IPv6 Deployment Status in Japan
-- Exploring New Business Area --

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Board member, WIDE Project

AGENDA

- Introduction
- Potential IPv6 Application Area
  - Legacy Networks
  - New Fields
  - Live E! Project
- Summary

Five Contributions by IPv6

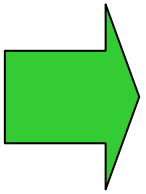
1. Huge number of components leads to simple and easier system design/architecture
2. Plug and Play, i.e., no manual configuration
3. Global connectivity with identification for security
4. Re-configuration free with MIP/NEMO, in the case of re-installation and of relocation
5. Faster and appropriate trouble shooting

(*) Newcommers do not care about version of IP nor length of IP address.

(*) Contribution is reduce the labor cost caused by high skilled human being, and to increase the time allocating to new business opportunity for them

How use the (digital) information ?

- Generate
- Collection
- Distribution
- Analyze
- Process
- Share



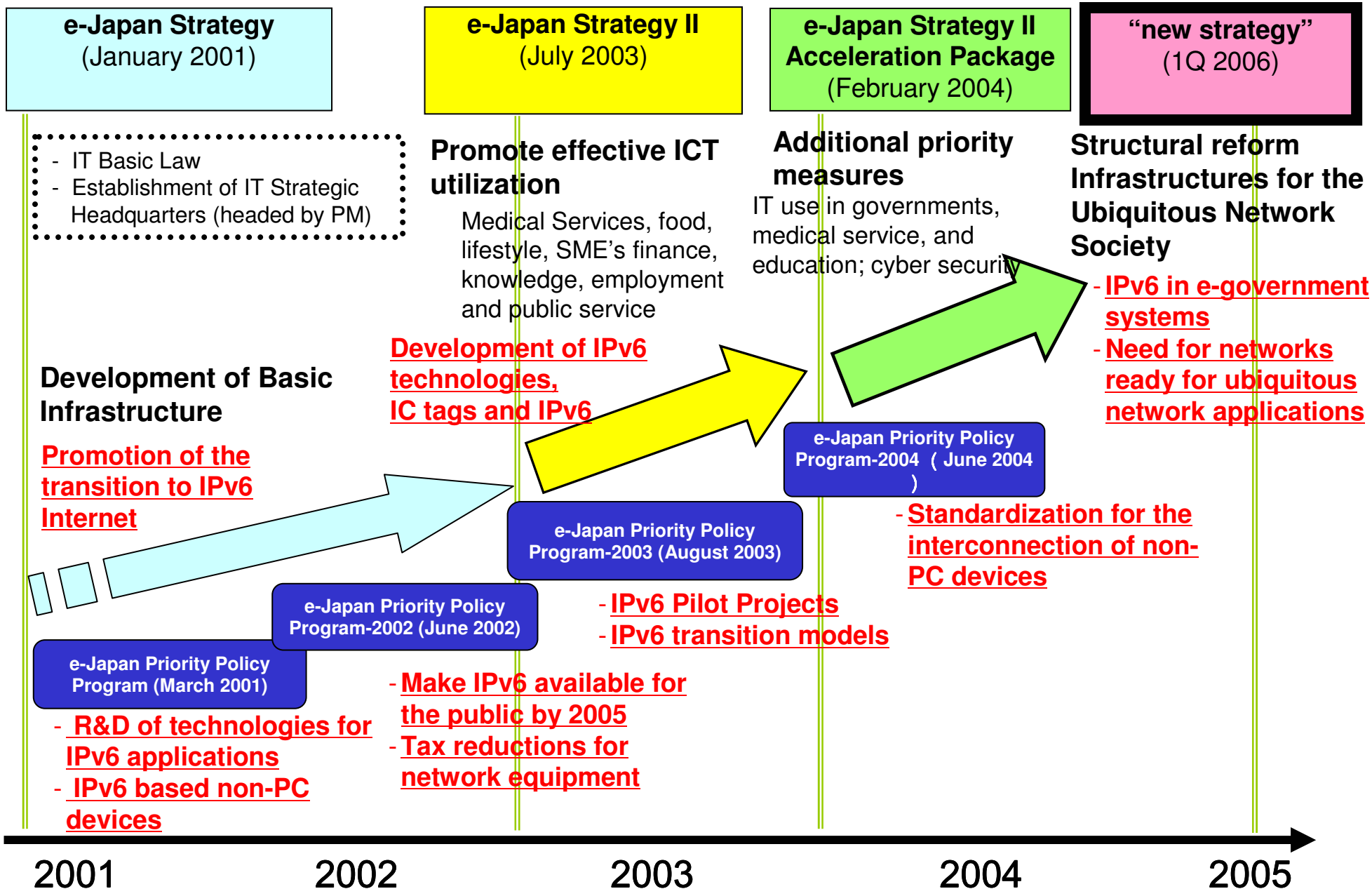
Value/Worth

1. Direct income (i.e., GET money)
   sell some information
   (e.g., contents)
2. **In-direct income (i.e., SAVE money)**
   Cost-reduction
   Improve efficiency

Toward

a. SAVE money !!
b. increase outputs !!

e-Japan Strategies



IPv6 deployment in e-government systems

IT Strategic Headquarters

*SHALL adopt "**the new strategy**" in January 2006*

The draft new strategy, which will undergo the public consultation process, proposes with regard to e-government systems:

"To make ICT devices of each government ministry or agency compatible with IPv6 by FY 2008 , in principle, when they are replaced."

