Japan's Policy Initiatives toward Ubiquitous Network Societies

- Anytime, Anywhere, by Anything and Anyone -
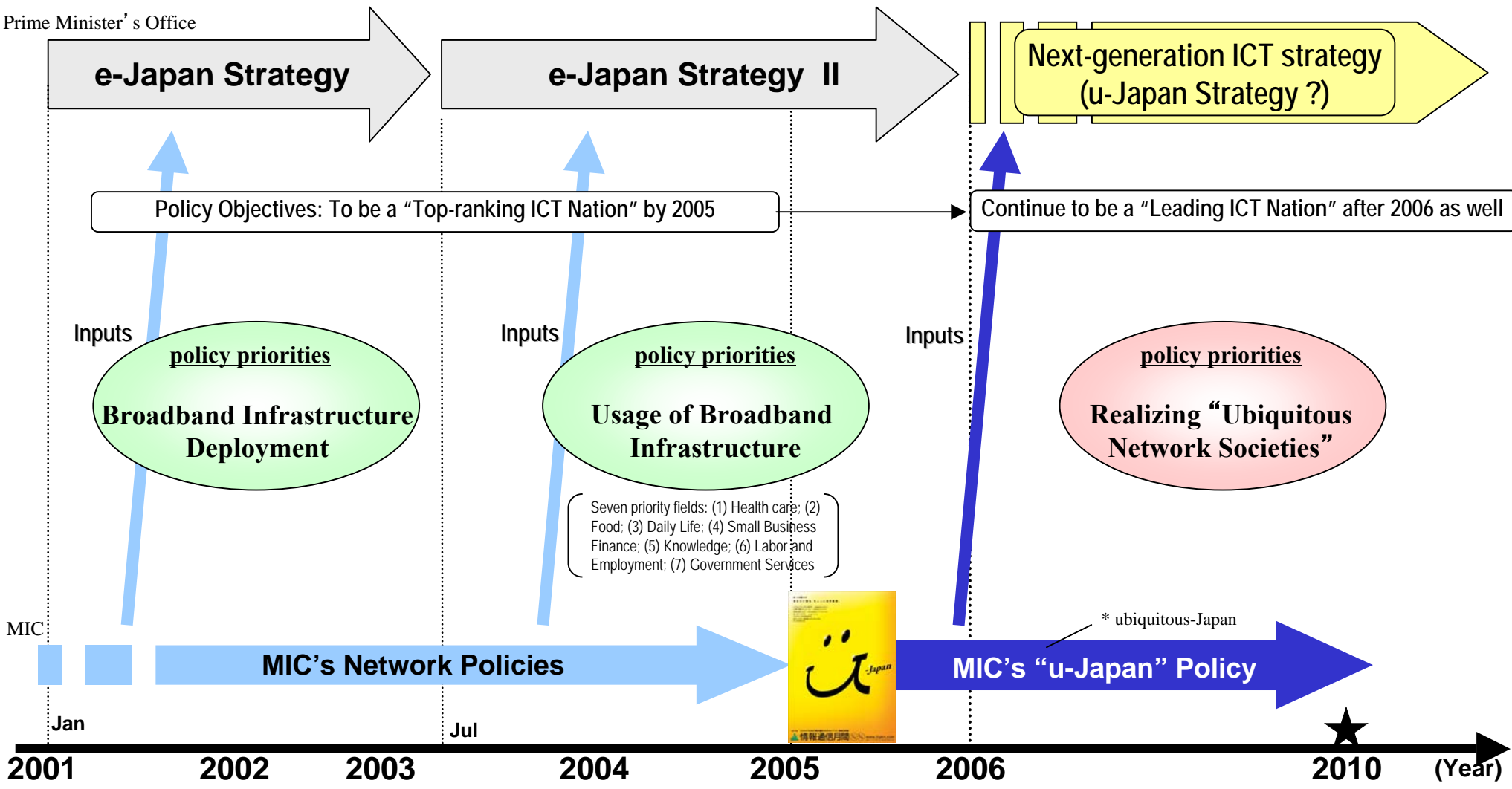
April 7, 2005

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The national ICT strategies in Japan are evolving from "e" (electronics) towards "u" (ubiquitous).

Prime Minister's Office

e-Japan Strategy → **e-Japan Strategy II** → **Next-generation ICT strategy (u-Japan Strategy ?)**

Policy Objectives: To be a "Top-ranking ICT Nation" by 2005 → Continue to be a "Leading ICT Nation" after 2006 as well

Inputs

policy priorities
Broadband Infrastructure Deployment

Inputs

policy priorities
Usage of Broadband Infrastructure

Seven priority fields: (1) Health care; (2) Food; (3) Daily Life; (4) Small Business Finance; (5) Knowledge; (6) Labor and Employment; (7) Government Services

Inputs

policy priorities
Realizing "Ubiquitous Network Societies"

MIC

MIC's Network Policies → **MIC's "u-Japan" Policy**

* ubiquitous-Japan

Jan Jul

2001 2002 2003 2004 2005 2006 2010 (Year)

1

The Potential of ICT to Resolve Social Problems

- ICT sector is showing outstanding results in structural reform. Japan will become a leading ICT country by 2005.

  – The goal for e-Japan was to become a leading ICT country by 2005. Through the concerted efforts of the government, centered on the IT Strategy Headquarters, the goal is almost achieved, mainly with respect to infrastructure. The main issues are to extend the usage of ICT. To realize our goals in the future, we are steadily promoting the e-Japan Strategy II, and other policies.

- There are a number of social problems after 2006, when Japan faces the declining birthrate and aging society.

