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## —e-Government & Business Collaboration WG — Overseas Research Report

Members of e-Government & Business Collaboration WG, IT Utilization Group, ECOM visited the Republic of Slovenia and Spain from February 20 to 27, 2008 to study the use of online public services (e-Government, e-health, and e-service). This is a summary report by Michihisa Uchida, Research Director.

### 1. Republic of Slovenia

According to “Benchmarking the Supply of Online Public Services” published in September 2007 under the editorship of the European Commission, the Slovene government was ranked as 15th three years ago, 7th last year and 2nd this year in the EU public online service assessment.

We visited the Slovene “MINISTRSTVO ZA JAVNO UPRAVO” (administration agency), which was founded three years ago.

The Slovene government has spent a long time to develop electronic services. Electronic procedures started in 1993 and now 1,500 public facilities in this country are connected through the network. Slovenia is the eighth country in the world that started electronic authentication. In 2000, the signature for digital certificates was introduced with the same status as a handwriting signature. Slovenia is also the second country in the world that digitized and unified residential information.

Since most administrative procedures can now be performed from the home or company, people do not need to go to public offices. Company registration previously required going to 12 offices; tax, building permission and building owner registration can be processed on the Web since 2004. You can even register your car on the Internet once you get the car inspection certification and pay the tax.



Right: Dr. ALES DOBNIKAR, Manager of International Relations Department, Civil Service Division, MINISTRSTVO ZA JAVNO UPRAVO  
Center: Mr. Michihisa Uchida, Research Director, ECOM  
Left: Mr. TADEJ KURENT, M.SC., Senior Advisor, Civil Service Division, MINISTRSTVO ZA JAVNO UPRAVO

advanced in recent years in this country, of which the population is 42 million.

Spain, which consisted of three kingdoms 500 years ago, had promoted the centralized system but approved the new constitution in 1978 to move to the constitutional monarchy system. This country now consists of 17 autonomous communities that contain municipalities and county councils (collections of municipalities) that have some autonomy. There are 8,100 municipalities and 41 county councils. The current government, which came into power in 2004, has carried out policies to implement efficient procedures for companies and individuals.

The public office agency we visited mainly standardizes public software, simplifies company and citizen procedures,



University of Ljubljana in Slovenia

Citizens aged 18 or over can obtain their citizen card. Children under 18 can also have this card if the parent applies for it. A birth number and tax number are assigned to citizens at birth.

Currently, Estonia, Finland, Portugal, Austria and Slovenia are considering unifying conditions that are different by nation. For example, the health insurance card, which supports Slovene as the standard language, will be displayable in other languages.

Introducing the use of mobile phones is not planned for the time being due to a lack of cost-effectiveness, since Slovenia is not as large as Finland.

### 2. Spain

We visited “MINISTERIO DE ADMINISTRACIONES PUBLICAS” (public office agency) in Spain to research the reasons why electronic procedures have

and assesses service implementation.

A total of 18 (17 public officers representing each of 17 autonomous communities that participate in the autonomous communities meeting and one representative from the central government) officials agree to which citizen procedures will be simplified and services to be introduced. There is a sort of council that consists of representatives from the industry, companies, universities and user communities as the advisory organization. Their ideas and complaints are discussed in meetings within the autonomous communities. As a result, Spain has moved from a system where citizens express their opinion through representatives or lawmakers to a sort of participatory democracy where each citizen's opinions are put together. Biennial meetings are also held between the autonomous communities and the central government to discuss the results and to assess the simplification of citizen procedures and service implementation.

The current government is mainly engaged in the following activities:

- Since 2004, the government has had both rich and poor municipalities kept in alignment. For example, when introducing new business software into a poor municipality, the cost is evenly shared by the central government, the autonomous community, and the municipality.
- Spain has given priority to services for companies. This has resulted in improvements of company productivity, generating profits. Spain has the same rank as Norway in the EU public online service assessment mentioned above.
- The government implements services that citizens can comfortably use. For example, when procedures become necessary at the same time in the central government, autonomous communities and municipalities, you can complete the procedures at once. The government considers doing away with procedures that may be unnecessary for simplification because it is the citizens that determine whether or not the system is useful.
- The government is examining barrier-free services that visually-, or other handicapped persons can access without problems.
- Some procedures are supported across borders. The government has started preparations according to a plan called eu2010 so that a user can, for example, access the database in Sweden and make a report to the French government when performing a procedure in Spain.
- When a citizen in municipality A makes an application to municipality B, the authentication in municipality A is automatically verified. The application is accepted even if the citizen cannot be authenticated in municipality B, as long as he/she was approved in municipality A.
- Citizens can permit the central government or other public office to use their data registered with their municipality or other office. The government must not ask where the citizen's data is registered. If the citizen does not permit the government to use his/her data, that citizen must bring the data registered with the municipality to the central government or other office in person.

