University (Indonesia)
Counterpart	Center for Public Policy and Development Management Studies
Internet connectivity	Text based interaction site
	56kbps Dial up Network using modem. Not stable.
Lecture Environment	• Transmit video/audio using WMT from Japan • Transmit video/audio using Netmeeting from Hasanuddin • Bi-directional realtime question and answer session is possible •PowerPoint is distributed to Hasanuddin and will be synchronized using RPT. Hasanuddin participants can see the move of the mouse, too. • Printed out version of the PPT is available
Mailing List	soi-asia-unhas@soi.wide.ad.jp

AYF/JAD (Malaysia)

Name	AYF/JAD
Counterpart	Whole Organization
Internet connectivity	Full Interaction Site
	2Mbps Stable connection to the local ISP
Lecture Environment	• Audio and Video using WMT stream (500kbps) from Japan. 30 seconds to 1 minute delay because of Encoding and Decoding time and network delay. •Real time question and answer session using Polycom •Power Point material is sent to AYF beforehand and the timing of the material change is shared through the network. •Printed out version of lecture material is also available.
Mailing List	soi-asia-ayf@soi.wide.ad.jp

Asian Institute of Technology (Thailand)

Name	Asian Institute of Technology (Thailand)
Counterpart	Computer Science Department
Internet connectivity	Full interaction Site
	500kbps Stable network using Ku-band connected to NAIST
Lecture Environment	• Transmit video/audio using WMT from Japan • Transmit video/audio using Polycom/Netmeeting from AIT • Bi-directional Realtime question and answer session is available •PowerPoint is distributed to AIT and will be synchronized using RPT. AIT participants can see the move of the mouse, too. • Printed out version of the PPT is also available • Network environment is the best in AIT, because it is the AI3 partner and has a dedicated satellite network to Japan.
Mailing List	soi-asia-ait@soi.wide.ad.jp

Institute of Technology, Bandung

Name	Institute of Technology, Bandung
Counterpart	Computer and Science department
Internet connectivity	Full Interaction Site
	500kbps
	One of the AI3 partners and it has a stable 500kbps Internet infrastructure using AI3 network
Lecture Environment	•Sending video and audio using WMT (500kbps) from Japan. 30seconds to 1 minute delay because of encoding and decoding. Some PCs are set up for each student to view the lecture.
	•Using VIC/RAT, BBS for question and answer session.
	•Bi-directional Realtime question and answer session is available
Mailing List	soi-asia-ioit@soi.wide.ad.jp

IOIT (Vietnam)

Name	Institute Of Information Technology
Counterpart	Whole Institute
Internet connectivity	Full interaction Site
	500kbps
	One of the AI3 partners and it has a stable 500kbps Internet infrastructure using AI3 network
Lecture Environment	•Sending video and audio using WMT (500kbps) from Japan. 30seconds to 1 minute delay because of encoding and decoding. Some PCs are set up for each student to view the lecture.
	•Using BBS for question and answer session.
Mailing List	soi-asia-ioit@soi.wide.ad.jp

Advanced Science and Technology Institute (Philippines)

Name	Advanced Science and Technology Institute
Counterpart	Whole Institute
Internet connectivity	Full interaction Site
	500kbps
	One of the AI3 partners and it has a stable 500kbps Internet infrastructure using AI3 network
Lecture Environment	•Sending video and audio using WMT (500kbps) from Japan. 30seconds to 1 minute delay because of encoding and decoding. Some PCs are set up for each student to view the lecture. •Using BBS for question and answer session.
Mailing List	soi-asia-asti@soi.wide.ad.jp

SOI ASIA Lectures (1)

- IT Special Lectures
  - February1 to April 3, 2002
  - Lecture from & Place : Japan Advanced Institute of Science and Technology
  - Topics on the Information Technology
- IT and Social Science by Keio SFC
  - June 18 to July 18 2002
  - Lecture from & Place : Keio University, SFC
  - Topics on the Information Technology and Social Science
- Advanced Topics for Fisheries and Marine Science
  - September 17-18, 2002
  - Lecture from : Tokyo University of Fisheries
  - Place : Keio University, Mita Campus

SOI ASIA Lectures (2)

- Special Seminar on E-learning of IT Economics
  - September 27, 2002
  - From SOI Global Studio in Maryland, U.S.A.
- E-Government Seminar in Indonesia
  - October 10, 2002
  - From Hokkaido Media Park, Japan to Brawijaya University
- The International Graduate Program on Advanced Science and Technology kick off ceremony
  - November 20, 2002
  - From Keio University, Faculty of Science and Technology

SOI ASIA Lectures (3)

- Advanced Internet Technology
  - November 11, 2002 to January 23, 2003
  - From Keio University, SFC/Mita Campus, NAra Institute of Science and Technology, Sony CSL U.S.A
  - Topics on the cutting edge Internet Technology

Operators Workshop
2002 Summer

- In order for the partner sites to operate their site on their own
- August 29 – September 5, 2002
- 21 participants from 9 partner organizations, 5 countries
- @ Keio University, SFC, Japan
- Lecturer from Keio University
- Topics
  – Basic TCP/IP
  – Basic UNIX command
  – Basic UNIX Server Management

Operators Workshop
2002 Summer

- Communication among the participants
  – Helping each other
- Score of the practice quiz went up by about 10 points.
  – 62.1/100 -> 71.52/100
- Participants level differed
  – Different curriculum?