Society and living
- Stop the population decline in 2007
- Create a livable environment for the aged
- Win back faith in food safety
- Enhance local community relationships and reliability

Labor and employment
- Employment opportunities for the elder people
- Job opportunity for young workers
- Improve working environment for women
- Secure job-hopping and skills-based employment systems

Health care / Welfare
- Realize a patient-orientated remote medical care system
- Reduce malpractice by disclosing information
- Pension system reform

Education / Human resources
- Education emphasizing on mathematics and sciences
- Reduce adolescent crimes
- Enhance international competition among undergraduate/graduate studies

Government administrative services
- One-stop administrative service in relocating
- Administrative cost cutting by computerization of procedure

Transport and distribution
- Reducing traffic accidents, alleviating transport congestion and train crowding
- Create a barrier-free environment for the aged and disabled

Public safety and disaster prevention
- Dissolve fear against terrorism and serious crimes
- Measures for earthquakes, typhoons and major accidents
- Restore public order from crimes such as picking

International
- Presence in international organizations such as the UN
- Tight relationships with Asian countries

Environment / Energy
- Stop the evolving global warming
- Reduce wastes and facilitate recycling
- Develop natural energies such as solar power
- Proper use of biotechnologies

Economy / Industries
- Recover economy and enhance competitive power
- Prevent deindustrialization in the manufacturing industry
- Promote efficiency by ICT-based business management
- Promote Japanese culture and arts

- The future trend of ICT is "ubiquitous networking". Its utilization is expected to be the breakthrough to solve social problems.
  – Ubiquitous network technology is gradually being put into practical and general use such as in smart household appliances, IPv6, IC tags, broadband and digital broadcasting.
  – Solution by the latest ICT usage is being developed such as nursing and welfare support systems that ease anxieties in old age, food traceability system to ensure food security, and home security systems to relax anxieties about public safety.
    → Expectations towards a ubiquitous society are growing

- Creating a mid-term vision to realize the next generation ICT society by 2010
  – The "anytime, anywhere, by anything and anyone" future ubiquitous society is just at our door step. MIC clearly spelled out a concept of the next generation ICT society in 2010 and published last year the "u-Japan policy package" to realize this society.

Future concepts for the next generation ICT society in Japan are expressed as "u-Japan".

ｕ－Ｊａｐａｎ (ubiquitous Japan)

Ubiquitous
Connects everyone and everything

○Easy connection to networks "**anytime, anywhere, by anything and anyone**".
・To a society where ICT will be everywhere in daily life and can easily be used.
○Person to Person plus Person to Goods, and Goods to Goods
・In every aspect, communication will play an even more important role

Universal
Friendly communication

○Friendly to people
・Can be used by anyone without thinking of the equipment or network
・The aged and disabled will be able to actively participate in society with ICT
○Contacts from heart to heart.
・Heart-to-heart communication overcoming barriers between generations and localities to create togetherness
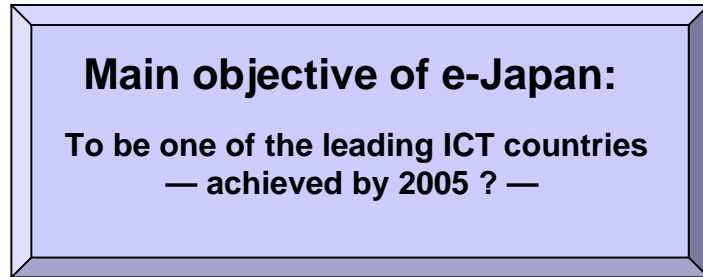
User-oriented
Based on users' viewpoints

○Close to the user
・To a society that is even more aware of user convenience than the ideas of the supply side.
・Developing technologies and services that are closely connected to our needs
○Users can be suppliers, too
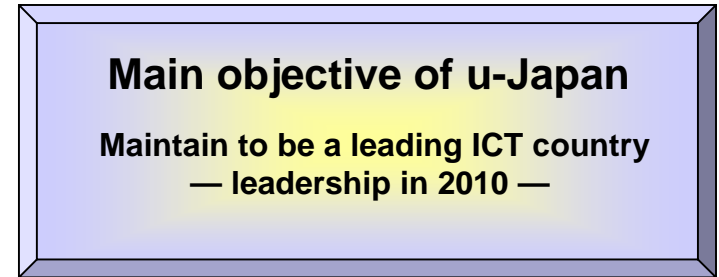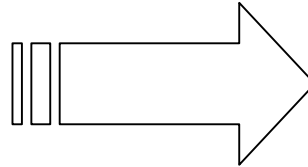・ Using the power of networking to make 100 million "prosumers"

Unique
Creative and vigorous

○Creation of vitality of the individual
・A new society where it is easy to have dreams and take on challenges even for individuals
○Vitalize the society
・Creation of new social systems and business services
・ Get out from stereotype and realize local revitalization with creativity

3

Framework of u-Japan Policy toward 2010

Main objective: to attain the frontrunner targets for 2010

Main objective of e-Japan:

To be one of the leading ICT countries — achieved by 2005 ? —

(Catching up)

Main objective of u-Japan

Maintain to be a leading ICT country — leadership in 2010 —

(Frontrunner)

Basic concept: developing from "e" to "u"

◆ ICT integrated into all aspects of everyday life at the grassroots level

◆ Creative applications to generate brand-new utilities

usage

Solution-oriented

Solution -oriented

7 leading areas

computerization

e-commerce, e-government

e - Ｊ ａ ｐ ａ ｎ Ⅱ (2003-2005) *usage*

e - Ｊ ａ ｐ ａ ｎ (2001-2003) *infrastructure*

Enabling environment

Ubiquitous network

ｕ－ｊａｐａｎ *utility evolution*

infrastructure

Narrowband   **Broadband**   **Ubiquitous network**

Three Cores of the u-Japan Policy

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By 2005

By 2010

1st: Seamless ubiquitous networks

Infrastructure

Development of an ultra-high-speed network infrastructure

High-speed for 30 million households, ultra-high-speed for 10 million households

* DSL, cable, optic fiber (wired systems)