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- **Potential IPv6 Application Area**
  - **Legacy Networks**
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Potential Application Areas of IPv6

- **(Legacy) Network Service**
  - **NGN**
  - **FMC**
  - **Triple Play**
  - **Wireless**
- New Areas
  - Non Computer Devices
    - Sensor
    - Controller/Actuator
    - Embedded
  - Applications
    - Building System; Energy, Emergency, Security, IT
    - Facility

Lesson by Network Mobility Operation

MR

Mobile Network

AP

AP

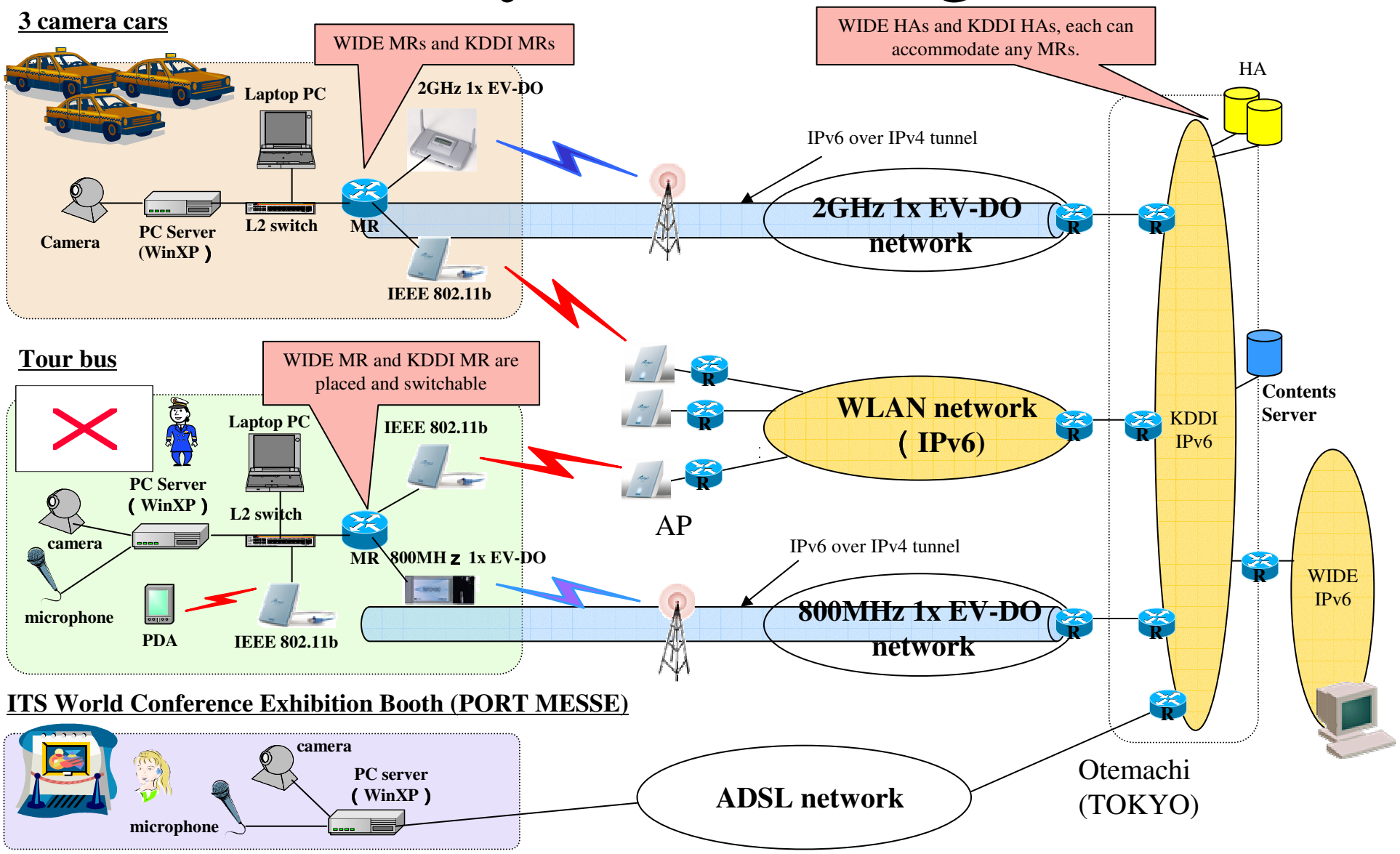
CN

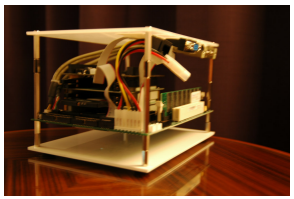
HA

INTERNET

Prefix Delegation

NEMO System Configuration



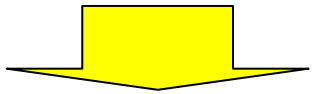


MR by WIDE

MR by KDDI

Lessons on NEMO/MIP operation

- Original objective was to improve connectivity, such as smooth handover……. But..



1. Applicable not only for wireless networks, but also for wired networks, for unique protocol
2. Can hide the c/o address, where actually the node is, i.e., keeping the location privacy against the public, and trace-ability for private network.
3. Do not need re-configuration at nodes, reflecting to the operational cost

   ➔ Providing “Portable” address space is a key.

   – When we need configuration, waiving the re-configuration contributes to the cost reduction for network operation
   – Full auto-configuration is not easy, but is difficult

Legacy Network Services

- ISPes; starts to realize the expiration IPv4 addresses
  - Residential Customer
    - IPv6 triggered by triple play, especially digital TV multicasting
    - NTT group has already provided IPv6-based VoIP and Streaming
    - NGN; all-IP solution and VoIP for PSTN service
    - WiMAX; serious technical evaluation for commercial operation
  - Corporate Customer
  - SOHO customer
- Campus/Private networks
  - Corporate network, including government network
    - Start to enable IPv6 for new/future services
    - Challenging to the Hotel system, as IPv6-FIX project activity
  - Home network

Study on KDDI's Ultra-3G
- Voice from Global IP Biz Summit -

- KDDI technical officers love TDM, and do not like IP
  - Why adopt IP-based NGN solution ?
    ➔ simply because discontinuation of TDM switches
    No-alternative, ….. They accept to use IP
- KDDI does not care IP version, but does care business
  - Why they pushed IPv6 for 3GPP(IMS)/3GPP2(MMD) ?
    ➔ simply because their business is more than 10 years.
    No-alternative,…… They accept to use IPv6.
- Then, they have consider network development
  - Signaling (expensive part of the network) should go with IPv6
  - Transport still needs IPv4, at this time.