All citizens will have eid cards by the end of this year. This card expires every ten years and must be replaced at that time. The validity period of the electronic signature on the eid card is thirty months so you need to update it every thirty months.

If you forget your PIN code, the police identify you by fingerprint authentication using a card reader and will then provide a new PIN code.

People aged 14 or over can obtain their eid card, though this is not obligatory. This card is available five months after birth upon application.

The final goal of the Spanish government is to create new services in response to citizens' requests, create a new application method, eliminate waiting lines in public offices and reduce the amount of paper generated. In addition to the application procedures now available (office visit, phone or Web), the procedure service test that uses terrestrial digital broadcasting was started in 2007.



Right: Mr. Jorge Barallat Quincoses, Nation Management Modernization Organization Chief  
Left: Mr. Michihisa Uchida, Research Director, ECOM

# Outline of Lectures at the “28th ECOM Seminar” —Document Storage/Management and Long Term Storage Technologies—

The monthly ECOM seminar was held at Kikai-Shinko-Kaikan Bldg. (Shibakoen, Minato-ku, Tokyo) on January 24, 2008. There were 96 attendees, including ECOM members and general participants.

Since the J-SOX Law (Financial Instruments and Exchange Law) was enacted in the Diet session in June 2006, the technologies to assure and maintain the authenticity and integrity of electronic documents are demanded more than ever. ECOM's Electronic Signature Dissemination WG is considering the use of the “long term storage format (long term signature format) for signed document” as the technology to assure the authenticity and integrity of stored electronic data (documents). ECOM has standardized the “long term signature format profile” as part of this consideration. In this seminar, members of the Electronic Signature Dissemination WG introduced the latest move in the electronic document (data) management method field.

## ◆ Lecture 1 Document Management and Long Term Storage Technologies

Michihiro Kimura, NEC Corporation,  
Chair, Electronic Signature Dissemination WG, ECOM

### [What Issues Does Long Term Storage Have?]

#### - Structure of electronic documents

An electronic document is recorded on the media in a file format. Reading the recorded data as a document involves the device itself, the OS, application, driver and other components. Attaching an electronic signature or time stamp requires the certificate authority or time stamp authority service. Management of an individual's identifier and attributes must also be considered as part of electronic signature management.

#### - Issues related to long term storage of electronic documents

The following three issues exist in relation to long term storage of electronic documents: (1) Location of the document is unknown, (2) Document cannot be correctly read, and (3) Authenticity cannot be verified. Issue (1) is caused by absence or inconsistency of the management system. Issue (2) is caused by degradation of recording media or termination of drive or other equipment maintenance. Issue (3) occurs when signature verification information cannot be obtained or the signature algorithm is compromised. It is important to take measures against these problems before they surface.

### [Long Term Storage]

#### - Requirements for long term storage

Recording media for documents includes magnetic tape, optical disk, and magnetic disk. Their expected lifespans are generally ten to thirty years, though the actual lifespan largely depends on the environment and handling.

Requirements for long term storage include highly reliable media (for which expected lifespan is assured), long term provision and maintenance of the drive, and writing quality assurance.

Storage media suitable for long term storage are the optical disk for business use, magnetic disk with RAID structure, and magnetic tape (LTO) library.

#### - Issues of writing quality and migration (media transition)

Immediately after data is recorded on the media, you could normally read it even if it has not been successfully written as long as the error is not so serious (within the modifiable range). However, after some time passes, this erroneous part degrades, exceeding the error modification limit and causing a reading error. For the writing quality issue, JIS Z 6017 provides migration guidelines.

### [Long Term Storage File Format]

#### - File incompatibility issue

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It may not be possible to read or correctly display a file in the environment after several decades due to the compatibility problem of the hardware, OS, application or other component.

It is recommended to store documents in a file format suitable for long term storage as the basic policy for countermeasures against the file incompatibility issue.

