

Security Management in the Internet Era

10th: Evaluation of Security Risk
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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)

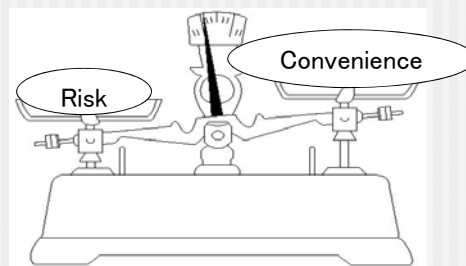
14th (1/12) Final Presentation (1)

15th (1/19) Final Presentation (2)

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Risk and Convenience

- Why do you ride a car at risk?
 - Number of deaths from traffic accidents has fallen
 - Number of injury from traffic accidents has up



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What's Risk Management System?

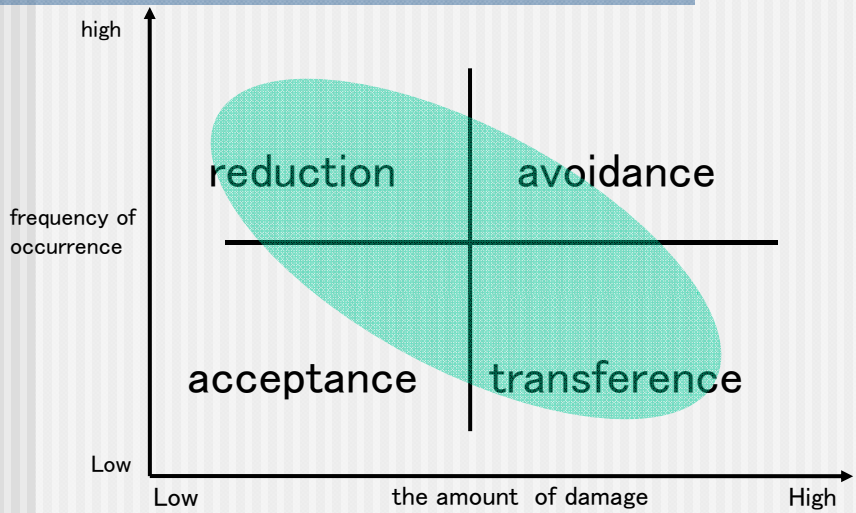
“Total management system to establish, implement, operate, monitor, review, and maintain information security based on business approach”

“Including organization structure, policy, plan, responsibility, procedure and resource management system”

[ISO/IEC27001:2005]

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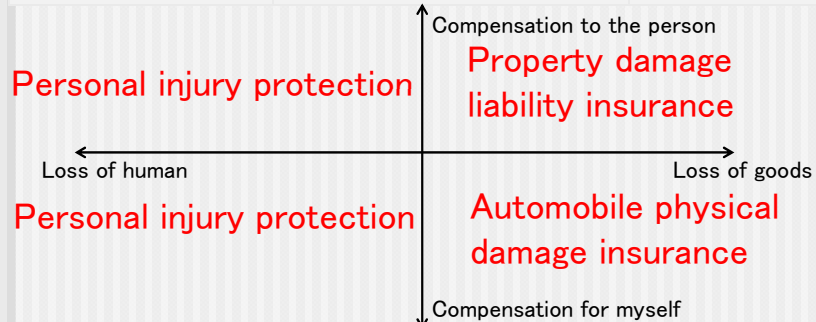
Types of Risk Countermeasure



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Examples of risk transfer

Event	Expected Risk	Countermeasure
Driver Accidents	<ul style="list-style-type: none"> • Injury to the person • Passenger injured • Damage to the goods • Own car 	Insurance



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Examples of Risk Reduction

Event	Expected Risk	Workaround
Hospital blackout	<ul style="list-style-type: none"> ▪ Patient, Avoiding surgery ▪ Integrity of electronic medical records 	<ul style="list-style-type: none"> ▪ Private electric generator ▪ Handwriting

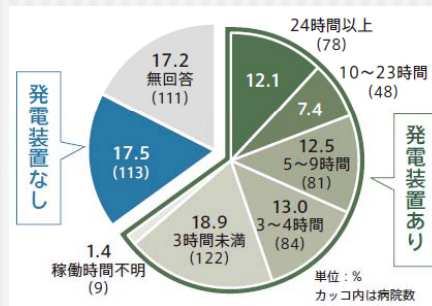


図1 Power Failure in a Tokyo hospital

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Risk management of Information Security

ISO/IEC 27002

- | | |
|-----------------|--|
| Confidentiality | Assurance that only the person who has the right to access it. |
|-----------------|--|
- | | |
|-----------|---|
| Integrity | Protect information and its processing is precise and integrity |
|-----------|---|
- | | |
|--------------|--|
| Availability | Assurance that user can access whenever it is needed |
|--------------|--|

Risk

||

Vulnerability x Resource x Threat

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Example of Risk Management -Data Center in disaster-

- Falling back
 - Which service to continue or not
- Fail-safe
 - UPS for power outage
 - Shut down servers before the loss of power
- Fault-tolerant
 - Hot swapping
 - VRRP



Risk Management of information leaks

- Example of Information leaks
 - SONY
 - On April, 2011 PlayStation Network hacked
 - 77 million people are thought to have been affected (including name, address, mail address, login detail)
 - Offered several game titles for free
 - Softbank BB
 - On January, 2004 Softbank has announced that leak has occurred which affect 4.5 million user
 - Paid 500 yen for each consumer
- Recompenses are differed by company

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Risk management of Information leaks

- Leaks in Schools
 - Example of Keio Shonan Fujisawa Junior & Senior High School
 - Teacher dropped a Hard Disk which contains name and picture and academic results (September, 2011)
 - Issue a press release and administer a rebuke
- Leaks in personal level
 - Put too many “to:”s when sending a mail
 - Just say “sorry!”
- Recompenses are different and not enough..



