

Security Management in the Internet Era

13th Midterm Presentation (2)
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Schedule

01st (09/22) Course Description
02nd (09/29) Cloud Security (1)
03rd (10/06) Cloud Security (2)
04th (10/13) Military use of the cyber security technology and its issues
05th (10/20) IPv6 Security
06th (10/27) Guest Lecture (Joichi Ito)
07th (10/27) Personal Information and Security (1)
08th (11/10) Personal Information and Security (2)
09th (11/17) Evaluation of Security Risk
10th (12/01) Guest Lecture
11th (12/08) Guest Lecture
12th (12/15) Midterm Presentation (1)
13th (12/22) Midterm Presentation (2)
14th (1/12) Final Presentation (1)
15th (1/19) Final Presentation (2)

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Final Assignment

Please identify the issues to be resolved in our society and how CPS(Cyber- Physical Systems) can be utilized to solve the problems.

Furthermore, by utilizing this system, make clear case for new problems.

Answer should consider the following points.

- Technology
- System
- Education
- Promotion of taking risk while proceeding it

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Supplementary Note

- Slides in English and Presentation in English
- 20-minute presentation each team
- 15-minutis question and answer

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Presentation schedule

- 15 Dec. Midterm Presentation
 - Group 1 and 2
- 22 Dec. Midterm Presentation
 - Group 3 and 4
- 12 Jan. Final Presentation
 - Group 1 and 2
- 19 Jan. Final Presentation
 - Group 3 and 4

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Group 3

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The IT system for resolving the environment problems

Budi Rahmadya (NAIST)
Yusuke Fujiwara (NAIST)
Naofumi Higuchi (SFC)
Hokuto Hoshi (SFC)

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The Environment Problems

There are many environment problems in the world.
For example,

- Global Warming
- Decrease of tropical rain forest
- Waste Problem

and so on.

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The Environment Problems

• Global Warming

The temperature rise from the increase of the greenhouse gas (carbon dioxide, methane, water moisture, and so on). The progress of the global warming is predicted to cause various problems.

For example,

- The drastic change of the global climate by melting of the polar ice and change of the currents.
- The movement of the cultivated land.
- The submergence of the island countries and lowlands by the rise of the sea level.

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The Environment Problems

• Decrease of tropical rain forests

The tropical rain forests are treasuries of various species and sources of the oxygen in the atmosphere by the photosynthesis.

They are rapidly decreasing by cutting for the wood resources and cultivation.

The decrease of the forests may cause

- the progress of desertification
- the extinction of many species
- increase of carbon dioxide as greenhouse gas

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The Environment Problems

• Waste Problem

The countries consume a large amount of resources and dump many wastes. Such a human activity cause serious problems.

- The waste and exhaustion of the resources
- The preparation of the land for the dumping grounds
- The environment pollution by the wastes.

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The Environment Problems

These environment problems threaten our daily life and subsistence, so we must resolve them.

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To resolve the environment problems

The environment problems result from the human activity of production and living.



To resolve the problem, each individuals must know the current actual conditions and promote the ecology movement.

The IT system can contribute to the resolution of the environment problems.

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The contribution of the IT system

The IT system can contribute to the problem in terms of following points.



- The IT system can collect the environmental data from various sensor and enables us to recognize the current actual condition of the environment by the IT network.

- When each individual promotes the ecology movement, the IT system can visualize the effect of an individual's behavior and the contribution to the whole condition.

We suggest an IT system for resolving the environment problems.

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The points of this system

We discussed this system in terms of following four points.

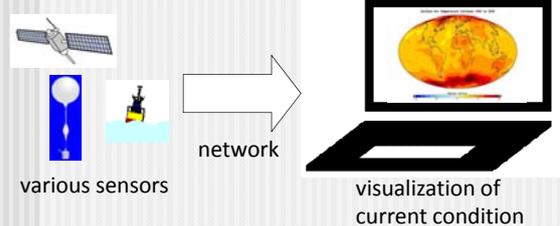
- 1 The technologies themselves.
- 2 The social systems at the introduction of this IT system.
- 3 The education for the user.
- 4 The benefits against the risks.

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The technologies

The point is "realization".

- First step – the realization of the current condition**
- Collection of the environmental data from various sensor
- Broadcast the collected data through the network like Internet

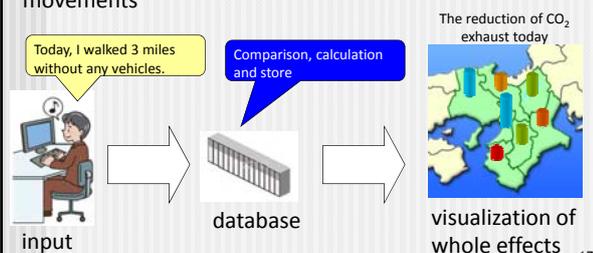


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The technologies

- Second step – the realization of the effects**

- Input of daily ecology movements into the system
- Comparison of the result with the database
- Visualization of the whole effects of the ecology movements



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The social system

- Standardization of the visualization system and environmental assessment.