#### - Requirements and recommended formats for long term storage file

A long term storage file must be human readable, have open specifications, support canonical expressions and have continuity from use to storage. Recommended file formats include the PDF and XML formats. The PDF format was adopted by ISO as an open specifications document file format in December 2007 and its specifications are scheduled to be soon published.

#### [Long Term Signature Processing and Format]

##### - Limit of electronic signature

The validity period must not end and the signature must not expire when an electronic signature is validated. Otherwise, validation is not possible. Therefore, a measure is needed to verify that the signature was valid at the time of signature even after it expires or the validity period ends (re-verification of signature).

##### - Methods that allow re-verification of signature

To re-verify the signature, it is required to determine the signature time and to safely store the verification information. Methods such as time stamp duplication (long term signature format), storage in tamper-proof hardware, safe storage by stringent operation, deposit to (electronic) notary are provided for this purpose. ECOM recommends the long term signature format method because a third party can verify the signature.

##### - JIS draft for long term signature profile

ECOM has proposed a long term signature profile for electronic signatures using CMS or XML as a JIS draft. ECOM created this draft by extracting the sections necessary in Japan from well-known European long term signature standards.

#### [Record Management]

##### - Recording metadata

Dublin Core (ISO 15836) is normally used as metadata for document management. In addition to this, you should introduce “preservation” such as storage and “management (administrative)” such as acquisition path as metadata and appropriately deploy them in your system and document.

### ◆ Lecture 2 Use of Document Management and Record Management for Internal Control—Use of Management

Takuya Mizokami, Certified SOX Advisor, Internal Control Business Promotion Division  
Hitachi Software Engineering Co.,Ltd  
TF Leader e-Document Management, Electronic Signature Dissemination WG, ECOM

#### [Procedures toward Conformance to J-SOX Law]

Establishment of internal control goes through the following steps: <planning> → <deployment preparation> → <documentation of internal control> → <operation test and validation> → <location and improvement of defects> → <internal control report>.

#### [Record and Storage Guidelines in Practice Standards]

Chapter II in “Practice Standards” published by the Internal Control Committee in the Business Accounting Council in the Financial Services Agency provides the “record and storage guidelines.” These guidelines stipulate that “A set of three documents <business description, business flowchart and RCM> as well as related evidences (such as business ledger sheets and data) shall be stored.” However, there is no guideline for specific management methods. The “System Management Standards Revision” issued by the Ministry of Economy, Trade and Industry also stipulates record and storage in “Appendix 4.” As with the Practice Standards, there is no guideline for specific management

methods.

As described above, the guidelines clearly state documents to be recorded, vouchers and other items but do not show specific record and storage measures. These are left to each company's value judgment and consultation with an auditor.

#### [Assessment Stipulated by J-SOX Law and Document Management Provisions]

##### - Assessment stipulated by J-SOX Law

Create a business process flowchart for each business operation and locate the point where risk occurs. Enter the control method, the name of the related provision that describes the details of control and other information for each risk point in the control matrix.

To assess conformance, the actual worker verifies the existence of the procedural manual and provisions (documents) that describe business procedures that show the details of the controls and the presence and processing of the voucher that must be stored. To assess the operation, a third party verifies the presence and processing of the voucher that must be stored as stipulated by the procedural manual or provision.

To extract vouchers, the operation tester in the assessment team normally orders the test points to collect samples. Then, the field worker finds the specified ledger sheet and extracts samples. This operation test has a problem in that the document storage method may depend on individuals because the ledger sheet management method is not assessed.

##### - Results of Questionnaire Made Up by the Records Management Society of Japan

According to the Records Management Society of Japan's research results, the "Current Status and Issues of Records Management Activities within Manufacturing Companies in Japan" (2006), document rules that apply to the company or company group as a whole conform to the company-wide document management rules and other recent voluntary legal restrictions, but have become a dead letter. Type and categorization of stored documents that must be used across the company also no longer have their original effect. Whether a stored document is kept or discarded is selected by the department chief (depending on individuals). The document disposal record cannot be checked. It is difficult to see the existence of documents used inside the department from outside the department. As for modification and approval of document management rules and consistency checks, the factory rules take priority and the company-wide standards have lost their substance.

As described above, rules may become a dead letter if either some necessary operation rules may not exist or if the field may have changed the rules without asking. Therefore, the document management method could still depend on individuals, causing management errors or leading to misconduct.