Legacy Network Services

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IPv6 products and Services

Commercial IPv6 products available in the market

- network camera, printer, router, IP phone, LSI, facility management system

IPv6 Internet services

- NTT Com.: OCN IPv6(remote control of appliances), OCN IPv6 Dual Ether Access
- NTT East: FLET‘s.net (movies, music, TV phone, file exchange)
- NTT West: FLET‘s Optical Premium (TV phones, movies)
- Nifty: @nifty IPv6 Service
- KDDI: IPv6 Native/Tunneling Service
- IIJ: IPv6/IPv4 Dual Stack Service, IPv6 Native Service, IPv6 Tunneling Service

Interoperability

IPv6 Ready Logo Program derived from TAHI Project

Approved 93 (Phase-1)/10 (Phase-2) applications for IPv6 Ready Logo to products of Japanese manufacturers, as of 28 November 2005

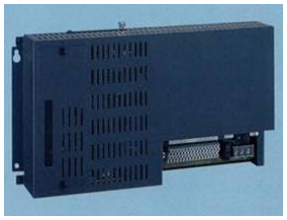
IPv6 Ready Logo

IPv6 Products in the market

◆Brand-new IPv6 Products

- ✓ **Office Solution**
- ✓ **Facility Management**
- ✓ **Transportation System**
- ✓ **Medical System**
- ✓ **And so on…**

FreeBit
IP Phone & Centrex



Matsushita Electric Works
EMIT Total Buildings. System Controller for floor management

Yokogawa
"Xancia"
(All-purpose Controller)

◆Commercialized IPv6 Products

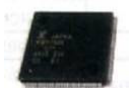
NTT Regional Co.
IP Video Phone

Panasonic Communications
Network Printer & WebCam

Yokogawa
Networked Audition Machine &
"Fis" Environment Analysis System

YAMAHA (IPv6&SIP)

Hitachi ULSI (IPv6&IPsec)



Fujitsu LSI (IPv6&IPsec)

Hitachi
GR2000 Series (Router)

SGI "View Ranger"
(Micro server & Cam for Monitoring)

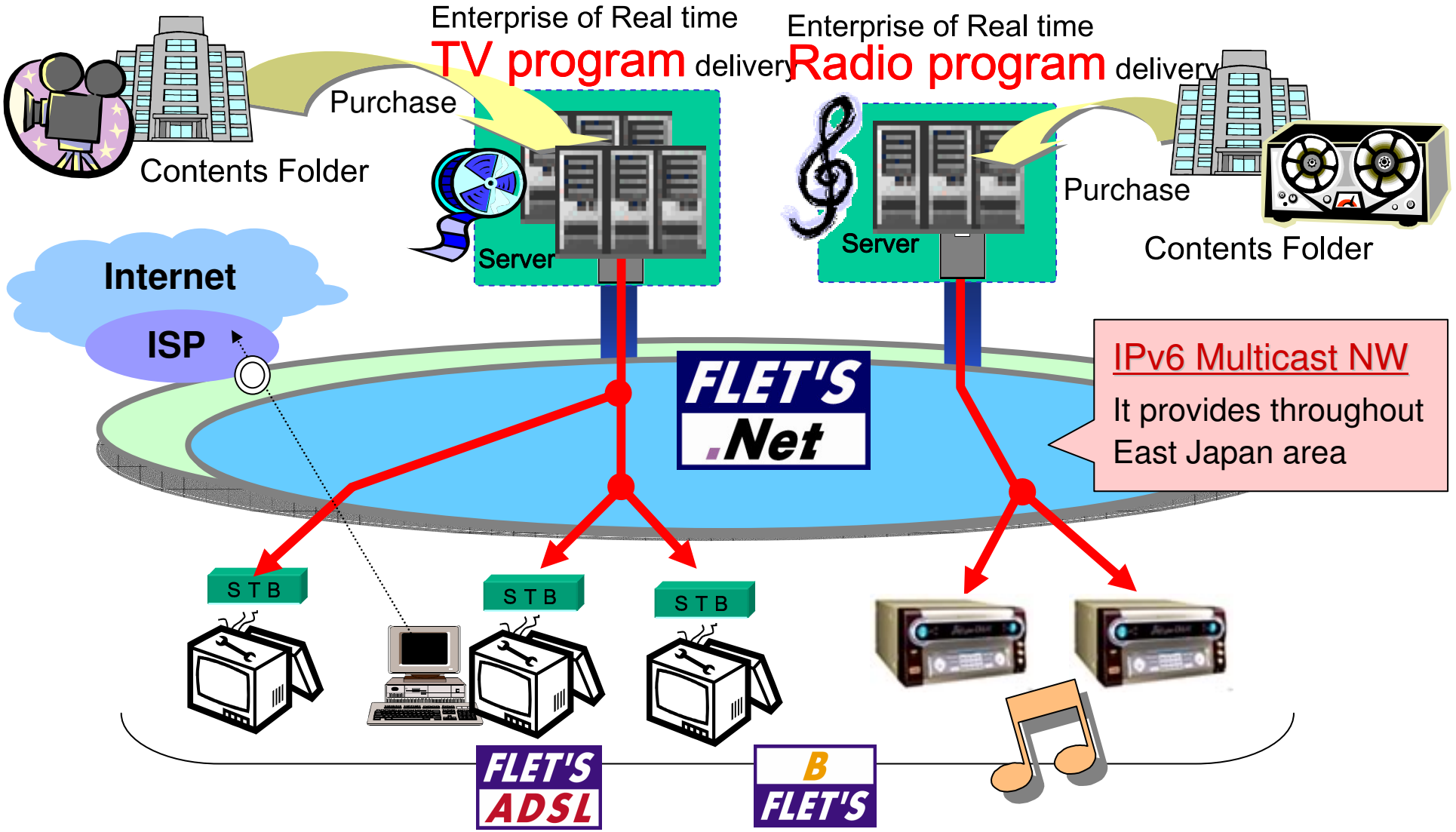
NTT Group switched on IPv6 - covers nation-wide -

- NTT West, since December 24, 2004.
  - Contents distribution
    - Multicasting and VoD
  - High quality video-phone, with instant messaging
  - Fairness control /Queuing
  - IPv4 over IPv6 for legacy ISP
- NTT East
  - Contents Distribution
    - Multicasting and VoD
  - High quality video-phone
  - FLET's Net
  - Multi-Homing (plan)
- Plala

