
Research and Development at NIME and Demonstration of Some Tools



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Outline



- ◆ Introduction of NIME
- ◆ DVD/CD-ROM Educational Materials

- ◆ Virtual Reality Environment: TEELeX
- ◆ Outdoor Distance Education using IP-based
- ◆ Personal Research
 - Information Visualization
 - Multimodal Interfaces
 - System Software
- ◆ 3D stereoscopic view

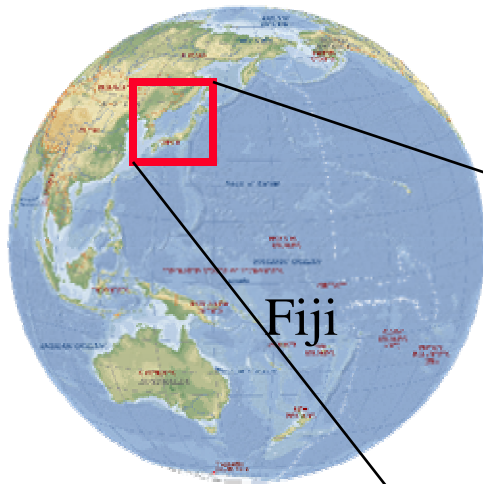
Outline (continued)



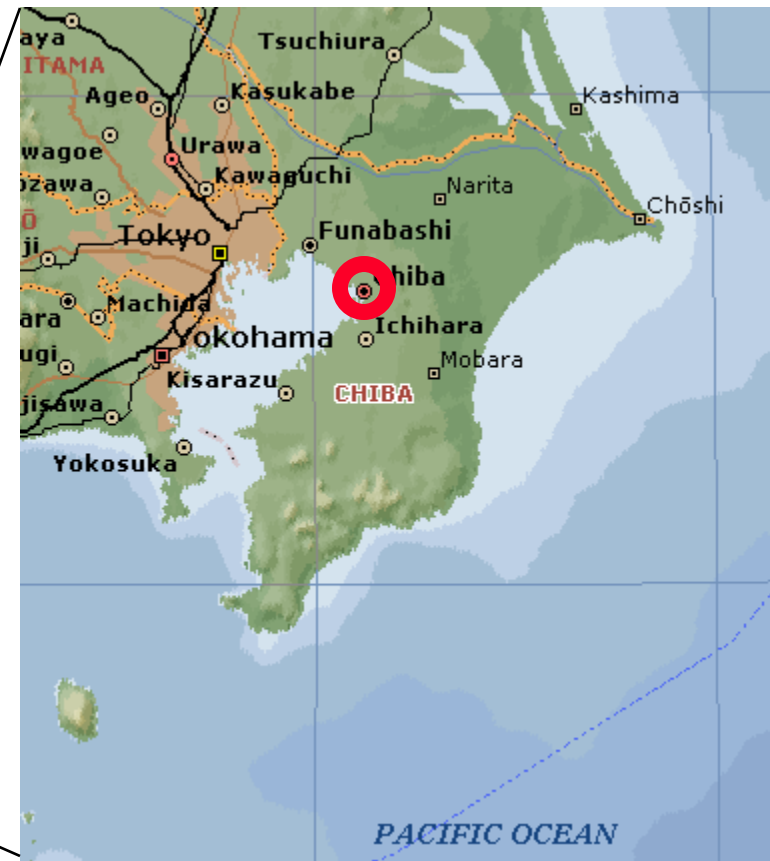
◆ Demonstration

- Instant Messaging/Chat
 - Windows Messenger/NetMeeting
- Video Streaming
 - Windows Media Encoder
- Simple Authoring
 - Windows Media Producer
- Video Streaming with Chat

◆ National Institute of Multimedia Education



Japan



DVD/CD-ROM Educational Materials



- ◆ Languages
 - English
 - Chinese
 - Japanese
- ◆ Science
 - Physics
 - Astronomy
 - Information Science, etc.
- ◆ Counseling
- ◆ Science of Nursing
- ◆ Faculty Development
- ◆ etc.