From broadband to ubiquitous networks

Development of seamless ubiquitous networks (wired and wireless)

100% of the population to have high-speed or ultra-high-speed internet access

* Development of a seamless networking environment including shifting from wired to wireless and from networks to terminals, and elements such as authentication and data exchange

2nd: Solution-oriented ICT usage

Usage

Promoting ICT applications in seven priority fields

Health care, food, daily life, small and medium business finance, knowledge, labor and employment, and government services

* Focus on promoting information technology

From computerization to solution-oriented

Solution-oriented ICT usage to resolve social issues

80% of the population to appreciate the role of ICT in resolving social problems

* Reforming social systems and structures in order to address 21st century issues in health and welfare, environment and energy, disaster prevention and public safety, and education and human resources

3rd: Emphasis on safe and secure environment

Enabling environment

Information security measures

Adding the development of a safe and secure usage environment to the e-Japan Strategy II

* Specializing on information security measures

Drastic upgrade of ICT enabling environment

Upgrade ICT enabling environment to allay concerns in connection with spread of ICT

80% of the population to feel comfortable with ICT

* Formulate 21 strategies for promoting the safety and security of ICT, and draw up a Ubiquitous Network Society Charter for worldwide release

Structure of the "u-Japan policy package"

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Future challenges toward 2010 (identified through a demand survey targeting 5,000 consumers)

Universal
- Dwellings friendly to the elderly
- Participation of the younger generation and seniors
- Reduction of traffic jam and accidents
- Relaxing passenger tension

User-oriented
- Security measures upon disaster
- Worry-free and safe foods
- Effective use of medical information
- Promotion of recycling and garbage processing
- Efficient shopping
- Administrative procedures over the Internet

Unique
- Access to content without restrictions
- Diversified working mode
- Support for collaboration among office workers
- Increased opportunities for life-long learning

ICT contribution to providing solutions to future problems

Matured technologies and penetration thereof

Encourage efforts to implement collective and prioritized policy measures through collaboration among civil society, industries, academia and governments

Improved awareness of users

To contribute to the rest of the world as a "leading ICT nation" in 2010

By the year 2010, 100% of the population to have high-speed or ultra-high-speed internet access

By the year 2010, 80% of the population to appreciate the role of ICT in resolving social problems

By the year 2010, 80% of the population to feel comfortable with ICT

u-Japan Policy Package

Policy packege(1): Development of ubiquitous networks
- Preparation of an environment having seamless access to wire and wireless networks
- Preparation of broadband infrastructures on a nationwide basis
- Establishment of networks among products that have been embedded with various types of ICT equipment
- Preparation of infrastructures for network collaboration

Policy package (2): Advanced usage of ICT
- Social system reform in advance through ICT
- Promotion of content creation, distribution and use
- Promotion of introduction of universal designs
- Employment of ICT human resources

Policy package (3): Upgrading enabling
- Identification and clarification of "negative" problems to be resolved
- Promotion of "21 strategies for ICT's Safety and Security"
- Response to important issues becoming obvious
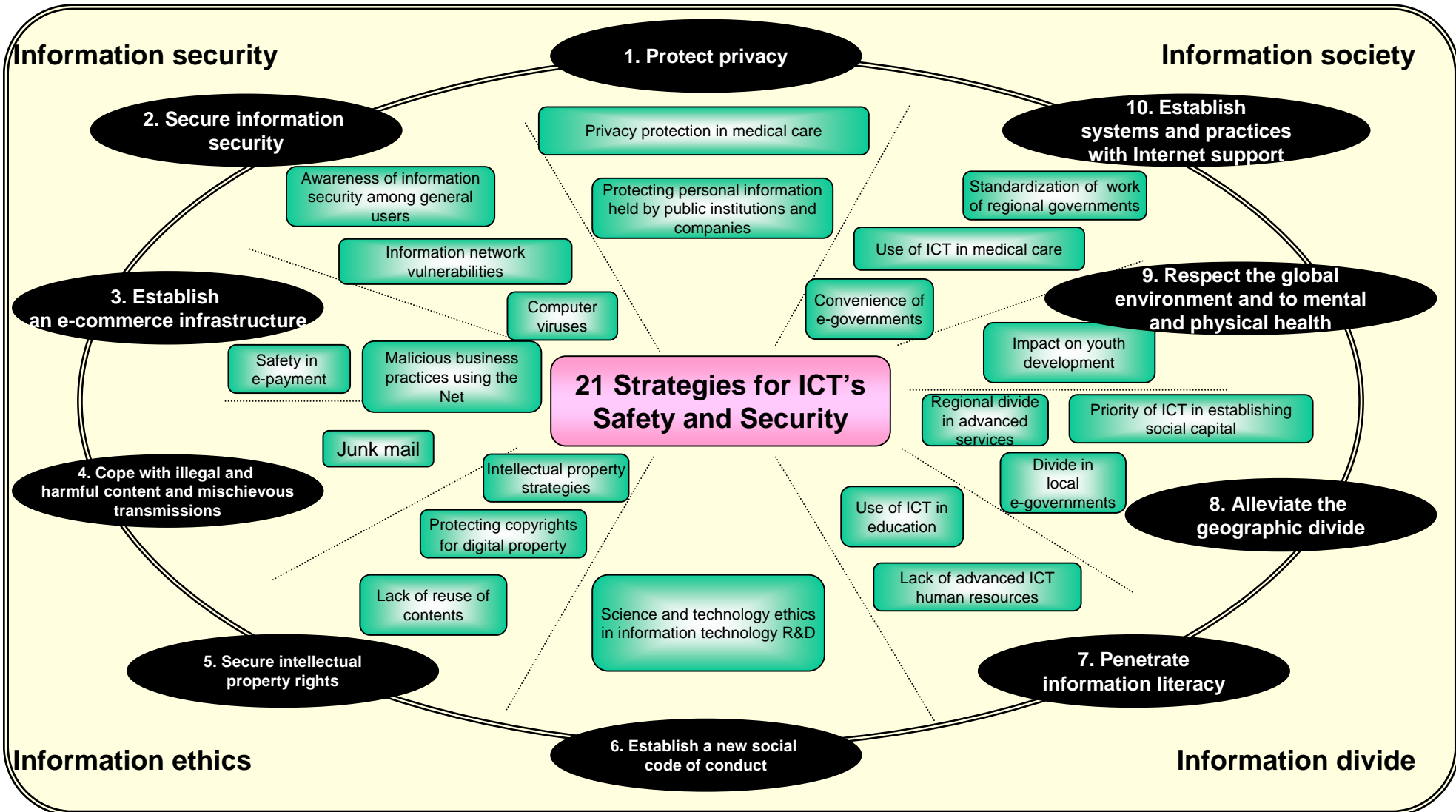- Formulation of the "Charter for Ubiquitous Network Societies"