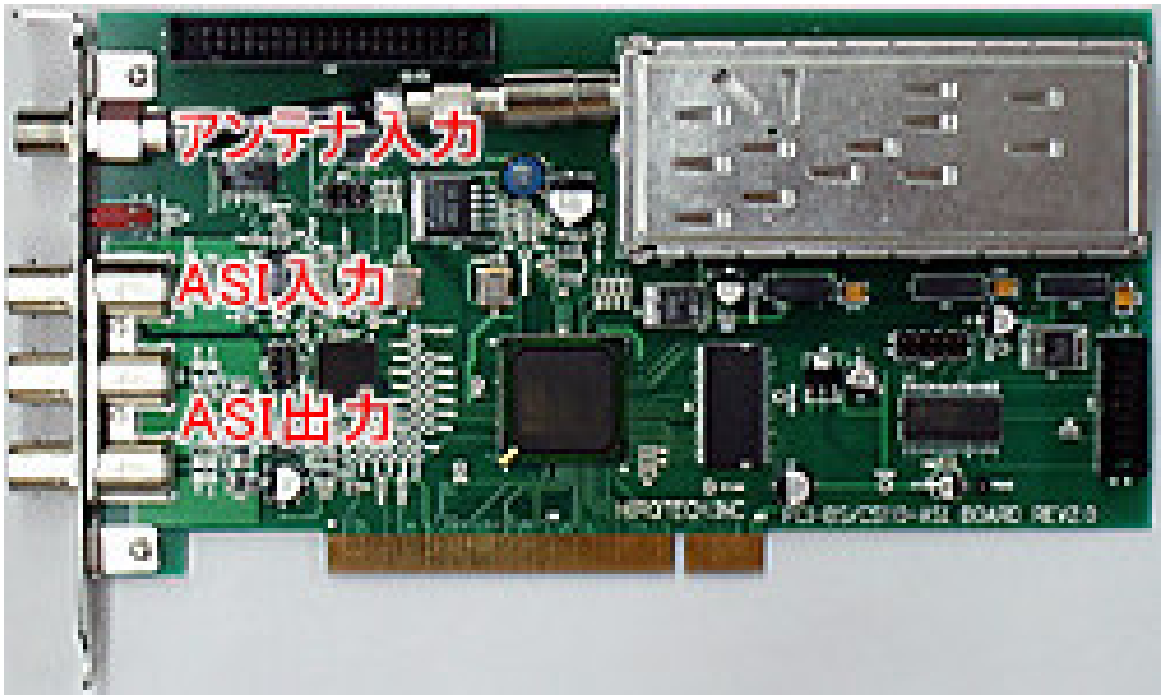
NTT Regional Co.
IP Video Phone

IP TV-Broadcast
- Delivery of Broadcast Contents -

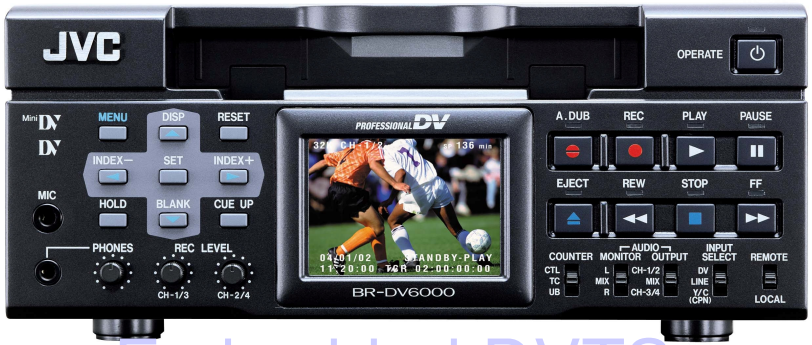
We support delivery of broadcast contents which enable a number of user to receive the same contents data simultaneously.



