Global Knowledge Sharing and Roles of Educational Institutions

Yuichiro Anzai
Senior Advisor, National Institute of Informatics
Former President, Keio University

30 September 2009, Tokyo
International Workshop on Information Systems for Social Innovation 2009
National Institute of Informatics

Copyright © 2009
Yuichiro Anzai
Change of the World and Higher Learning Environment

- Increasing diversity, complexity, and necessity of thoughtful mediation in politics, economy, foreign policy and social systems; nation, ethnicity, language, culture, religion and other (increasing number of) dimensions for diversity and complexity.

- Increasing speed and personalizability of communication media.

- Increasing size and complexity of databases, or the amount and the structure of knowledge shared globally across borders.
Change of the World and Higher Learning Environment

- People who think and act independently and collaboratively at the same time.
- Open and real-time communication for understanding each other, and for discovering and solving problems in the world.
- Creation, accumulation and distribution of knowledge logically and semantically robust enough against abuse of information, and spatio-temporally stable enough for peace, sustainability, and prosperity of our globe.

- Needs of learning environment for nurturing people who can be both independent and collaborative.
- Needs of globally distributed infrastructure for global communication and knowledge sharing based on innovative digital communication networks.
Innovation through Institution-Community Collaboration

Knowledge Source Model

Institution as Source of Knowledge

Knowledge Interaction Model

Interaction of Institution and Community

Knowledge Globalization Model

Institution-Community Interaction in Knowledge-Sharing World

Value of original ideas: IP and Standards
Real-time collaboration for global interests
All depend on information security

Copyright © 2009 Yuichiro Anzai
SOI (School On Internet) Asia
-based on satellite Internet technology
24 Partner Universities in 12 Countries

Thailand
Chulalongkorn University, Asian Institute of Technology, Chulachomklao Royal Military Academy, Prince of Songkla University
Laos
National University of Laos
Myanmar
University of Computer Studies
Indonesia
Brawijaya University, Sam Ratulangi University, Hasanuddin University
Kampus Tamalanrea, Institut Teknologi Bandung, Universitas Syiah Kuala
Malaysia
Universiti Sains Malaysia, Asian Institute of Medicine, Science & Technology
Vietnam
Institute of Information Technology
Philippines
Advanced Science and Technology Institute, University San Carlos
Nepal
Tribhuvan University
Cambodia
Institute of Technology of Cambodia

Bangladesh
Bangladesh University of Engineering and Technology
Mongolia
Mongolian University of Science and Technology
Japan
Tohoku University, Tokyo University of Marine Science and Technology, Japan Advanced Institute of Science and Technology, Keio University

Copyright © 2006 Keio University
Keio University and SOI Asia assisted Universitas Syiah Kuala, the largest national university in Indonesia, by providing comm. env. for disaster recovery.

Photos by Chermg Talay Subdistrict Administration Office

Tsunami Symposium on SOI Asia network

Copyright © 2006
Keio University
Remote e-Learning System for SOI Asia

- Attendance
- Personal activity reports
- Site status
- Assignments
- Q&A and Communication
- Feedback

Copyright © 2009 Keio University
Industry-government-academia Collaboration for SOI Asia

Technology Development
Internet via Satellite
1996~
JSAT

Satellite Internet Infrastructure

Technology Development
Satellite and UDLR
2000~

Satellite Receiver (Product) and UDLR (Standard)

UDcast
SONY

SOI Asia Lecture Platform

Content Development for Digital Media for Asia
2006

IBM

Asia IT Training
2004~2005

Industry/Government Partners

- Toyota Motor Corp.
- Toshiba Corp.
- NTT DoCoMo, Inc.
- Yokogawa Electric Corp.
- Matsushita Electric Industrial Co. Ltd.
- DENSO Corp.
- Fuji Xerox Co., Ltd.
- Fujitsu Ltd.
- Hitachi Ltd.
- Honda R&D Co., Ltd.
- IBM Japan, Ltd.
- KDDI Corp.
- Microsoft Corp.
- Ministry of Education, Culture, Sports, Science and Technology etc

Copyright © 2006 Keio University
Operator Training for SOI Asia

Annual SOI Asia Operators Workshop
(in 2005 at Brawijaya University, Indonesia, for the photo)
Global Digital Studios (as of 2006)

- University of Cambridge, UK
- Tsinghua University, Beijing, China
- Yonsei University, Seoul, Korea
- Keio University, Tokyo, Japan
- San Francisco Studio, California, USA

SOI Asia partners in 12 countries

Copyright © 2006 Keio University
What are Global Digital Studios?

• Studios are:
  ✓ Standardized digital communication spots
  ✓ With high quality digital video/audio facilities
  ✓ Located in key places for handling digital content
  ✓ Connected to each other through a global digital network
  ✓ Shared by diverse education and research communities
  ✓ Interoperable since they adhere to the same standard
  ✓ Autonomously operated by each partner
  ✓ Registered as shared resources among partners.