Policy packege(4): International and Technology strategies
- International strategy: Promotion of policies not only for domestic society but also for international markets and networks
- Technology strategy: To strategically promote R&D and standardization in priority areas, and to strengthen international competitiveness through innovations

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Pick up 21 priority issues in ten categories with significant social impact requiring more attention, and formulate strategies for tackling these issues predicated on user environment

Information security

Information society

1. Protect privacy

10. Establish systems and practices with Internet support

2. Secure information security

Privacy protection in medical care

Standardization of work of regional governments

Awareness of information security among general users

Protecting personal information held by public institutions and companies

Use of ICT in medical care

9. Respect the global environment and to mental and physical health

Information network vulnerabilities

3. Establish an e-commerce infrastructure

Computer viruses

Convenience of e-governments

Impact on youth development

Safety in e-payment

Malicious business practices using the Net

21 Strategies for ICT's Safety and Security

Regional divide in advanced services

Priority of ICT in establishing social capital

Junk mail

Intellectual property strategies

Divide in local e-governments

8. Alleviate the geographic divide

4. Cope with illegal and harmful content and mischievous transmissions

Protecting copyrights for digital property

Use of ICT in education

Lack of reuse of contents

Science and technology ethics in information technology R&D

Lack of advanced ICT human resources

5. Secure intellectual property rights

7. Penetrate information literacy

6. Establish a new social code of conduct

Information ethics

Information divide

Charter for Ubiquitous Network Societies (Draft)

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Establish a charter summarizing the basic principles and shared understandings for the ubiquitous network societies
→ Propose a framework for maximizing the advantages and minimizing the disadvantages of ubiquitous network societies

Charter for Ubiquitous Network Societies (Draft)

Preamble

- **Latent potential of ICT and its role in future society**
- **Ubiquitous network society — definitions, objectives and significance**
- **Balance between free and diverse information distribution, and safe and secure information distribution**
- **Positioning of the Charter**

Free and diverse information distribution

- **Information access and dissemination rights**

Access to networks and to information in the public domain, dissemination of information over networks, the digital divide in geographical terms

- **Information diversity**

Securing the diversity of contents and the interoperability of means of access, enhancing freely available content, promoting information disclosure by public institutions

- **Promotion of information technology in business and society**

Promoting the use of ICT, safe development of e-commerce, promotion of computerization in the public sector, developing infrastructure that increases the convenience for the user

- **Information literacy**

Balancing the distribution of benefits from ICT, nurturing specialists, securing universal design, using easy-to-understand terms and expressions

Safe and secure information distribution

- **Privacy**

Independence from networks, protection of personal information, securing privacy, securing appropriateness in shooting videos and photographs

- **Information security**

Securing network safety, prevention of improper usage, development of security technology

- **Intellectual property rights**

Protection of copyrights, etc., protection of rights through technology

- **Information ethics**

Establishment of information ethics, prevention of illegal and harmful contents, etc., ethics in science and technology, ethics of contents producers

Balance

Support

Construction of new social infrastructure

- Balance between the real society and the cyber society

Developing systems supporting the cyber-society, establishing a new social code of conduct, consideration for the recycling-based society, timely and appropriate realization of policies

- Systems for local and international coordination and cooperation

Inclusion of diverse viewpoints in policy formulation, development of structures for coordination and cooperation with local communities and with the international community

Appendices

Drawing up an ICT state strategy: [e-Japan Strategy] (January 2001)

Main objective: "To make Japan the world's most advanced ICT nation by 2005"

◆ 5-year urgent concentrated implementation by 2005

◆ Four priority policy areas

－Infrastructure: Principle of private-sector initiatives, **Creation of the world's most advanced environment for the Internet**

－e-commerce: Ex-post-facto check rule, Building confidence in participants, International harmonization

－e-governments: Reform of administrative work, Social infrastructures for use of ICT

－Human resources: Improvement in ICT literacy, Recruiting of ICT instructors, Fostering of ICT engineers/experts

Targets

Constant access environment by 2005
High-speed: 30 million households
Ultra-high-speed: 10 million households

Transition to the Second-phase ICT Strategy

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The fruit of e-Japan strategy > Policy targets have been achieved.