Virtual Reality Environment: TEELeX

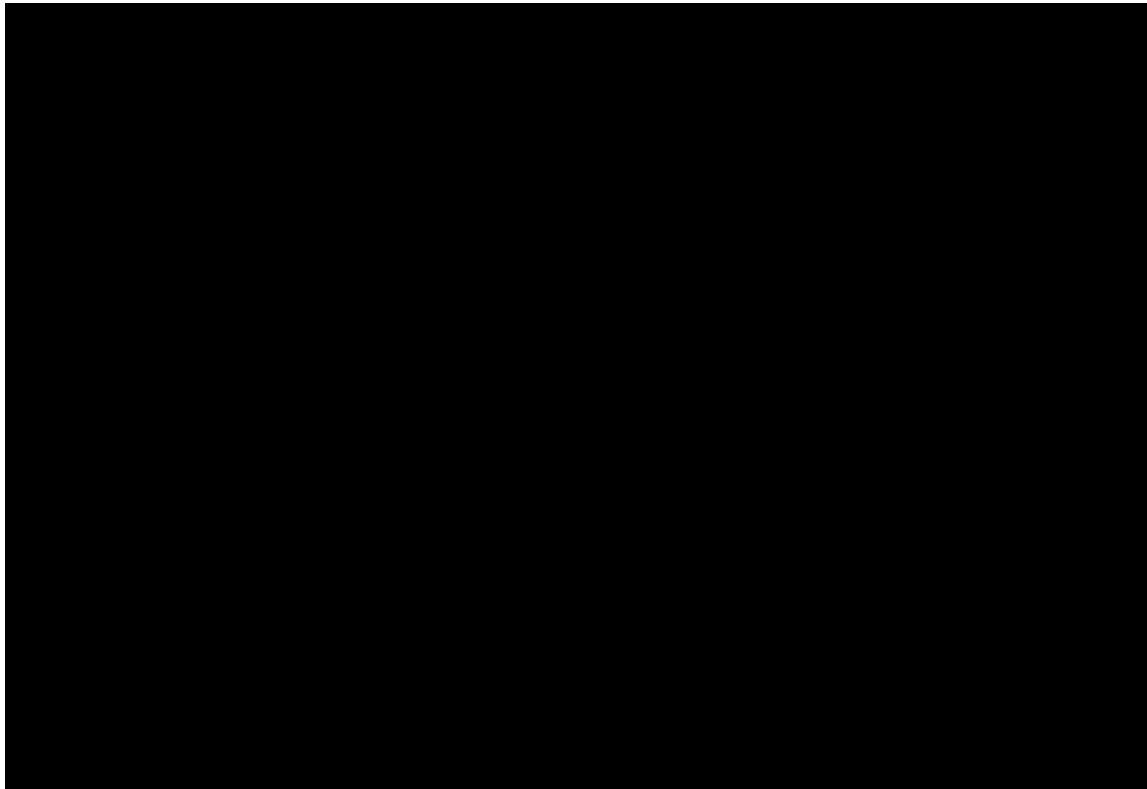


- ◆ Demos
 - Roller Coaster
 - Paradise

- ◆ Experimental Applications
 - Virtual Solar System
 - Saint-Savin Cathedral (3D walk-through)

 - Virtual English Class Room
 - Moon (3D walk-through)