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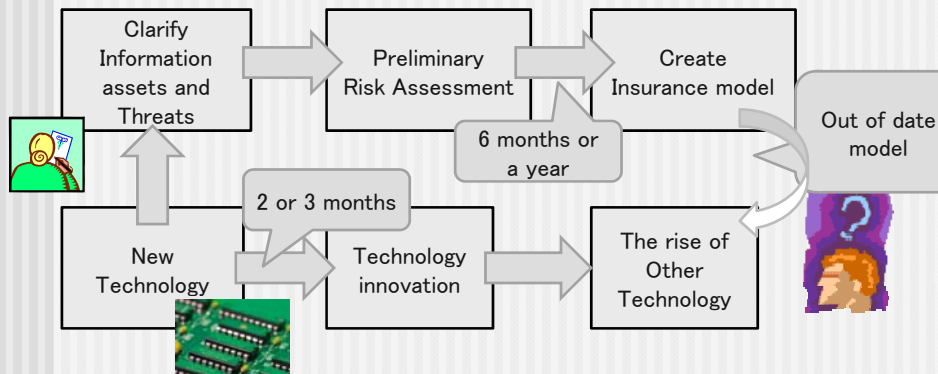
Discussion

- Are personal information holders who made information leak dealing enough to the tragedy?
 - Is 500 yen / person enough for you ?
 - If it is OK, how about for venture companies who can not afford it?



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Problem of Current Risk Management



Security (Insurance) model in the field of IT

- It is important for any business or service to create security (insurance) model
- **But ,technology is constantly advancing**

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Code breaker from the future

- Growth of the Information handling ability
 - Improvement of the technique of code breaking
 - Rise of Quantum computer
 - Vulnerability of Existing Service
 - Malware
 - Discovery of new vulnerabilities in Service ,Software
- **In the future, all existing technologies may be broken!!**
- **These problems are now growing**
 - Ex1:WEP has broken
 - Ex2>Password Cracking using Cloud Computing



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Discussion

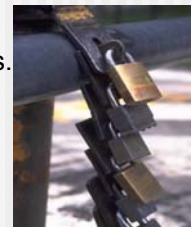
- **Problem**

- How to establish Security Model?
- Countermeasure against code breaker from the future



Countermeasure

- **Need for creating security model at short period of time**
 - Minimum of 3 or 4 months
 - Necessity of adopting an Engineer and business manager's vision of these problems.
- **Other approaches**
 - Defense in depth
 - Update to the latest version of security program
 - Security for a limited time
(All information which to be published)
Ex Publication of war Information



Summary

- Risk management
 - Risk management is widely used in many fields
 - In the field of IT, we are not good enough
 - Information Technology is constantly advancing

- International Issues
 - How to establish Security Model?
 - Necessity of adopting engineering and business manager's vision for this problem

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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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最終課題の詳細

数多くのビジネスシステムで取り扱われるデータや、多種多様なセンサーから取得されたデータを活用して、実世界を表すデジタルデータが利用可能になってきた。このようなデータを活用し、例えば、世界の飢餓人口が9億6000万人を越すなかで、日本では国内外から9000万トンの食料品を調達し、約2割に相当する1900万トンが廃棄されている

実態も明らかになっている。

また、北米では、在庫切れによる小売業者の売り上げ機会損失金額は、年間推定ながら約9兆3000億円に達すると述べる事ができるようになった。社会に存在する様々な問題を解決することを目的として、あらゆるモノが情報を発進し、様々な組織がデータを収集し、それらの関係を解析したり、可視化・分析することで、問題解決プロセスが進むことが期待されている。

この問題解決プロセスで活用されるデータセットは一般に大規模になることが多い。また、問題解決プロセスの中で、クラウド

利用が広がり、さらにグローバルにデータセットを活用することも期待されている。

このように、問題解決プロセスでは、無限の可能性が考えられている。一方、プライバシーの問題も同時に指摘されており、新たなリスク上昇の懸念も表明されている。このような状況を踏まえ、次を本講の最終課題として提示する。

我々の社会で解決すべき課題を特定し、その課題を解決するために活用できると考えられる、実世界とITが緊密に結合されたシステム、いわゆる「Cyber-Physical Systems (CPS)」を提案せよ。

さらに、このシステムの活用により、新たに生まれる懸念についても明確にせよ。

また、以下の点も考慮すること。- さまざまな視点からの議論を行うこと。技術、制度、教育の観点。また、リスクをとって進めるべきというプロモーションに重点を置いた立場からの観点についても考慮すること。

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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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Schedule

- 1 Dec. Send Staffs that how the problem to be resolved (sig2011@sfc.wide.ad.jp)
- 8 Dec. Midterm Presentation
 - Group 1 & 2
- 15 Dec. Midterm Presentation
 - Group 3 & 4
- 12 Jan. Final Presentation
 - Group 1 & 2
- 19 Jan. Final Presentation
 - Group 3 & 4