Policy Targets

Always-on access environment by 2005

High-speed: 30 million households

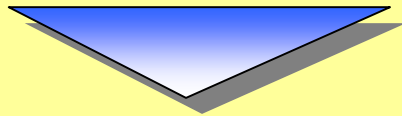Ultra-high-speed: 10 million households

Versus

Actual Results

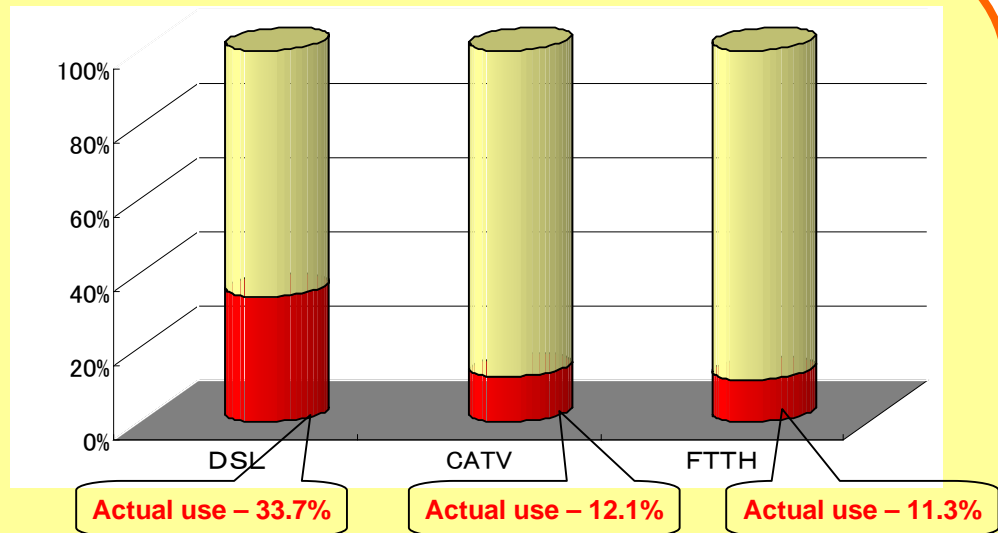Always-on access environment by・・・

High-speed (DSL): 38 million households
High-speed (cable TV): 23 million households

Ultra-high-speed (FTTH):18.50 million households

However, ICT usage is still low.
(Able to connect, but do not)

Shift towards the second phase is urgently required
(expansion in the usage of ICT)

Actual use – 33.7%   Actual use – 12.1%   Actual use – 11.3%

(Source) MIC (as of end of September 2004)
(Note)   Percentages refer to the share of actual users compared with the number of potential users.

e-Japan Strategy II (2003-2005)

In addition to making Japan the world's most advanced ICT nation by 2005, we need to aim to continue leading the world after 2006.

ICT Strategy – Phase I:

To positively tackle the establishment of ICT foundational infrastructure→ significant level of progress.
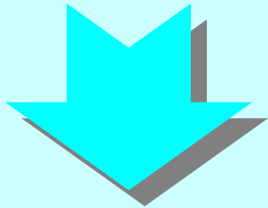
ICT Strategy – Phase II:

To realize a *"vigorous, safe, impressive and convenient society"* through the practical use of Information Technology

Priority Policies

Leading 7 fields making practical use of ICT

1.Medical / 2.Foods / 3.Life / 4.Finance for SMEs /

5.Intellectual / 6.Employment and Labor /

7.Governmental Services

Develop results in these 7 fields to other fields.

Construction of New Society

1. Construction of next generation ICT environment
2. Safe and secure use environment
3. R&D to promote the intellectual resources of the next generation
4. Develop ICT-HR and promote learning
5. New international relationships focusing on ICT

Examples of ICT Usage in the u-Japan Society (everyday life)

Case of grandfather and grandson

What do you want for your birthday?

While watching a cartoon… Oh! A message from Grandpa!

I want to go to the aquarium!

With a ubiquitous terminal, it is possible to watch cartoons anytime, anywhere.

OK, I will pay the fee so why don't you enjoy the virtual aquarium?

Wow! The shark just got bigger! It is like I am actually in the sea.

Screen adapts to the sounds in the large-screen virtual aquarium.

Case of independent creator

I will send a script I just amended here.

In charge of script

I am going to actually perform the choreography that I have worked out, so take a look.

In charge of choreography

Collaboration on a multi-screen

Image of costumes for the △△ role are ready so take a look.

In charge of clothing

The main theme song is finally ready. What do you think?

In charge of music

When it is ready I will try distributing on the web. If the response is good I will actually perform it later.

Send choreography as solid images

Anybody can create (musical creation with Net friends)

u-Japan
ICT penetrates into every area of life.

Case of the handicapped

There is a bicycle 2m ahead. Take care.

The sensor detects and notifies concerning obstacles

Encourage the driver to pay attention and contribute to prevention of accidents

A pedestrian is trying to cross the crossing.

Guides to registered destination with simple operations

Cross the pedestrian crossing 5m ahead to the right.

I must slow down and pay attention.

Case of working parents

Notice Tomorrow is the excursion so we will meet at 8:30. Please make sure to bring a lunch box. In charge ○○

Checks on state of her children. Check contact items via e-mail.

They are playing happily. I need to prepare a lunch box tomorrow so I must go shopping on the way home.

Supports ideal lifestyle based around return time.

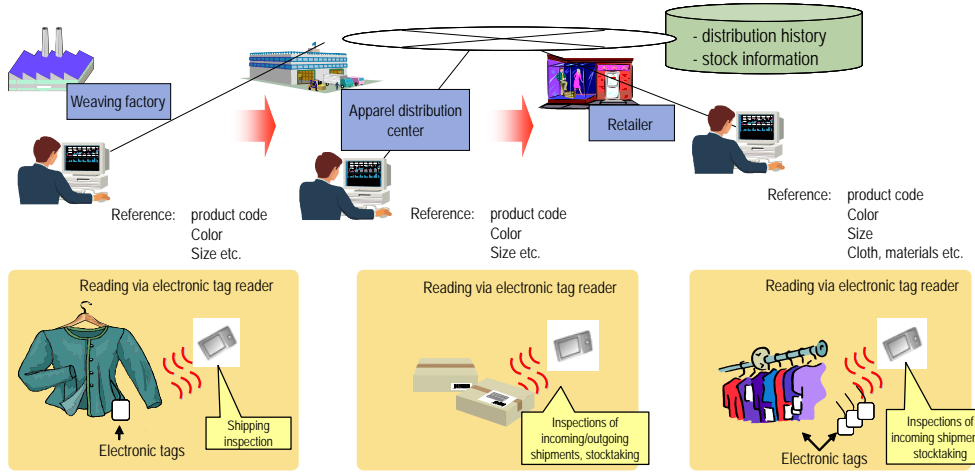A hot bath ready 5 minutes after returning home.