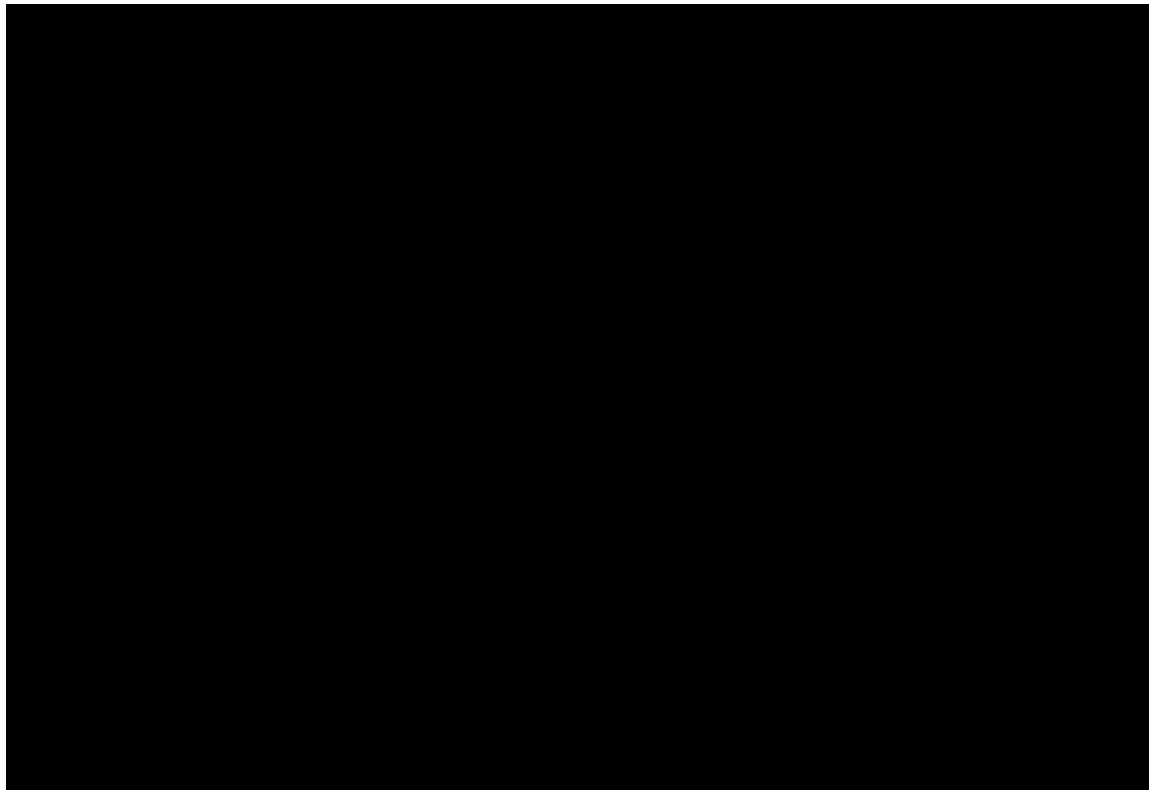
Roller Coaster



Paradise



◆ Interaction



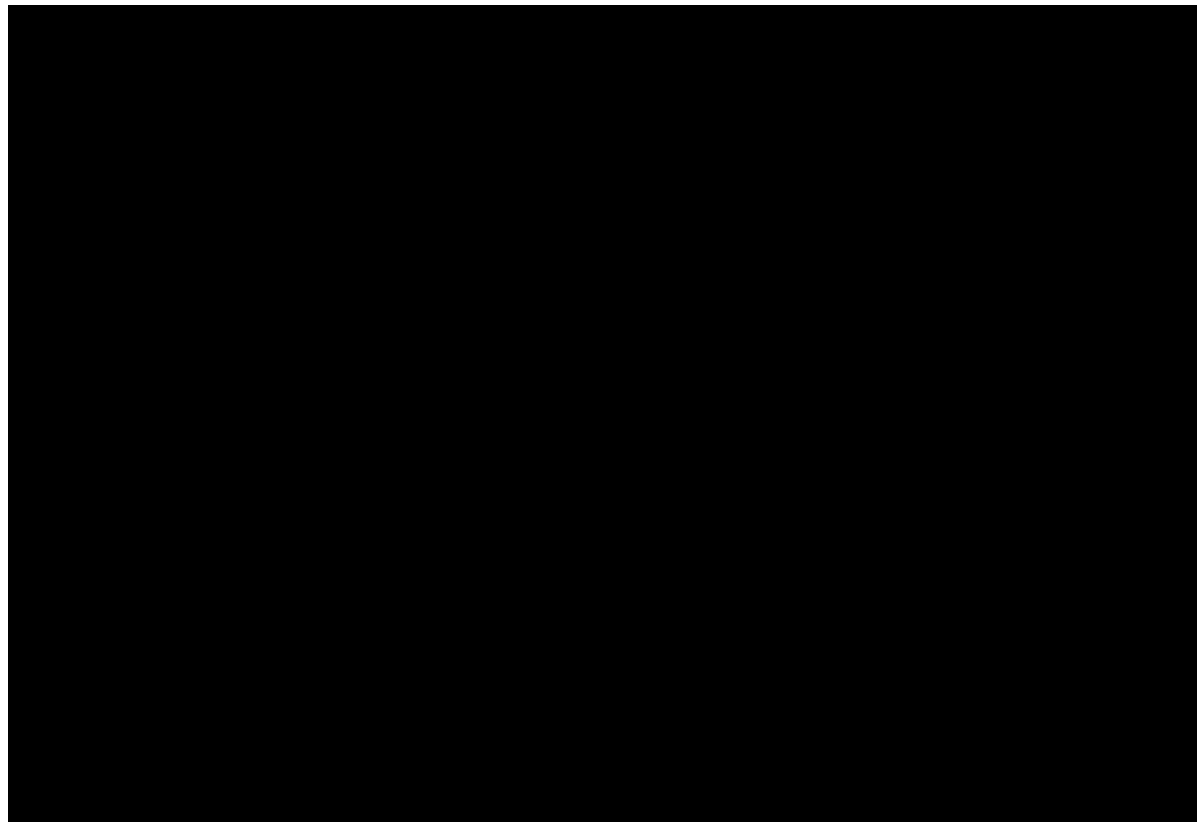
Virtual Solar System



Saint-Savin Cathedral



- ◆ Walk-through

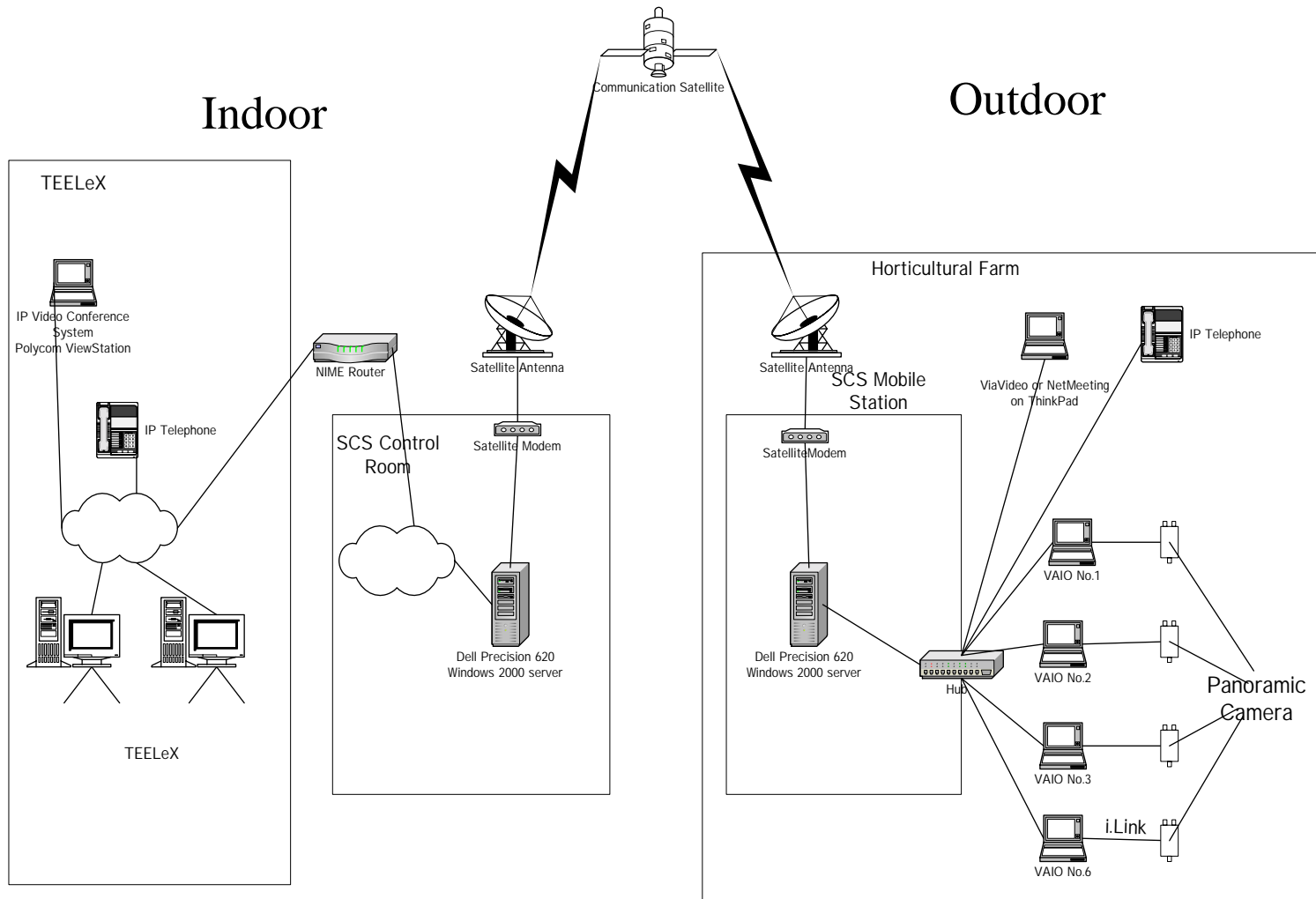


Distance Education Between Outdoor and Indoor using IP-based Satellite Communication



- ◆ PC-based System
- ◆ IPv4 (Internet Protocol version 4)
 - Native IPv6 are going to be used
- ◆ 5 video streams
 - 1 video for conferencing
 - 4 video for panoramic camera (low frame rate)
- ◆ 2 voice streams
 - Conferencing
 - IP Telephone
- ◆ About 700kbps

System Configuration



Outdoor



- ◆ SCS Mobile Station
- ◆ Personal Computers
- ◆ Panoramic camera



Indoor



- ◆ Using TEELEX as Surround Display
 - Not stereo scopic



Personal Research



- ◆ System Software
 - It3d : 3D toolkit library
- ◆ Information Visualization
- ◆ Multimodal Interfaces