#### [Recommendation of Record and Storage Management Method]

##### - What is ISO 15489 (JIS X 0902-1)?

ISO 15489 (JIS X 0902-1) are the international standards for record management. ISO 15489 was established in September 2001 and JIS X 0902-1 was established in July 2005. These standards cover the management methods that do not depend on the recording media and anti-tamper technology such as "setting of policies and standards" and "design, introduction, and management of special record management system." In particular, "authenticity," "reliability," "integrity" and "usability" are required as record management requirements.

Applying ISO 15489 (JIS X 0902-1) eliminates individual dependency from document registration and storage methods and effectively prevents false entry and accounting fraud. It is recommended that these standards be applied to documents covered by ISO 19000 and ISO 14001 as well as J-SOX-related documents.

##### - Procedure for constructing the record management system

It is desirable to first research and analyze the situation of internal control-related documents and records as a whole and then reconstruct the record management system. It is important to not only design the record management system but also check it and take actions when constructing it.

Just creating rules is not enough. You should review unrealistic provisions and appropriately develop realistic operations through automation or other measures. It is important to apply the PDCA cycle not only for assessment provided by J-SOX Law but also record management that supports it.

#### [Paper Storage Risk and Elimination through Automation]

For example, the following risks can occur in relation to paper storage in the cabinet: (1) The supervisor can freely

access all papers (risk of tampering and replacing documents), (2) The access history is not kept (risk of tampering, replacing, and losing documents).

IT-based storage has advantages such as (1) automation of operations following company rules, (2) prevention of tampering and document replacement, (3) user authentication, (4) authority management, (5) access log record, and (6) disaster control and backup storage in a remote location.

In general, IT-based document storage can be realized at a much lower cost than paper-based countermeasures against storage management risk. Application of IT-based document management is beneficial although you need to consider individual legal restrictions for the target document, digitize paper documents, and change the paper document procedure to the electronic document procedure.

◆ Lecture 3 Comparisons of Long Term Storage Technologies  
for Documents with Electronic Signature

Kazuya Miyazaki, Information Technology R & D Center  
Mitsubishi Electronic Corporation  
Vice Chair, Electronic Signature WG, ECOM

[What Is the Long Term Storage Technologies for Documents with Electronic Signature?]

- Ensuring authenticity of the electronic document

The “electronic signature” is used to ensure the reliability (identity, integrity, authenticity, and credibility) of electronic documents. Unlike signatures and stamps, electronic signatures have an expiration date.

- Limit of digital signature

The digital signature assures the expiration date by using the public key certificate. The signature created during the validity period can be validated during that period but cannot be validated after the period ends because it cannot be differentiated from a signature created outside that period. Once the signature expires, it cannot be validated even during the validity period and no expiration information is issued after the validity period ends.

The reliability of the electronic document cannot be maintained for a long time since the validity of the digital signature does not last long. It is required to verify that the signature was once valid after it expires or the validity period ends (enablement of long term signature verification).

- Requirements for enablement of long term verification

To enable long term verification, it is required to (1) determine the signature existence time, (2) acquire the evidence information necessary for verification (verification information), (3) make it possible to detect tampering of information necessary for signature re-verification, and (4) store information for keeping tampering detection available. Long term verification can be realized using either the long term signature format, ArchiSig method, hysteresis signature, or long term signature format + Secure Seal.

[Overview and Characteristics of Each Method]

- Long term signature format

The long term signature formats are divided into the CMS and XML versions. The CMS version of the long term signature format allows you to input data necessary for the long term signature in the original signature format.

\* Characteristics

Anyone can assign a long term signature and anyone can take it over. This method has high portability: You do not need to select a specific time stamp authority nor are bound to a fixed system. Although each signature needs multiple archive time stamps, they can be kept as-is when the document is exchanged.

- ArchiSig method

The way of assigning the signature time stamp and verification information to the original signed data is the same as that for the long term signature format. The package of signature time stamp, verification information and other data is registered to the stamp archives as a data object, and its existence is proved using the archive stamp. Time stamps can be saved as multiple data packages; they are aggregated into a hash value tree, and an archive stamp is added to the hash value at the top. The system load can also be reduced because you can add a new time stamp to a single archive stamp without having to extract the original data before the digital signature expires.