Cleaning complete by return time.

Food ready 10 minutes after coming out of the bath.

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Examples of ICT Usage in the u-Japan Society (industrial aspect)

Efficiency in production management processes within corporations

- distribution history
- stock information

Weaving factory

Apparel distribution center

Retailer

Reference: product code
Color
Size etc.

Reference: product code
Color
Size etc.

Reference: product code
Color
Size
Cloth, materials etc.

Reading via electronic tag reader

Reading via electronic tag reader

Reading via electronic tag reader

Electronic tags

Shipping inspection

Inspections of incoming/outgoing shipments, stocktaking

Electronic tags

Inspections of incoming shipments, stocktaking

Example of supply-chain management for apparel company (management of orders, stock and distribution)
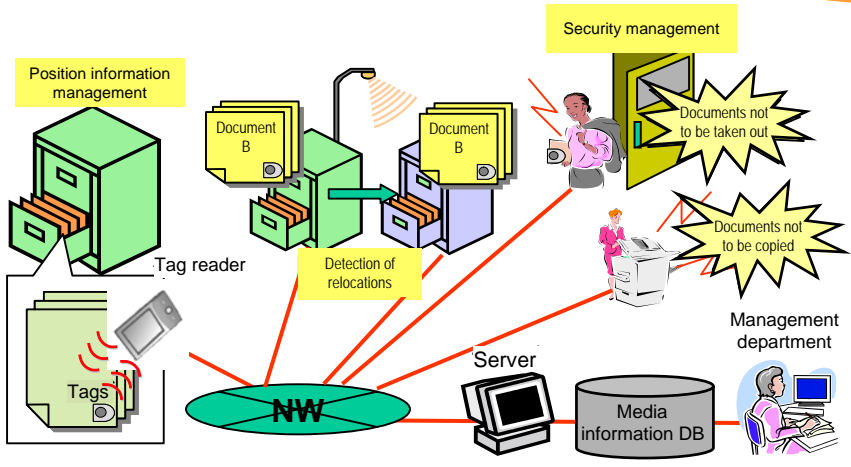
Realize flexible collaboration between corporations

Theater

Travel agency

Restaurant

Agent Robot

Car rental

Hotel

Airline
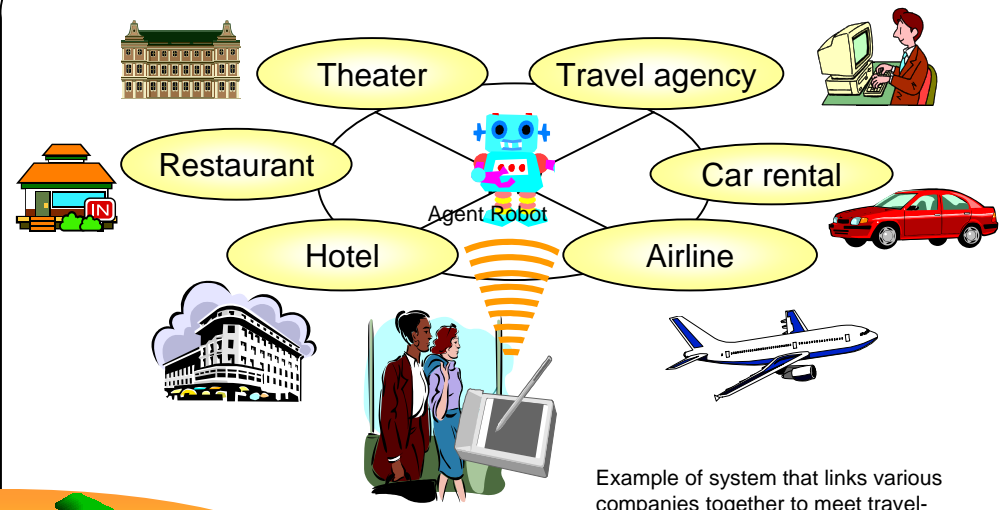
Example of system that links various companies together to meet travel-related needs and provides a system for processing.
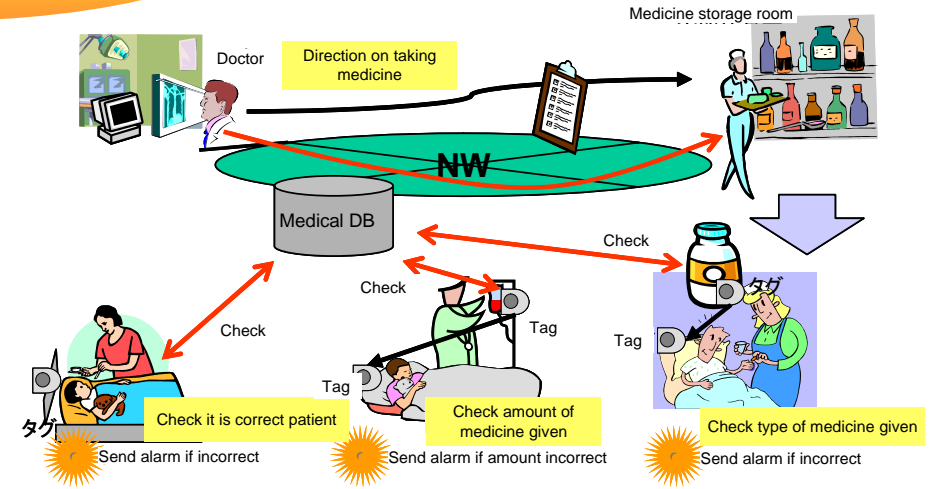
u-Japan
ICT penetrates into all areas of industry

Example of system of document management within a company (confirm location of documents, security management)

Security management

Position information management

Document B

Document B

Documents not to be taken out

Documents not to be copied

Tag reader

Detection of relocations

Management department

Tags

Server

NW

Media information DB

Example of system to support appropriate provision and application of medicine at hospitals etc.