- Economic incentives that advance the promotion of this system and ecology movements like tax reduction and subsidy



- Legal regulation

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The education for the users

The important points in this field are

1. Education Background

Education background in accordance with the job.



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The education for the users

3. Human Error and High operating cost

Human error and high operating cost can be prevent or reduce by user education.



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↓



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The benefits

•From company's point of view:

- Consumption is visualized and make possible to cut waste more effectively.
- The database can also use in other systems.



•From people's point of view:

- Can take more interest in ecology movements and fix their behaviors.

•From environment's point of view:

- Many resources will be re-used and be cut.



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The risks

•From company's point of view:

- Management cost of Monitoring systems
 - these systems is introduced only for environmental problem?



- Privacy policy of collecting data



•From people's point of view:

- Behavior's feedbacks will make harder to consume
 - "All of my behavior will make CO2 ...fmm..."

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Conclusion

1. This system visualizes the current condition and the effects of ecology movements.

2. In order to promote the use of this system, the standardization of the environmental assessment, economic incentive, and legal regulation.

3. Educational background and experience of the users is important for solving environmental problems.

4. Human error and high operating cost can be prevent or reduce by user education.

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Conclusion

5. Visualization of the consumption, reduction of the waste, and application of the database for other purpose.

6. The further promotion of the ecology movements from many points of view.

There are some risks such as the cost, privacy and security, and reduction of the consumption.

However, these risks can be relievable by more robust system and legal regulations. They are insignificant than the one of the environment problems.



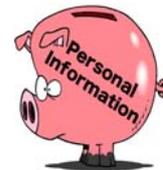
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Group4

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Long-Term Personal Information Protection : The Information Bank

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Introduction

- Personal information has become vital in our society
- Everyone has precious information
- 3/11 "no pictures, no memories remain"

Problem

The two methods until now and their limits

- Having your own storage hard disk at home
 - Limited geographic location.
 - Disks life span
- Using Internet cloud services
 - Leak risks
 - No guarantees on the long term
 - How much can you trust?

Solution

- The solution : The Information Bank.

WHY ?

- The society is more and more digital
- Town Hall, Post offices etc may turn digital also
- More information → More loss → Bigger Necessity of secured long term storage service

Security / Technical Issues

- Who can access the stored information?
- How to avoid the potential risks of information leaks, theft and loss?



知的財産権 Intellectual Property Right

- 著作権(著作権法)
 - 著作物の権利
 - 著作権隣接権
- 産業財産権
 - 特許権(特許法)
 - ・ 発明に対する権利/保護
 - 実用新案権(実用新案法)
 - ・ 物品の形状に関わる考案を保護
 - 意匠権(意匠法)
 - ・ 工業デザインの保護
 - 商標権(商標法)
 - ・ トレードマークを保護
- その他の権利
 - 育成者権、肖像権
- Copyright (Copyright Act)
 - Neighboring right
- Industrial property right
 - Patent right (Patent Act)
 - Utility model right (Utility Model Act)
 - Design right (Design Act)
 - Trademark right (Trademark Act)
- Another rights
 - Holder of a breeder's right, Portrait rights

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著作権とは What is a Copyright?

- Work definition
 - "work" means a production in which thoughts or sentiments are expressed in a creative way and which falls within the literary, scientific, artistic or musical domain
 - e.g.
Novel, Research Paper, Music, Picture, Movie, Computer Program...
- Authors' rights
 - Moral right of author
 - ・ Right to make the work public
 - ・ Right to maintain integrity
 - Property right
 - ・ The author shall have the exclusive right to an authorization to exploit
 - ・ The author shall have the exclusive right to effect a public transmission of his work (including, in the case of automatic public transmission, making his work transmittable)

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Revised : Copyright Act in Japan

- Published in Jun 12, 2009 (effective date: Jan 1, 2010)
- Background
 - Information and communication technology development
 - ・ Illegal information distribution about a digital content on the internet.
e.g. File sharing software, Video hosting service

文化庁HPより抜粋 http://www.bunka.go.jp/chosakuken/21_houkaisei.html 33

Points of the Revision

- Downloading becomes illegal (Article 30)
 - In this revision, following case is excepted from reproduction for private use
- But, this article doesn't have a penalty provision



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Points of the Revision

- Search engine cache was legalized (Article 47)
- Search engine providers can set a cache server in Japan
 - ・ Previously, search engine cache was saved in servers that are located in foreign countries



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Protected by The Agreement

- The Berne Convention for the Protection of Literary and Artistic Works
 - published on 1986
 - Total number of Contracting Parties : 164 (2009)
 - Principle of national treatment
 - ・ "Authors shall enjoy, in respect of works for which they are protected under this Convention, in countries of the Union other than the country of origin, the rights which their respective laws do now or may hereafter grant to their nationals, as well as the rights specially granted by this Convention."