\* Characteristics

Time stamps can be saved. Because multiple documents can be associated before storage, document loss can be detected. This method is effective in archiving a large number of documents. However, this method has the following disadvantages. That is, the hash tree must be generated and managed. The document size becomes large in exchange because related hash values must be packed. Troubleshooting a compromised hash is complicated.

#### - Hysteresis signature

The signature history that records what signatures the signer has made is used. When a new signature is created, it is recorded as a combination of the hash value for the last signature record (signature/document hash/signature record hash) and the document hash value. The legitimacy of the signature history is ensured by publishing the signature record in a paper publication at a certain time or by assigning the time stamp.

#### \* Characteristics

As the signature record and history are published, no time stamp is required. If time stamps are used, it is possible to save them. However, you need to expand the standard signature format and manage new items such as signature history. Also, countermeasures against a compromised hash have not yet been established.

#### - Long term signature format + Secure Seal

This method uses Secure Seal for the archive stamp.

#### \* Characteristics

Because RSA encryption is not used, the validity period of the time stamp is long and you do not need a lot of archive time stamps. However, the user cannot verify the documents and therefore extremely high reliability must be expected from the time stamp authority. This method is not appropriate for when documents are exchanged.

#### [Summary]

The long term signature format is appropriate to storage of documents that are widely exchanged. The ArchiSig method is suitable for storing a large number of documents. The hysteresis signature is suitable for storing documents within your own organization or those received from another organization. Secure Seal is suitable for storing documents used within an organization or storage services targeting specific customers.

### ◆ Lecture 4 Report on ECOM CAAdES/XAdES Plugtest 2007 Results

Kenji Urushima, Entrust Japan Co.,Ltd

Vice Chair, Electronic Signature Dissemination WG

Project leader, ECOM CAAdES/XAdES Plugtest 2007, ECOM

#### [What is CAAdES/XAdES Long Term Signature Format?]

##### - Expansion of CMS and XML signatures

The currently common signature formats are divided into the CMS signature and the XML signature in binary format. The CMS signature is used for general data, S/MIME (signed e-mail) or PDF files. The XML signature is for data with a hierarchical structure represented with text as the element technology of Microsoft Office, SOAP, SAML or the like and used for e-mail with encrypted signatures or data with electronic signatures, for instance. Because the signing time of these signatures cannot be publicly guaranteed, it is not possible to determine “whether the signature was made while the identity certificate was valid, or to validate the signature in the case where the encryption algorithm is broken in the future.” Long term signature formats such as CAAdES and XAdES solve these problems by attaching the time stamp to the signature described above. This solution has advantages in that “rough verification is possible using the original CMS or XML signature verification tool,” and that “you only need to verify added elements.”

#### [Overview of Field Trial]

##### - Overview of 2007 long term signature format interoperability test

This test intends to verify that the long term signature formats conform to CAAdES/XAdES standards and the JIS draft, verify the interoperability of data generated by each organization, and perform an international interoperability test. The common data verification function conformance test and signature generation and verification interoperability test have been completed in Japan, and the international trial is currently being performed.

##### - Participants in 2007 field trial

A total of 25 organizations participated in the field trial this year. 14 companies participated in the CAAdES trial, eight companies in the XAdES trial, and two overseas organizations and eight Japanese companies in the international trial.

In addition, three companies provided time stamps for test and another three companies designed test cases.

#### - Characteristics and Advantages of ECOM CADES/XAdES Plugtest 2007

This test is one of the world's largest interoperability test events for CADES and XAdES. One of its characteristics is the international implementation of trials. Other characteristics include the following: both the signature generation and verification functions were tested, interoperability with almost all implementations in Japan was checked, and TSA for testing used hardware equivalent to the non-free services provided by three Japanese certified time authentication providers.

#### - Signature data generation and verification interoperability test (former online test)

This test intends to check that data in the CADES or XAdES format generated in another company's implementation can be read and verified. Each company generated effective CADES and XAdES formats (T, A) in each implementation using the specified certificate, CRL, and time stamp service. Then, each company read and validated the data generated by other companies in each implementation. This test used five types of test cases including ES-T basic test (time-stamped signature generation verification test for each basic test signature format (enveloping, enveloped, detached)) and ES-T time stamp authority test (test to verify that the time stamp authorities for the three tests are supported).