Digital Broadcasting Tuner



Embedded DVTS by JVC



Embedded DVTS

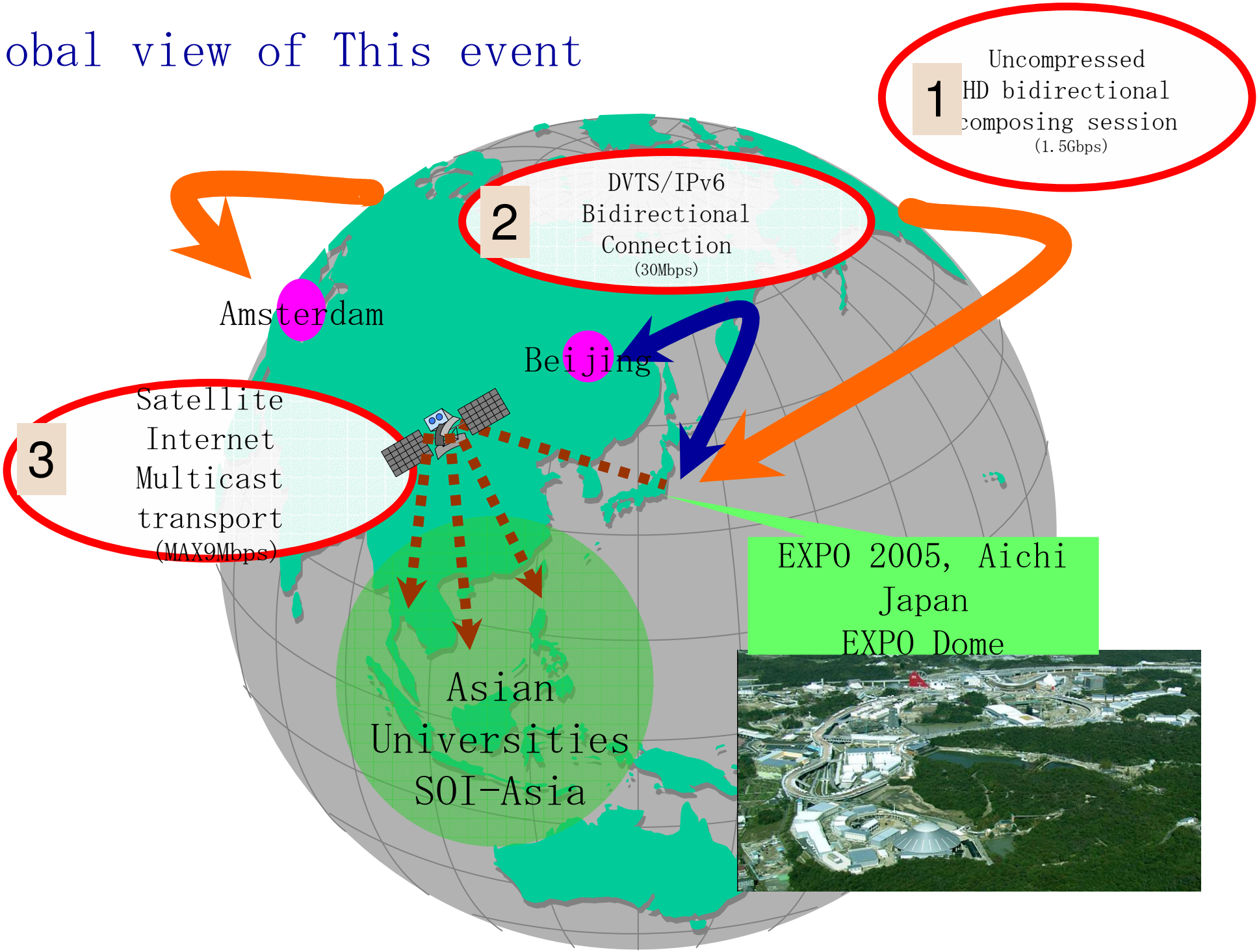
Extension Module

Embedded Linux

EXPO 2005 Aichi, Japan Message Event,
Closing Forum,
"Towards the Creation of a Sustainable Society"

Event: Sept 21st, 2005

Global view of This event



(Digital) Video Delivery Service

- Japan will shut down analogue TV broadcasting in 2011
  - Cell-Phone can receive digital TV signal
  - High speed Internet can handle digital contents via terrestrial and via air

Enabling IP (i.e.,IPv6) at digital TV system

DMC Institute International Symposium:
Convergence:Towards A New Paradigm for Creative Society

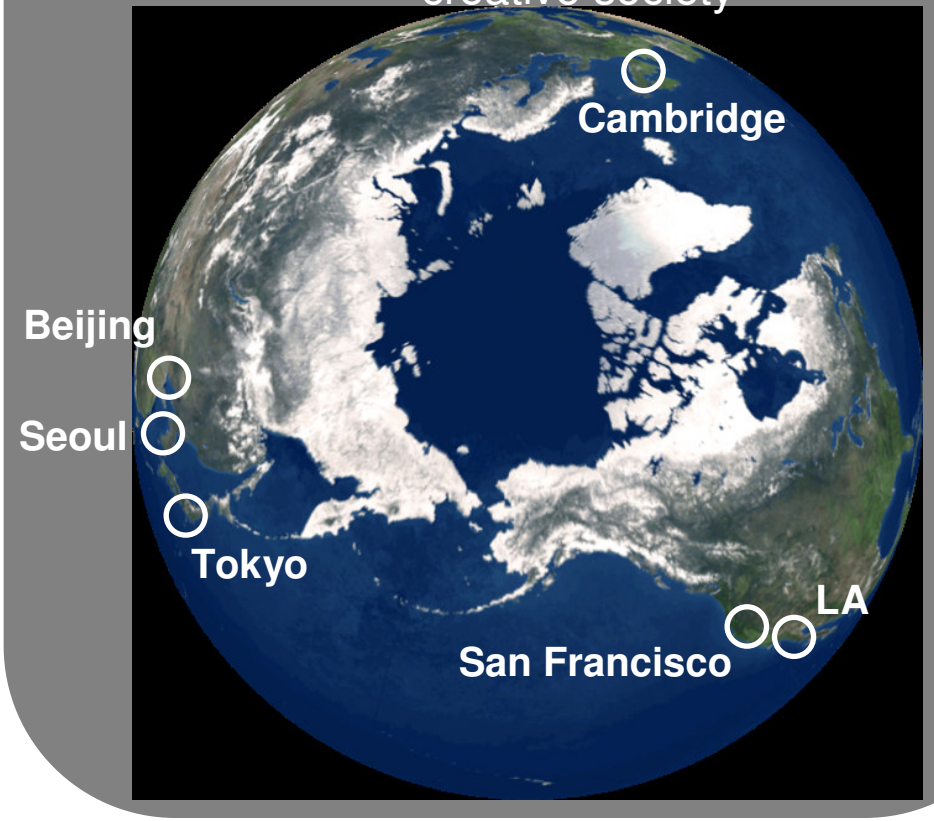
- ✓All operational Global Studio locations participated in our 5th international symposium
- ✓The symposium concluded with all participants signing the DMC Manifesto towards the Creative Society (online)