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Copyright Problems on a P2P

- Stakeholders
 - Sender
 - Receiver
 - Author of work
- Problem
 - Sharing music, movie and software that have a copyright by P2P file sharing system

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Case Study : Winny

- Timeline
 - 2003 11/27
 - Two men arrested for a violation of right of public transmission
 - 2004 5/9
 - Isamu Kaneko, who developed winny arrested for contributing a violation of copyright
- First Trial Kyoto district Court
 - Judge: guilty
 - Sentenced for 1.5M yen fine for contributing a violation of copyright
- Second Trial: Osaka High Court
 - Judge: not guilty
 - He noticed that it may be open to abuse but it is not enough for contributing.
- Final Trial: Supreme Court ←new!
 - 2011 12/20
 - Judge: not guilty

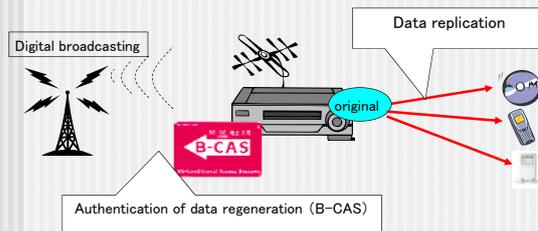
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Terrestrial Digital Broadcasting

- Content Management
 - Past : Copy One Generation (COG)
 - Current : Dubbing 10, COG, unrecordable, recordable
- Stakeholder
 - Broadcast, Audience, Receiver Maker

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Content Protection on the Terrestrial Digital Broadcasting



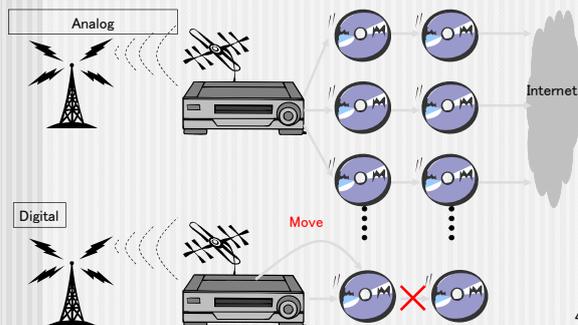
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COG (Copy One Generation)

- Analog Broadcasting
 - no limitation for a copy
 - quality and usability are not good
- Terrestrial Digital Broadcasting
 - local rule
 - permit one time copy
 - There is a problem of a copy failure

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Analog and Terrestrial Digital Broadcasting



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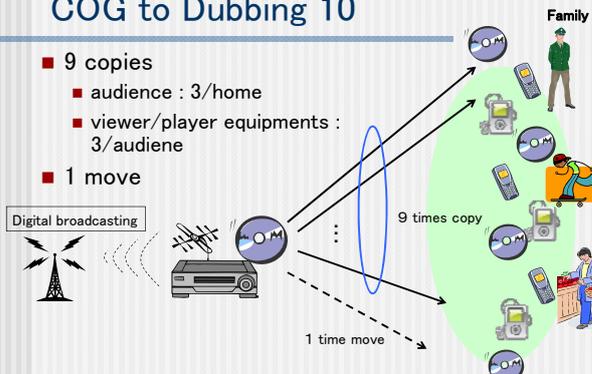
Situation in US

- No copy control in the terrestrial digital broadcasting
 - Now under consideration
- US :
 - Wired broadcast media is under development
 - In Japan, free broadcasting is main stream
 - DMCA : Digital Millennium Copyright Act
 - enforces copy control for public and free broadcasting.

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COG to Dubbing 10

- 9 copies
 - audience : 3/home
 - viewer/player equipments : 3/audiene
- 1 move



Google Book Search

- This project tries to liberalize the browsing of the whole world's digitalized books.
 - Very large digital library
- Stakeholders
 - Google, Publisher, Author, User
- Problems
 - Agreement with authors
 - Protest action
 - Open Book Alliance
 - member : Microsoft, Yahoo!, Amazon...
 - Compensation for author
 - In current compromise settlement
 - Author and Publisher : 63%
 - Google : 37%

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Creative Commons



- 完全な著作権保持と完全な著作権放棄の間を定義
- CC define intermediate rights between "all rights reserved" and "no rights reserved"
- 種類 (Kind)
 - 表示 (CC BY)
 - 表示-改変禁止 (CC BY-ND)
 - 表示-継承 (CC BY-SA)
 - 表示-非営利 (CC BY-NC)
 - 表示-非営利-改変禁止 (CC BY-NC-ND)
 - 表示-非営利-継承 (CC BY-NC-SA)



クリエイティブ・コモンズ

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Creative Commons

- License structure
 - Commons certificate
 - display the right
 - License
 - license article for a low
 - Metadata
 - RDF structure
- Examples
 - JOCW (Japan Open Course Ware)
 - This project makes learning materials available on the internet.
 - Member: Osaka Univ., Kyoto Univ., Keio Univ., Univ. of Tsukuba, Waseda Univ., JOCW.jp/

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Discussion Point

- Content management is becoming a problem on the internet
 - copy and distribution cost is low
 - online browsing is convenient for users
 - acceleration of content digitalization
- How do you think digital content rights should be?
 - users should respect the rights of a content.
 - the creator of a content should define an appropriate compensation price.
 - also, usability should be guaranteed.
- Is current approach correct? How should it be?
 - Dubbing10
 - Google Book Search
 - Creative Commons

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