#### - Standard conformance test of verification function (former offline test)

This test intends to check the verification function of the implemented long term signature format. Test targets (a set of data (ES-T and ES-A), verification information, and setting information) in the ES format generated by the secretariat were validated offline in each company's product. In other words, this test checked whether valid signatures and those that become no longer valid due to expiration or tampering can be correctly validated.

#### [Trial Result]

In the CADES generation and verification interoperability test, there were almost no problems in every test case and under any organization's implementation.

The result of the XAdES generation and verification interoperability test was similar to that of CADES test. It became clear that a lot of companies have implemented optional XAdES functions.

The verification function standards conformance test using common data showed that there is no problem regarding each item supported by each company.

If implementation passes the basic test, either generation or verification satisfies the requirements in the JIS draft. Thus, all participating implementations had sufficient JIS draft conformance regarding the provision of the CADES and XAdES basic functions.

#### [International Trial]

##### - ETSI-ECOM XAdES Japan and Europe Pretest (January to March 2007)

Technical University of Catalonia (Spain), A-SIT, IAIK (Austria), NEC, and Entrust Japan participated in the XAdES Pretest to prepare for the XAdES Plugtest scheduled to be performed in March 2008 by ETSI. AMANO Time Business Corporation cooperated as the time stamp authority. Participants performed generation and verification tests equivalent to the ECOM online matrix test, exchanged test plans, specifications and data by e-mail and held telephone meetings about once a month.

##### - ETSI XAdES Plugtest (March 2008)

ETSI plans to host the XAdES Plugtest in March 2008 based on the results of the ETSI-ECOM XAdES Japan and Europe Pretest. This will be a remote test using e-mail and telephone meetings like in the ECOM test.

##### - ECOM international trial

Two overseas companies and eight Japanese companies are currently performing the international trial, the same as with the domestic trial in ECOM.

#### [Future Challenges of Field Trial]

As old formats cannot be verified in many implementations, it is required to add more tests to verify backward compatibility. It is also necessary to enhance test cases for SHA2 family tests in XAdES and other OCSPs.

## Outline of Lectures at the “29th ECOM Seminar” —Latest Movement in Overseas EC—

The monthly ECOM seminar was held at Kikai-Shinko-Kaikan Bldg. (Shibakoen, Minato-ku, Tokyo) on February 5, 2008. There were 60 attendees including ECOM members and general participants.

As IT technologies have improved and the Internet has become widely used, the electronic commerce market using them is globally expanding. In this seminar, the latest movement in overseas electronic commerce was reported. The seminar especially focused on the United States, which is advanced in this field, and China, which is dramatically growing, and explained their current situation and movement in detail, presenting new trends such as the EC case examples using Web 2.0.

\* This seminar’s lectures are based on the results of research performed with money raised from bicycle races.

### ◆ Lecture 1 Current Situation and Vision of Electronic Commerce in the World

Chiyo Kobayashi, Chairman, Washington CORE LLC

#### [Movement of World Electronic Commerce Policies]

##### - Government policies: characteristics in 2007

While the world electronic commerce market is growing stably in terms of scale and growth ratio, electronic signature laws that give legal force to electronic signatures and privacy protection laws came into force and foundations for diffusion of electronic commerce were enhanced across the world in 2007. International institutions are actively implementing these measures and establishing collaborative frameworks. OECD, APEC and other organizations provide guidelines and frameworks regarding privacy protection and data security which are appropriate to each country’s situation. ASEAN countries announced the Beijing Joint Statement on the ICT Partnership with China and committed cooperation in ten fields.

##### - Broadband—toward the ubiquitous society

Developing and advanced countries in terms of the Internet are enforcing policies appropriate to their individual situations. Australia (developing country in terms of the Internet) has launched the broadband diffusion initiative to guarantee high-speed Internet communication access for 99% of population. On the other hand, Korea (advanced country in terms of the Internet) announced the concept of mandatory “ubiquitous network” construction in their metropolitan areas.

#### [Future of Electronic Commerce Policies in North America]

##### - Concerns about new technologies and privacy violation

As companies have come to regard electronic commerce as part of eBusiness rather than perform activities particularly focusing on it, new technologies such as behavior marketing, SNS, and ubiquitous technologies are facilitating privacy violations. Policy decision makers have concerns about behavior marketing as a wide variety of private information is controlled by Internet companies. They are also worried about SNS because private individual information may be used for advertisement purposes without permission. For ubiquitous technologies, there is a risk that individual information could be stolen from the information terminal.