Intensive Discussion using the Global Studios

Talking Circle 1: Content design

Talking Circle 2: Media convergence in creative society

Talking Circle 3: Distributed and autonomous creative society



The Bandon Declaration

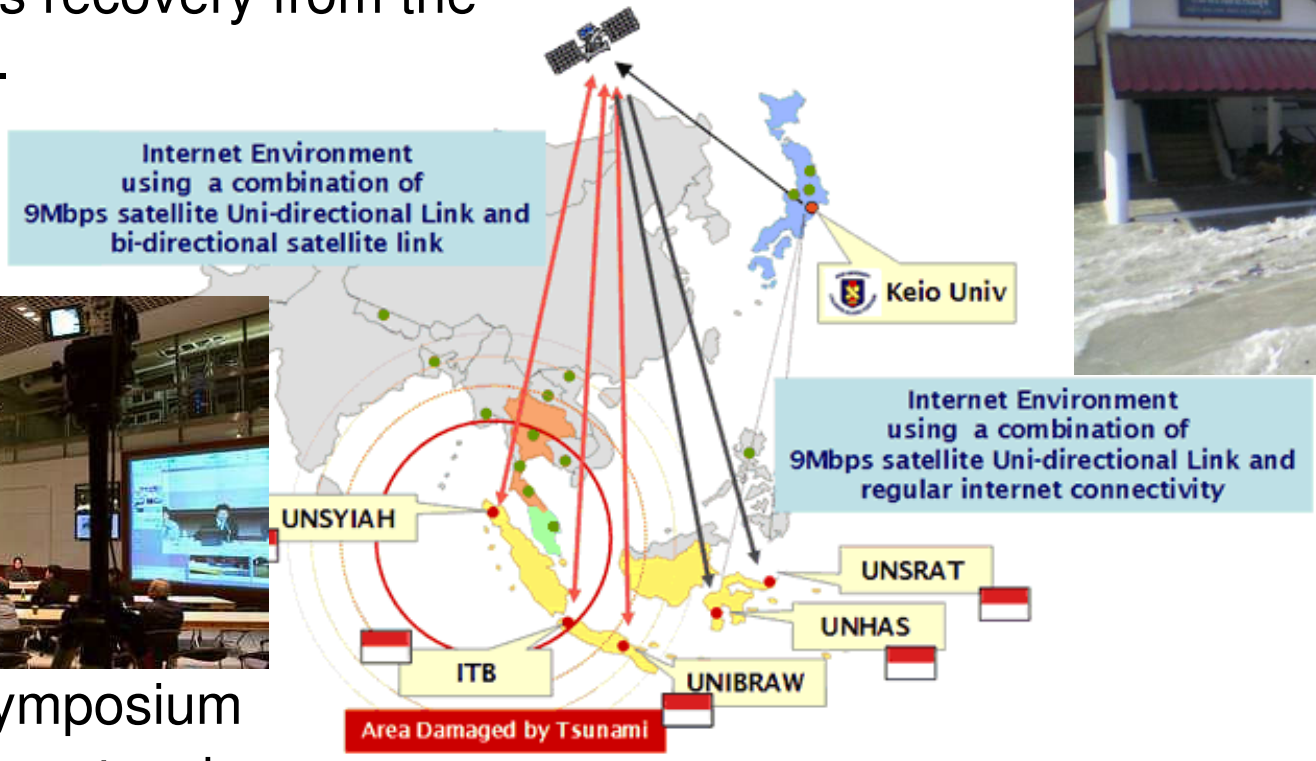
AI3 and SOI Asia - Bandung Declaration

Understanding and Solving Real-world Problems at SOI Asia -Tsunami Disaster Recovery Project

Keio University and SOI Asia assisted Universitas Syiah Kuala, the largest national university in Indonesia, by providing distance learning during its recovery from the tsunami.

Photos by Chermg Talay Subdistrict Administration Office

Tsunami Symposium on SOI Asia network



NGN, Next Generation Network

- All-IP network to integrate all the teleco-services
- FTTH to 30 million subscribers in Japan by NTT group
- VoIP service is the first service migration to IP-based service
- NTT's field trial
  - IPv6 and IPv4 dual service
- KDDI's Ultra-3G

IPv6 Deployment Example: IP-Phone

◆IP-Phone (by FreeBit)

- ✓IP-phone solution based on shared IP Centrex
- ✓Has already installed 20,000 terminals to 280+ sites of dormitories to manage their distributed facilities within 18 months

System Target

What IPv6 achieves

- **Simplifies Network design / re-design**
  → fall into only three install manuals
- **Reduce the required human-resources**
  1. Installation, auto-configuration at end-nodes
  2. Mis-configuration
  (i.e., 300 → single number)
  3. Trouble shooting
  (thanks for NAT-free global IP address)

7,000 Family Mart Stores enable IPv6

Adobe Acrobat Standard - [family_mart.pdf]

ファイル(F) 編集(E) 表示(V) 文書(D) ツール(T) アドバンスト(A) ウィンドウ(W) ヘルプ(H)

開く 保存 印刷 電子メール 検索 PDF の作成 レビューと注釈 セキュリティ 署名

テキスト選択ツール 113% 使い方...?

全7000店舗をブロードバンド化，IPv6使い大容量データを一斉配信 --- ファミリーマート

コンビニエンスストア 大手のファミリーマートは，2007年2月までに全国7000店舗へのブロードバンド回線導入を推し進める。利用するブロードバンド回線はBフレッツ。IPv6のマルチキャスト環境も構築する。将来の新サービス提供に向けてネットワーク・インフラを刷新し，万端の準備を整える。

激しい競争を繰り広げているコンビニエンスストア業界。街角に多数の店舗ができた結果，一つの店舗の商圏は徐々に狭くなっている。しかし店舗の1日当たりの売り上げは落ちていないという。「それだけ周囲に住んでいる人々のニーズをコンビニが吸い上げてきた結果」。ファミリーマートの上條公也・システム本部システム運用部長兼次期店舗システム推進室長はこう語る（写真1[拡大表示]）。

写真1 ファミリーマートの上條公也・次期店舗システム推進室長
[画像のクリックで拡大表示]

顧客のニーズに応えるため，コンビニは日々進化してきた。現在では航空券の予約や電子マネーへの入金など，さまざまなサービスをコンビニの小さな店舗で利用できるようになった。ほんの数年前までは考えられなかったほど，コンビニの店頭はインテリジェンス化している。

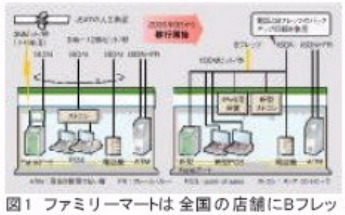


図1 ファミリーマートは 全国の店舗にBフレッツを導入
ISDNと衛星通信 の環境 から移行する。ブロードバンド化と通信コストの削減を同時に図る。
[画像のクリックで拡大表示]

そしてその高度なサービス群を支えるのがネットワーク・インフラ。コンビニエンスストア 業界第3位のファミリーマートは，先進的なネットワークで店舗を“刷新”するため，現在大規模なプロジェクトを進めている。それが「次期店舗システムプロジェクト」。目玉は，店舗のブロードバンド化だ。