Medicine storage room

Doctor

Direction on taking medicine

NW

Medical DB

Check

Check

Check

Tag

Tag

Tag

Tag

タグ

Check it is correct patient

Check amount of medicine given

Check type of medicine given

Send alarm if incorrect

Send alarm if amount incorrect

Send alarm if incorrect

Advanced knowledge management within corporations

Penetration of ICT use into all areas of industry

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e-Japan strategy brought about diffusion of an ultra-high-speed network mainly through wired networks.
Targeted development of infrastructure is achieved.
(e.g. high-speed network affordable to 30 million households, and ultra-high-speed to 10 million households)

Expectation of ubiquitous networks affording easy access to any information anytime, anywhere, and for anyone"

Establishing seamless ubiquitous networks
- promote extension of cyberspace and penetration to real space -

Developing seamless access environment of both fiber networks and wireless networks
- Open frequency policy
- Convergence of fixed networks and mobile networks
- Convergence of telecommunication and broadcasting
- Upgrading IP infrastructure

Nationwide establishment of broadband infrastructure
- Alleviation of broadband divide
- Promoting ICT in local communities
- Promoting digital broadcasting
- Promoting competition policy

By 2010, 100% of citizens to have access to high-speed or ultra-high-speed internet access

Networking real objects
- Developing IC tags, sensor network and, network robots
- Networking of consumer electronics
- Creating application of ITS and GIS
- Developing ubiquitous terminal

Developing infrastructure for network collaboration
- Developing ubiquitous platform
- Securing interoperability among different networks
- Securing high network reliability
- Developing infrastructure for e-commerce

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u-Japan Policy Package (2): Advanced Usage of ICT

e-Japan strategy II brought about diffusion of ICT in the various fields

e.g. Seven priority fields targeted in e-Japan strategy II : health care, food, daily life, small and mid size business finance, knowledge, labor and employment, and government services

Expectation of ICT usage for breakthrough of many problems
caused by the advent of the declining birthrate and aging society

ICT usage to resolve new issues to overcome
- ICT as a tool to resolve social issues -

Social system reform by ICT

- Enlightening social and business reform by ICT usage
- Administrative reform fostering ICT usage
- Reform of product distribution system
- Promoting e-government and e-local government

Environment Energy

Promoting creation, trading, and use of contents

- Supporting transaction such as trading and settlement of digital contents
- Promoting creation and usage of digital archives
- Creating attractive contents
- Establishing the "Japan" brand by soft power

Disaster prevention Public Security

By 2010, 80% of citizens to appreciate the role of ICT in resolving issues

Education Human resource

Promoting universal design

- Development of advanced agent technology
- Enhancement of user interface
- Ensuring information accessibility
- Building support systems of ICT usage for the aged and disabled

Health care Welfare

ICT human resource development

- Nurturing human resource with high ICT skill
- Supporting incubation of ICT venture business
- Literacy and education reform
- Encouraging civil participation

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u-Japan Policy Package (3): Upgrading Enabling Environment

Concerns and obstacles arise in spite of expectations towards the ubiquitous network society

e.g.: "Always" access ↔ 24-hour network connections may pose privacy issues

understanding negative aspects and
identify the issues to be solved

Drastic improvement of ICT usage environment
~ Ease concerns and obstacles of ubiquitous network society as early as possible ~

Identification of issues related to negative aspects

Pick up 100 negative aspects of the ubiquitous network society in ten categories

Survey 100 experts mainly in the ICT field to establish a priority ranking

Promoting ICT safety and security 21 strategy

Identify 21 priority issues with significant social impact and develop strategies for addressing them

Tackle emerging crucial issues

Identify emerging crucial issues unique to ubiquitous network society

Establishing a Ubiquitous Network Society Charter

Comprehensive charter statement for worldwide release setting out the basic principles and shared understandings of ubiquitous network society

Free and diverse information distribution

Harmonize

Safe and secure information distribution

Support

Constructing a new social infrastructure

80% of citizens to feel comfortable with ICT by 2010

◆ Ubiquitous network society is essentially global ⟹ Must take international markets and networks into consideration

◆ Ubiquitous network society is driven by technological innovation ⟹ R&D and standardization in the ICT field are important

Cross-cutting international and technology strategies are required

International strategies

International link-ups

Links between ICT developed countries and international institutions	WSIS (World Summit on Information Society)
Activities in standardization bodies such as the ITU and etc.	EPA/FTA
Appeal to the international society	

Strengthen international presence of Japan

Asia Broadband Plan

Cooperative relationships with Asian countries	Establishment of network infrastructure
Implementation of applications, content distribution and fundamental R&D.	Education and human resource development in the ICT field

Make Asia a world center for information

Technology strategies

R&D strategies for the ubiquitous network society

New-generation network technology
Ubiquitous network architecture, photonic networks, new-generation mobile technology, futuristic ICT…

ICT for safety and security
Network security, next-generation backbone networks, sensor networks, network robots…

Universal communications technology
Human communication, content creation and distribution, universal platforms, universal appliances…

Reinforcement of joint initiatives involving public, private and academic sectors such as an increase in competitive funding