##### - Political efforts by U.S. federal government

The Federal Trade Commission (FTC) is a U.S. federal agency that protects consumers in relation to new technologies. The FTC is paying attention to technology fields such as RFID, sensor networks, mobile commerce, and social networking services (SNS) and considers what policies are needed for these technologies.

Regarding policies and restrictions on IT technology, the U.S. government has the policy of waiting for advances in the private sector and basically avoids setting restrictions until new technologies mature. They adopted this policy to avoid restraining the possibility of innovation by strengthening restrictions, and therefore monitor the movement of new technologies in the market and assess when to set restrictions or take other actions.

Although the U.S. government tends to only focus on the domestic market, the country has become more and more interested in international movement and has adopted global electronic commerce policies such as benchmarks between the three poles (U.S., Europe and Asia).

Enterprises and universities in North America are seeking new business models related to electronic commerce to realize service innovations developed from Web 2.0 once the privacy-related restrictions and framework are established.

#### [Companies' Efforts toward Enterprise 2.0]

##### - Enterprise 2.0

Some companies have begun adopting Web 2.0, which is mainly grown in the consumer market, as the core of collaboration.

##### - Case example 1: LEGO (large world-class toy maker)

Consumers can create their own robots by combining LEGO blocks with gears, motors, microprocessors and other parts in their LEGO product line, Mindstorms. Initially, proprietary RXC software was developed to move this robot. However, the software code was unintentionally disclosed on the Internet by a student. After this incident, LEGO shifted to product development involving consumers and achieved success in further increasing their product's value.

##### - Case example 2: DrKW (international investment bank)

DrKW has offices around the world and more than 6,000 employees. This bank had a problem that different locations were not able to smoothly communicate with each other. With the introduction of Wiki, employees and groups at different locations can now perform brainstorming together and online management has become possible. As a result, they can now effectively present documents and other data.

#### [Service Innovation]

##### - Service innovation

As global competition is becoming fiercer, the service industry not only accounts for a large share in the economic sector but also has a large influence on productivity in all industries, including manufacturing.

##### - Case example: Bank of America

Bank of America provides a service called "Keep the Change." When you buy something using the bank's debit card, the rounded price is withdrawn from your checking account and the remaining cents are automatically transferred to your deposit account. In addition, the bank donates the amount equivalent to the remaining cents (up to \$250 per year). Since this service started, the bank received about 2.5 million new customers and achieved a maintenance ratio of 99%. This success stemmed from technological and engineering approaches adopted in a series of cycles from idea to launch. It is important to have a process that does not depend on individuals' guesses or experiences but organizationally deepens the study and creates innovation.

### ◆ Lecture 2 Latest Movement of Electronic Commerce Market in China

Jian Min JIN Ph.D, Senior Research Fellow, Economic Research Center  
Fujitsu Research Institute (FRI)

#### [Internet Diffusion and Electronic Commerce Market in China]

##### - Communication and network market and Internet business field in China

The number of cellular subscribers is continuously increasing in China, indicating that cellular phones started spreading across the rural market. The number of Internet users is also growing and it will certainly surpass the U.S. some time in the future. In addition, the Internet industry market in China has been expanding, reaching 13.31 billion yuan (170 billion yen).

Fields such as value-added mobile communication services and Internet games have large shares in the Internet industry market in China. Among others, the market shares of Internet games, Internet advertisements, electronic commerce, and travel reservations are increasing.

#### - Rapidly growing EC market

The EC market is also rapidly growing in China. CCID, a research company, has forecast that the B2B EC transaction amount will reach 7 trillion yuan in 2012. Although the B2C/C2C EC market is also burgeoning, the Internet sales are still small, only accounting for 0.5% of nationwide product wholesale sales.

The penetration of Internet shopping is low in China. The ratio of Internet shoppers to the Internet population is 22.1% and the number of shoppers is 46.4 million. "Transition of Internet Shopping Market" shows that the C2C share exceeded 70% in 2006 although it only accounted for less than 30% and the B2C constituted a large share in 2003. From this, it can be said that the security level in China has been improved. Now, the EC online settlement system suitable for the Chinese society has been introduced and logistics, cache flow, security and other problems are being solved. Banks started lending money to small-and-medium-sized businesses together with companies that offer payment systems created for EC.