「半歩先」のネットワークを目指す

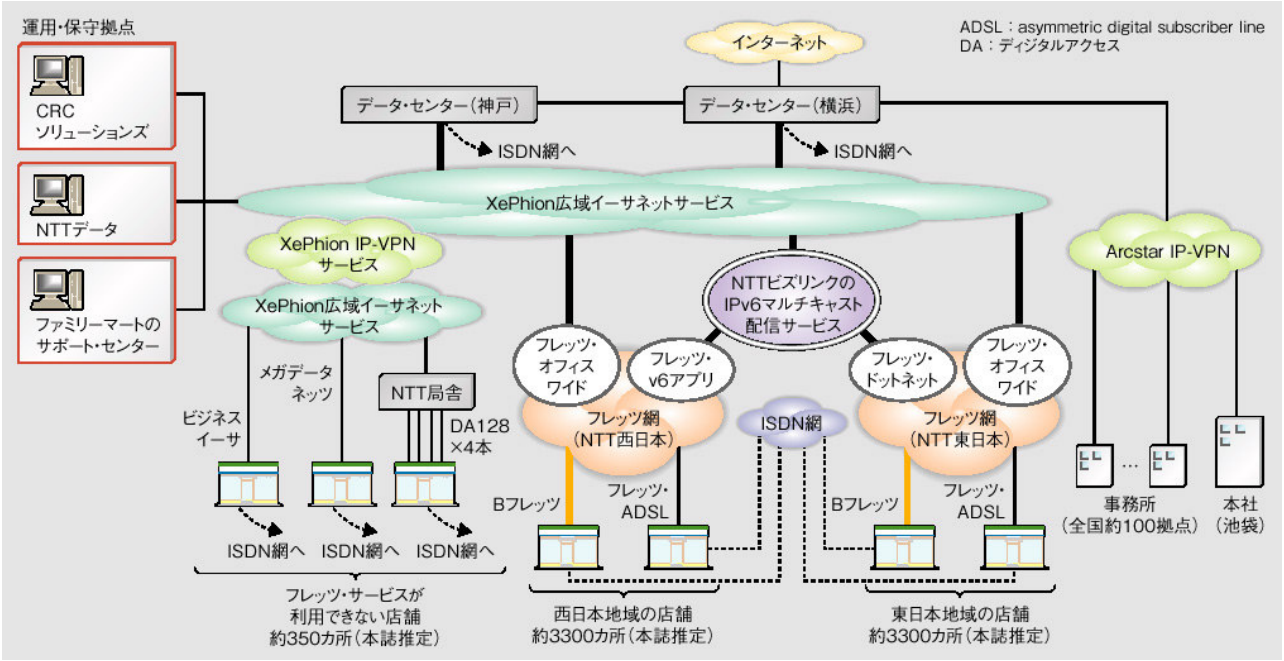
210.3 x 297 ミリ

1 / 4

Released in August 2006

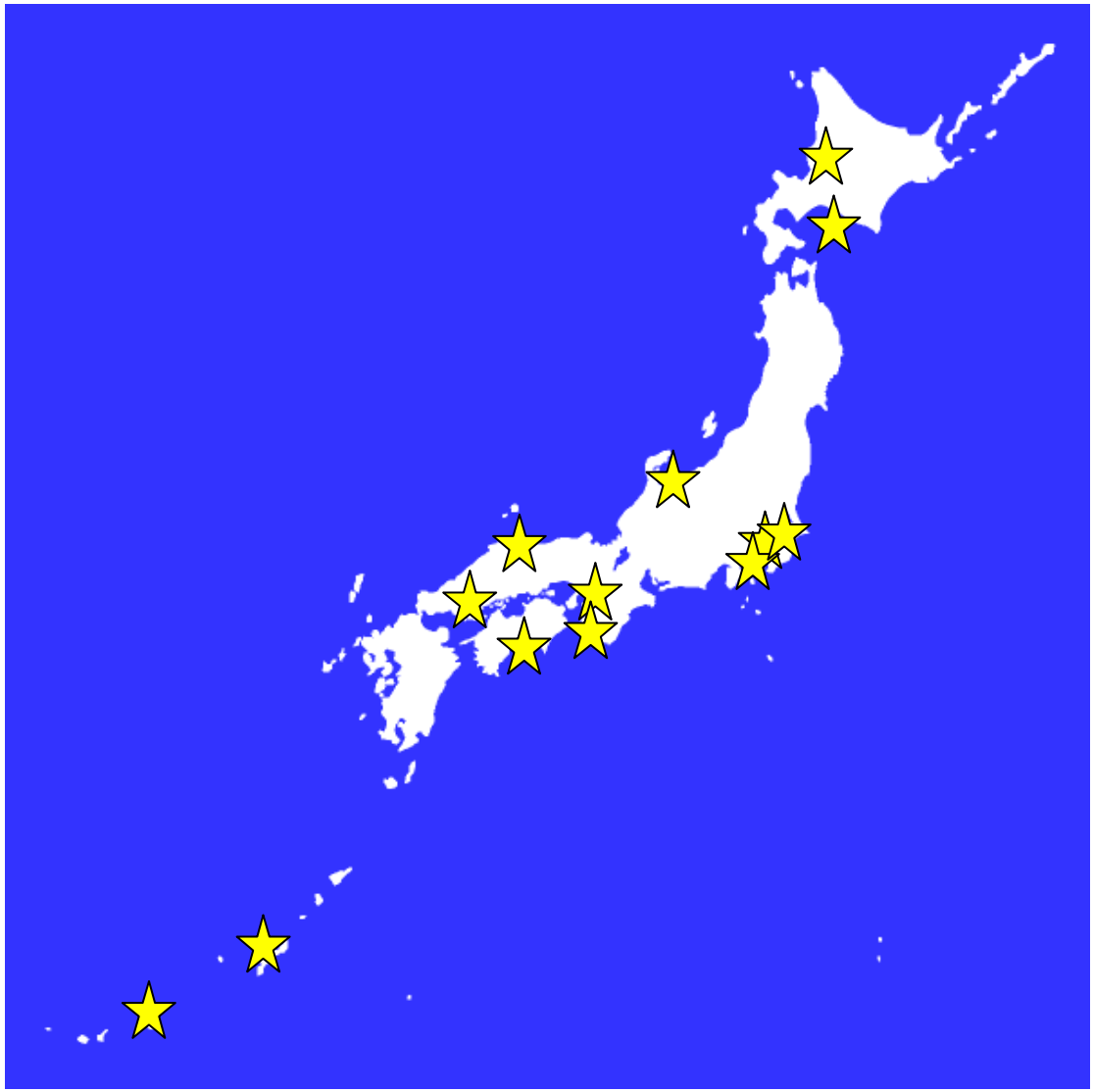
7,000 stores in nation-wide Japan

- Installation starting from February 2007
- 80 stores installation per day
- Multicasting service
- ISDN ➔ Broadband Internet with B-Flets