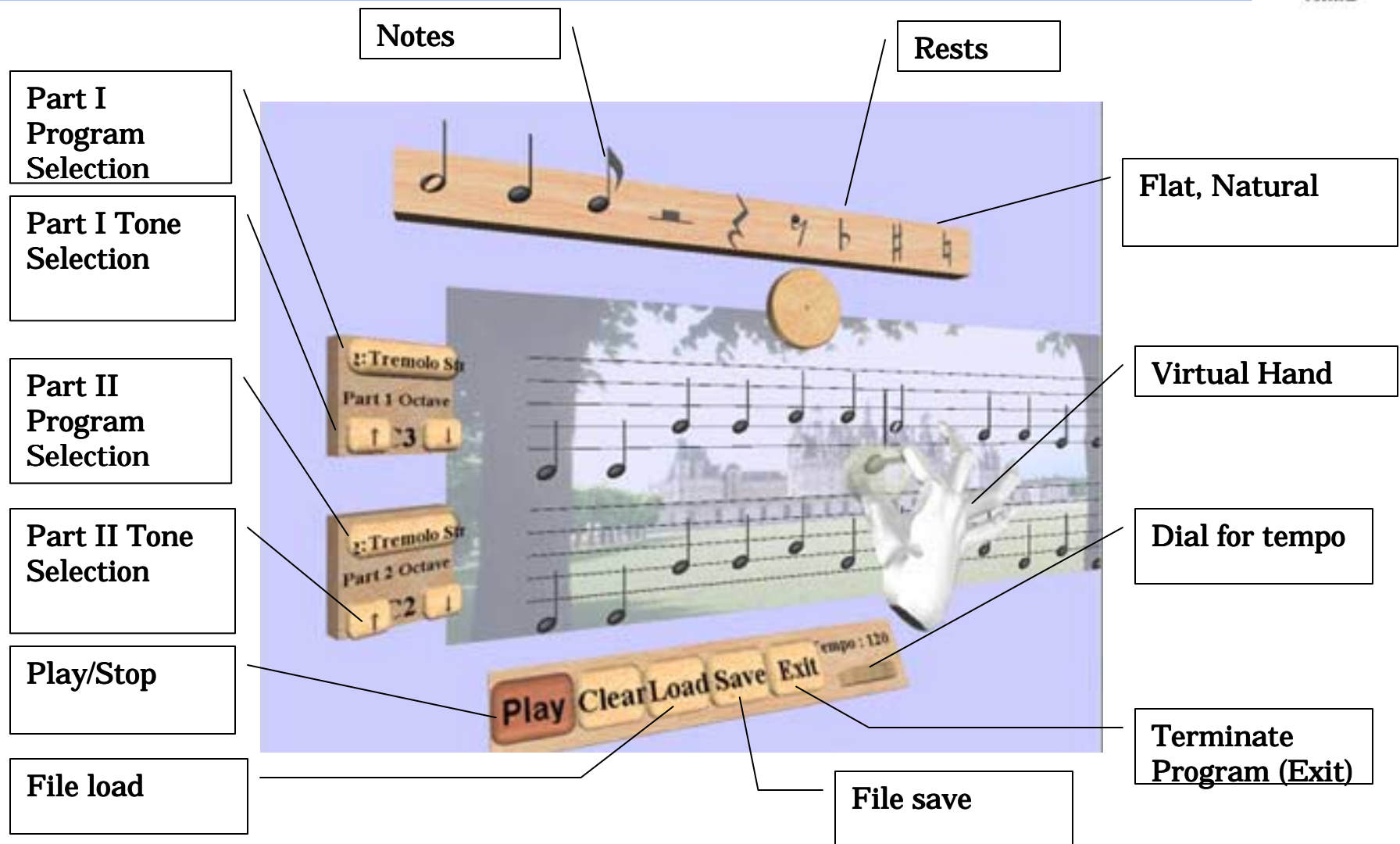
- ◆ Applications
 - Reijin (music player / miraculous god in Japanese)
 - Immersive 3D music editing/playing system
 - Ougi (folding fan / secret in Japanese)
 - Immersive 3D programming system

Interactive Toolkit Library for 3D Applications: it3d



- ◆ Multimodal Input Device Support
 - Glove
 - Position/Orientation Tracker
 - Speech Recognition/Speech Synthesizer etc.
- ◆ 3D Widgets
 - 3D Button, Menu, Dial
 - Extrusion, Revolution of Solid etc.
- ◆ Gesture Recognition and Direct Manipulation Support
 - Simple Gesture Learning Tool
 - Drag and Drop in 3D

Immersive Music Editing and Playing: Reijin



Reijin: Video



Immersive Programming System: Ougi



- ◆ Immersive Programming System using Virtual Reality Technologies
 - Stereo scopic view, 3D visualization
 - Multimodal Interface
 - Sensor Glove, Feedback
- ◆ Supports a subset of Java Programming Language
 - Object-oriented programming

Ougi for a Dancing Programmer



- ◆ Programming in an Immersive Virtual Environment
 - When a programmer uses the system, the programmer appears to be dancing in the virtual environment



Ougi: Video



Multimodal Text Input



- ◆ For textual annotation in 3D space
- ◆ Input
 - Speech recognition
 - Virtual keyboard
- ◆ Editing
 - Hand direct manipulation

Multimodal
Text Input
in an Immersive
Environment

Stereo-scopic View Demo



◆ System

- Personal Computer
- LCD shutter glasses (consumer product)
- Graphics card (consumer product)

- CRT display
 - LCD display does not work

◆ Demonstration

Tea Break



Demonstrations



- ◆ Instant Messaging/Chat
- ◆ Video Streaming
- ◆ Simple Authoring

- ◆ Combination of Video Streaming/Conferencing and Chat

Instant Messaging/Chat



◆ Chat

- E.g. NetMeeting
- Room (chair control)