Promoting standardization
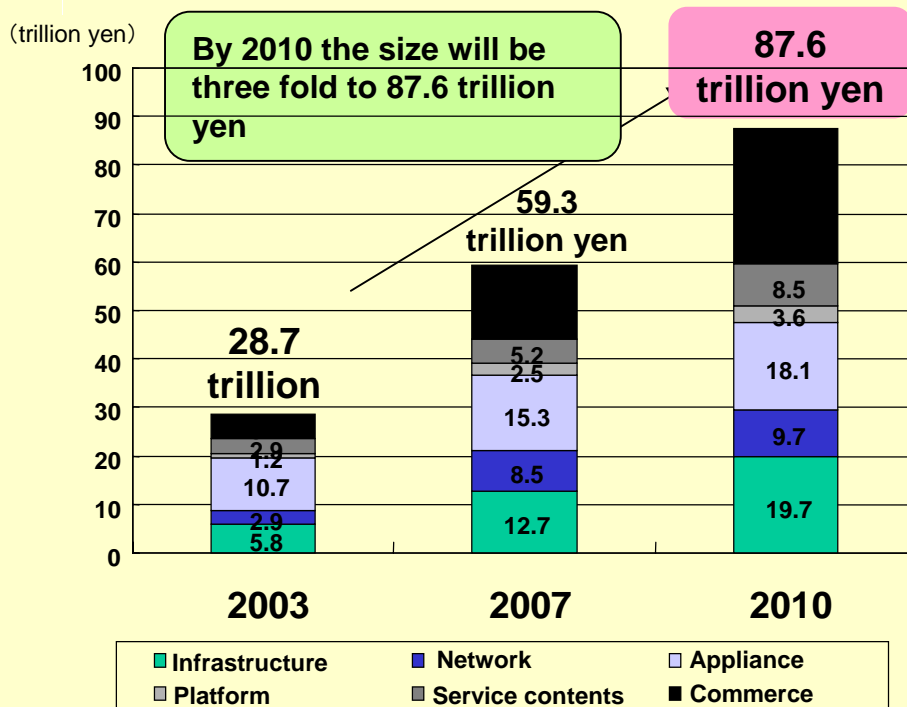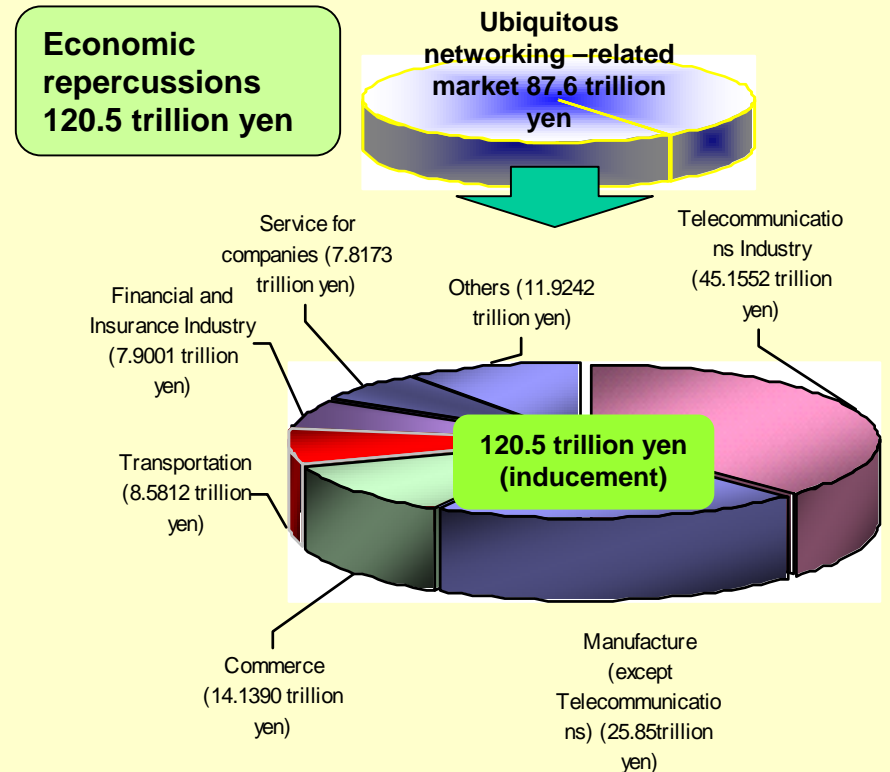
International standardization of NG-network, and etc.

Foster standardization activities by, e.g., supporting international standardization proposals and etc.

Putting world-leading ubiquitous network technology into practical use

Estimated Economic Impacts of the u-Japan Policy

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By promoting the u-Japan policy, the ubiquitous networking society-related market is expected to be 87.6 trillion yen by 2010 and the economic repercussions is expected to be 120.5 trillion yen.

Chart ① Present state and prediction of the size of a ubiquitous networking-related market

(trillion yen)

By 2010 the size will be three fold to 87.6 trillion yen

87.6 trillion yen

59.3 trillion yen

28.7 trillion

2003	2007	2010
2.9	5.2	8.5
1.2	2.5	3.6
10.7	15.3	18.1
2.9	8.5	9.7
5.8	12.7	19.7

- ■ Infrastructure
- ■ Network
- □ Appliance
- ■ Platform
- ■ Service contents
- ■ Commerce

(NB) The ubiquitous networking-related market it the total of the following markets: ①infrastructure market, ② network market, ③ appliance market, ④ platform market, ⑤ service and contents market, and ⑥ private e-business (B2C) market and the cashless market including contact-free IC cards and electronic tags

Chart ② Economic repercussion of a ubiquitous networking society (Inducement to all industries under a ubiquitous networking –relating market)

Economic repercussions 120.5 trillion yen

Ubiquitous networking –related market 87.6 trillion yen

Service for companies (7.8173 trillion yen)

Financial and Insurance Industry (7.9001 trillion yen)

Others (11.9242 trillion yen)

Telecommunications Industry (45.1552 trillion yen)

Transportation (8.5812 trillion yen)

120.5 trillion yen (inducement)

Commerce (14.1390 trillion yen)

Manufacture (except Telecommunications) (25.85trillion yen)

(Source) White Papers for Information Communication 2004