• Partner institutions can:
  ✓ Make use of any/all registered studios for any convenient occasion through very simple procedures.
Examples of Self-operated Global Digital Studios

Studio at Tsinghua University

Location 1/3 Overview

Studio at Yonsei University

Studio at University of Cambridge

Studio at Japan Society

Copyright © 2006
Keio University
Studio at Keio University

- Location: Tokyo, Japan
- Operated by: Keio University
- DVTS and Polycom / Multipoint capable
- IPv4/IPv6
- Re-constructed in February 2006
Creation and Distribution of Contextual Digital Content

✓ Digital content with context, such as real-time images, video clips, audio tapes, movie programs, animation programs, sport, music, performances, scientific experiments or other scenes, books, journals, reports or other edited pages of documents, a series of digitalized pictures or photographs, promotion videos for universities, industries, governments, and so on.

Knowledge Sharing in the Global Community

✓ Contextual digital content could constitute an enormous portion of our body of knowledge, to be shared & used for many purposes in global & local communities.

Research and Development

✓ How to create, store, send, distribute, share, retrieve, edit, use, & profit from contextual digital content in a global community is an open & challenging issue for R&D in media technology, human-machine interaction, knowledge handling, business management, financing, legal systems & others.

Benefits for Society

✓ Industries for contextual digital content are generally labor-intensive and/or cost-inefficient; better technologies & management will produce greater benefits for society.

Human Resources

✓ There are very few professionals in universities, industries or governments who can design and manage contextual digital content and its large-scale platforms. Thus, universities need to take a decisive role.
Intellectual Property Rights and Standards related to Global Knowledge Sharing

✓ Copyright Protection & Promotion of Distribution
  ✓ Encouraging the improvement and clarification of contractual practices in business and academia
  ✓ Supporting the development of content protection schemes

✓ More control over copyright infringement
  ✓ Establishment of a legal framework for dealing with trans-border copyright infringements
  ✓ Stricter control over P2P-based infringements

✓ Proactive efforts for international standardization
  ✓ Improving awareness of the importance of standardization, including training of standardization specialists
  ✓ Promoting collaborative research for the establishment of international standards

Copyright © 2006 Yuichiro Anzai
Key Mission: to convert “research results” to commercial products & technologies in order to disseminate Keio’s knowledge to the public.
IPR related International Issues

Rights holder
- Authors
- Performers
- Music industry
- Broadcasters
- People
- Multimedia content creators
- Database creators

Rights
- Moral rights
- Economic
- Publicity & privacy
- Neighboring
- Derivative works related
- Database owner’s

enforcement

Rights holder

IPR related international issues

Copyright © 2006 Keio University
IPR related International Issues: An Example

Which country's law should apply? (private int'l law)
Whose judicial system should be used? (int'l jurisdiction)

Country B
Server
Download without permission

Country C
Users

Country A
Webmaster

Country D
Author

particularly IP rights

Copyright © 2006 Keio University
Contribution to International Standardization: An Example

Contribution to International Digital Cinema Standard

✓ Approved as an international standard by DCI (Digital Cinema Initiative)
✓ Newest system adopting JPEG2000
✓ Can deliver hi-res Digital Cinema imagery (3840x2048)

4K Digital Cinema “Birthday Cake”
Content Industries and Content Management Policy

- Dedication to a specific area
- New competition & collaboration
- Alliance of industry and academia
- Paradigm-shift to a new business model
- Needs for strategy, leadership & policy to encourage momentum

Copyright © 2006 Keio University
Different types of content go digital in different ways

- Text and Picture
  - Text
  - Picture
  - Photo
  - 2D- and 3D- graphics

- Sound
  - Music
  - Speech
  - Lecture
  - e-Learning text

- Motion Picture
  - Movie
  - Video
  - 2D- and 3D-graphics
  - e-Learning Content
  - News
  - Drama
  - Animation

- Multimedia Title
  - TV Game
  - Encyclopedia, Almanac
  - Virtual Environment
Issues in Global Knowledge Sharing: Examples

- Regulation against sending moving images with pictures and sounds for remote education
- Regulation against heavily repeated use of commercial videos/films for educational purposes
- Rapid shift to oligopolization of copyrights and publication rights for academic products
- Difficulty in cooperation with content industries
- Difficulty in coping with heavy load to digitize paper and film products
- Underdevelopment of secured global communication networks with reasonable cost
- Underdevelopment of international and domestic laws for copyright, publication right, and distribution of information
- Underdevelopment of protection systems for information security
- Difficulty in standardization of formats and handling procedures for to-be-globally-shared materials
- Others
Global Knowledge Sharing: Roles of E&R Institutions

Knowledge Source Model
Institution as Source of Knowledge

Knowledge Interaction Model
Interaction of Institution and Community

Knowledge Globalization Model
Institution-Community Interaction in Knowledge-Sharing World

- Respect for Values of Originality and Creativity
- Nurturing Humans with Global Knowledge, Wisdom and Sincerity
- Globally Significant Academic Production and Archiving
- Social Innovation and Contribution to Global/Local Societies
- Collaboration for Solving Global/Local Issues

Copyright © 2009 Yuichiro Anzai