◆ Instant Message

- E.g. Windows Messenger
- Friend List (ad hoc list)



Chat

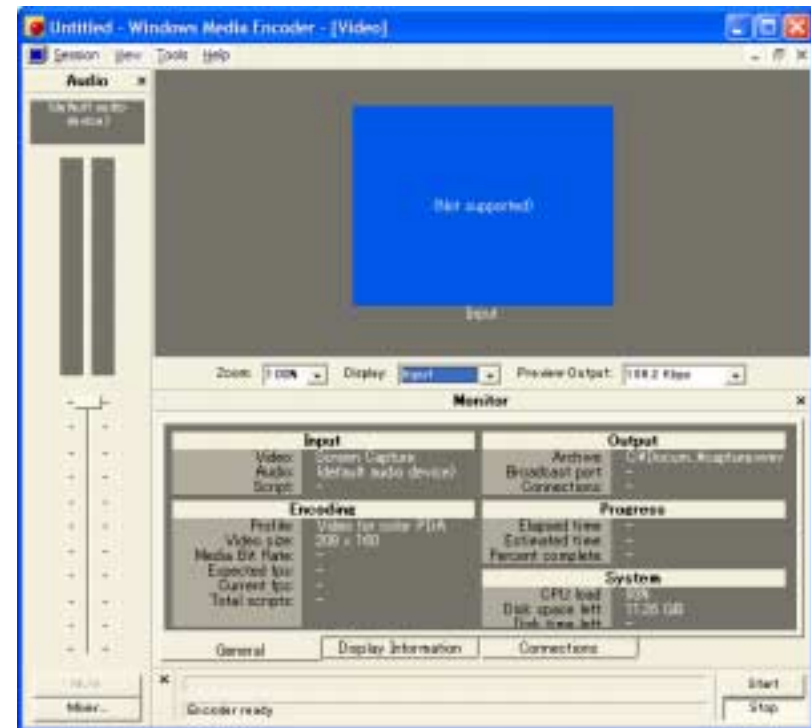


- ◆ Please send comments and questions using *Chat system* during this workshop

Video Streaming



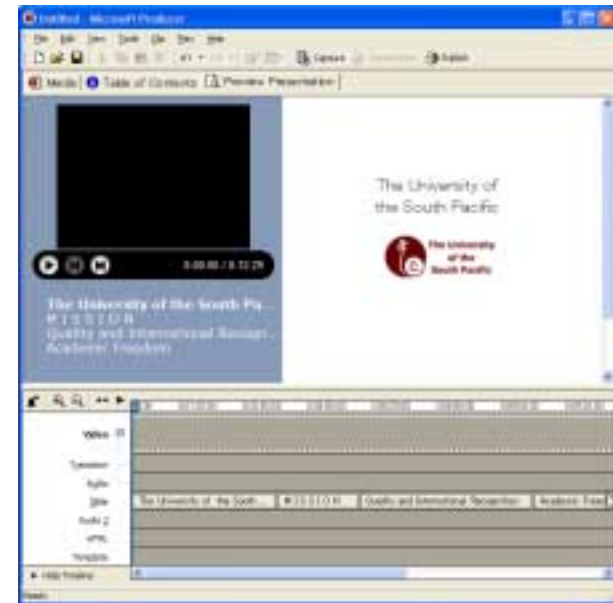
- ◆ Windows Media Encoder
- ◆ Video input
- ◆ Screen capture



Simple Authoring



- ◆ Windows Media Producer
 - PowerPoint-based
 - Can synchronize Slides with Video/Audio
- PowerPoint 2002 (Office Xp) is required



Video Streaming/Conferencing with Instant Messaging or Chat



- ◆ Video streaming
 - Unidirectional
- ◆ Instant Messaging/Chat
 - Student can make a question during lecture
 - Another student can answer or discuss the question
- ◆ Lecturer can give an answer or adjust his/her lecture
- ◆ Some training is needed to read messages during a lecture
- ◆ Facilitator may be needed for active discussion

Summary



- ◆ I hope that USP and NIME can work together for further development
- ◆ Thank you!