#### - Electronic commerce vendors entering into Internet competition

"Per-Vendor Share in the Internet Industry Market in China" includes an instant messenger provider, Tencent, online game providers, NetEase and Shanda, a B2B e-commerce provider, Alibaba, and a portal site operator, Sina. Each of these companies conducts business specializing in individual services.

Alibaba is an extremely well-known B2B service vendor. Alibaba and other Chinese B2B service vendors have also gained support by the global capital market. In the B2C service market, Amazon has the top share but a lot of competitors fiercely compete with each other. Specialized vendors are more successful than total vendors. In the C2C service market, Taobao accounts for most of the transaction volume. In addition, other service vendors including Paipai (instant messenger) and Baidu (search engine) started entering into the C2C EC service market.

Like the U.S. and Japan, the "ESE (E-commerce based on Search Engine) + ESN (E-commerce based on Social Network)" business model is being deployed in China.

### [Development of Web 2.0 in China and Its Impact on Companies]

#### - Development of Web 2.0 (such as BBS, blog and SNS)

The growth rate of BBS users is high in China. BBS has a higher commercial value than other Web 2.0 services such as blogs and SNS because BBS participants tend to be highly-educated, specialized and have higher income.

The number of bloggers is dramatically increasing in China, exceeding 40% of Internet users. Bloggers who frequently update their blogs are 47 million. So, it can be said that one out of thirty Chinese is a blogger. Major reasons for registering and reading blogs are individual interest, fun or entertainment. Companies that provide businesses for daily living pay attention to the blog, though Web 2.0 services for blogs are applied in backwards.

It is forecast that the number of SNS members in China surpassed the U.S. at the end of 2006, and will exceed 100 million in 2010. SNS is an exclusive community and valuable within a single company. However, it is difficult to obtain the internal information from outside. Therefore, its external commercial value is low.

The number of Internet video viewers reached 63 million in 2006. The government imposed a restriction and the majority of all new sites' capital must be funded by the government to offer Internet video services after February 2008.

#### - IWOM's (buzz marketing on the Internet) impact on companies: case examples

A CCTV newscaster complained that the Starbucks store on the Gugong premises "violated the Chinese culture" on his blog. This page, viewed more than 500,000 times, provoked a discussion across the nation and the store was at last forced to be closed. On the other hand, PepsiCo, Inc. adopted Backdorm Boys, a duo that became famous on the Internet, as the face of the company. As these examples show, IWOM can have both positive and negative impacts on companies.

## [Political Movement Related with Electronic Commerce Industry and Market]

### - Approach with industrial policies rather than laws

Chinese policies are driven by industrial policies rather than laws. While no electronic commerce law was established, there are a lot of policies related to electronic commerce. There is no binding law for personal information protection, which would be equivalent to the Act on the Protection of Personal Information in Japan. So, the government addresses this issue with legal interpretations, guidelines on administrative or local levels and other measures. The voluntary restrictions by the industry are the mainstream.

Beijing city adopted the “Beijing Digitization Promotion Ordinance,” which requires registration of Internet shops. This has caused controversy as this ordinance will lead to taxation on C2C transactions.

### - EC industry developed as the modern service industry

The Chinese government has developed EC as the modern service industry. The government is integrating the Internet, broadcasting network, and mobile communication network into one electronic information network. The government is also encouraging not only Internet venture companies but also EC departments spinning off from large companies, communication carriers and software vendors to enter into this market.

## ***Letter from the Secretary-General***

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▼ The end of winter approaches and I wonder if I need a scarf and coat every morning. ▼ At the 9th Planning Committee meeting, the business plan (draft), budget (draft), proposed revisions of rules of the society, and other provisions were discussed. They are scheduled to be further discussed at Planning Committees and Board of Directors meetings and finally discussed and reported in the extraordinary general meeting in March 24 (Toranomom Pastoral Hotel). I am looking forward to seeing the members there. ▼ The 30th ECOM seminar was the last seminar in this fiscal year. In this fiscal year, we organized nine seminars that about 850 participants attended, total. I hope that ECOM seminars will continue to help you acquire the latest EC information. ▼ There is only one month left this fiscal year and each group in the secretariat is tying up loose ends to summarize their activity results. You will receive the report of these results. I hope that it will be useful for all of you. (Kataoka)