Result of February,
IT Special Lectures (1)

Lec. NO.	Date/Time	Thailand	Laos	Myanmar	Memo
1	02/01/2002 11:00-14:30				WMT Stopped due to M.C. trouble in SFC Switch
2	02/08/2002 11:00-14:00			×	Equipment broken in Myanmar
3	02/15/2002 11:00-14:00				
4	02/22/2002 11:00-14:00	×			ISP disconnect in Thailand (International cable problem)

Result of March,
IT Special Lectures (2)

#	Date/Time	UNIBRAW	UNHAS	UNSRAT	AIT	Memo
1	03/06/2002 11:00-14:30		×			AIT:M.C. trouble in campus UNHAS: H/W roken
2	03/13/2002 11:00-14:00					
3	03/20/2002 11:00-14:00	×	×	×	×	JAIST: WMT Encoder PC broken
4	03/27/2002 11:00-14:00		×			UNHAS: H/W Broken AIT:M.C. problem in campus Ai3:DOS Attack
5	04/03/2002 11:00-14:00		×		×	AIT: Antenna H/W Problem

Advanced Topics for Fisheries and Marine Science lecture result

Name	1	2	3	4	5
Brawijaya Uni.	▲	▲	▲	▲	▲
Hasanuddin Uni.	○	○	○	○	○
Sam Ratulangi Uni.	▲	▲	▲	▲	▲
Laos National Uni.	○	○	○	○	○
Uni. of Computer Studies, Yangon	○	○	○	○	○
Chulalongkorn Uni.	○	○	○	○	○
AYF/JAD	○	○	○	○	○

▲ Because of VIC/RAT Audio was not stable

Advanced Internet Technology lecture result

Name	1	2	3	4	5	6	7	8	9	10
Brawijaya Uni.	○	▲	▲	○	○	○	○	○	▲	○
Sam Ratulangi Uni.	▲	▲	▲	○	○	○	○	○	○	○
Laos National Uni.	○	○	▲	○	○	○	○	○	○	○
Uni. of Computer Studies, Yangon	○	○	▲	▲	○	○	○	▲	▲	○
Chulalongkorn Uni.	○	○	▲	○	○	○	○	○	○	○
AYF/JAD	○	○	▲	○	○	○	○	▲	○	○

Summary

- Infrastructure
  - Stable Electricity
  - Return path
  - Dial-up -> leased line
  - Multicast
  - DOS attack
- Application
  - Better material and video synchronization
  - Full interaction with multiple sites
  - Better mechanism for distribution of lecture materials
  - Maintenance Strategy
- Educational Environment
  - Active question and answer session during the class
  - Acceptance form the questionnaire

SOI Asia : Discussion

- Technology development and educational program toward the stable and autonomous operation
  - Operators Workshop
  - Tools improvement
  - Stable network operation and monitoring
  - Better documentation
  - Standard configuration for RO Site operation (Mail/Web/SOI-Server).
  - Standard configuration for Lecture site.

- Partners and academic contents planning
  - More partners in Japan ?
  - More partners in Asia ?
  - More areas than IT ?
  - Accreditation

SOI Asia : Discussion(cont.)

- Research collaboration with other WIDE/AI3/SOI activities
  - 2 SOI studios in the US
  - Accessibility SOI
  - SOI Course Management Systems – more SOI Server utilization
  - Archived lecture contribution from the site
  - Lecture from the AI3 partners
  - Caching technology using multicast (AIT)
  - IPv6 challenge

Contact

- soi-asia@soi.wide.ad.jp
- http://www.soi.wide.ad.jp/soi-asia/

Recent Development

- 1/23 Lecture by WIDE
  - http://www.soi.wide.ad.jp/class/20020032/
- 2/17 - 2/24 SOI Asia Workshop - II @ AIT
  - 21 participants from 7 organizations
  - http://www.soi.wide.ad.jp/soi-asia/ow/2003-spring/

- 2/20 ASEAN-JAPAN Exchange 2003
  - Myanmar, Thailand, Japan and ASEAN
    http://www.soi.wide.ad.jp/conference/20030220asean/
    http://www.misu.ait.ac.th/newsandevents/NewsById.cfm?
    NewsID=2458