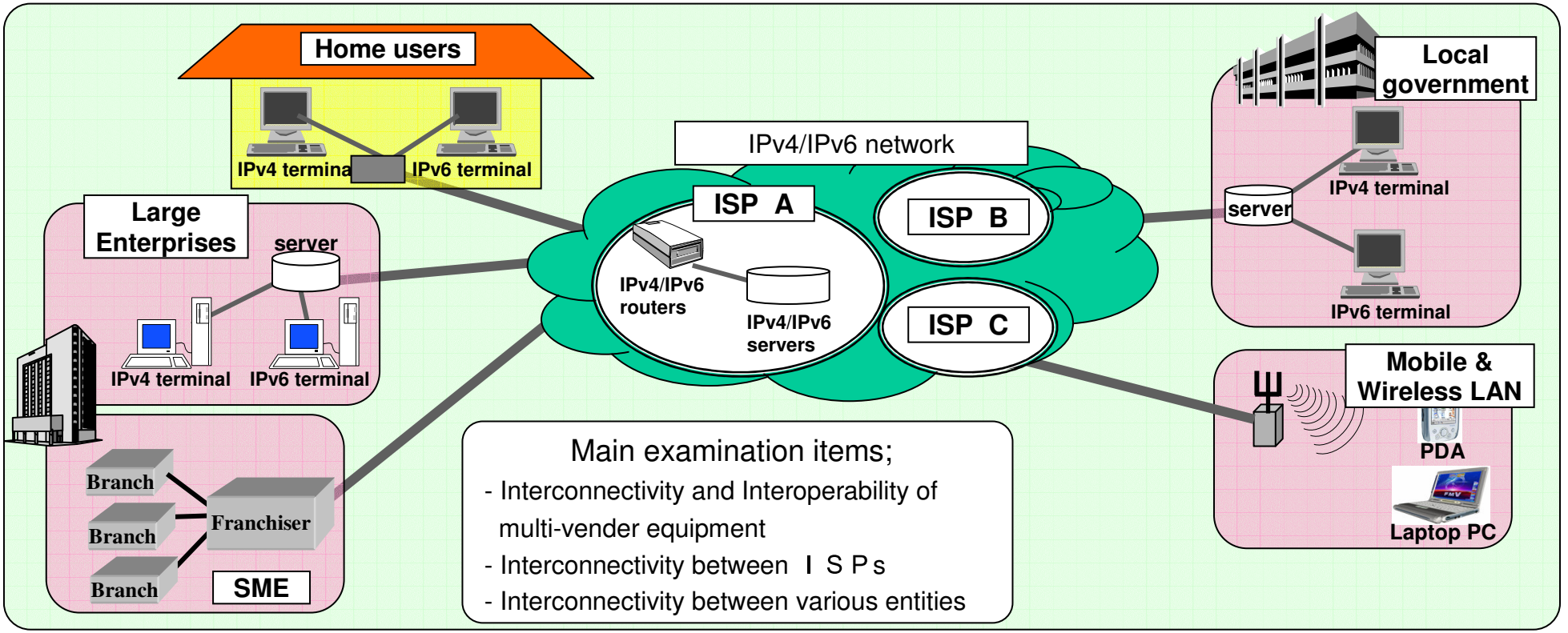
2005; IPv6 projects explore into nation-wide

- Emphasis on the development of applications in the public service, security, education, health and facility management, beyond the examination of basic technical aspects of transition to IPv6.
- Demonstrate potential of IPv6 applications through field test to the public in many places in Japan.



IPv6 Pilot Projects run by MIC

- IPv6 Pilot Projects for facilitating transition from IPv4 to IPv6
- Identify operational problems and possible solutions in IPv6
- IPv6 Transition Guidelines available to the public

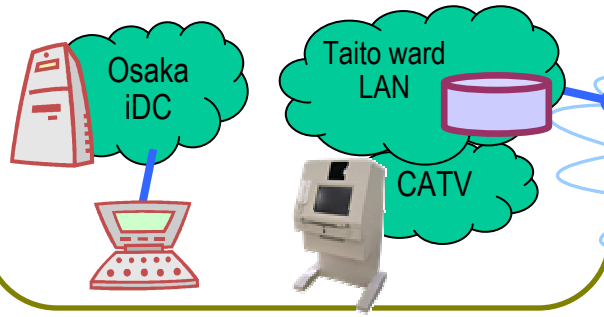


Duration: Fiscal year 2003 - 2005
Total budget in three years: \4,808mil (about US$ 40mil)

Completed Pilot Projects

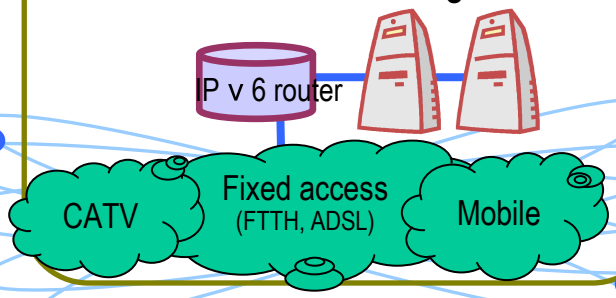
Local government

- Transition of existing network to IPv6
- Electronic application services
- TV consulting service for residents
- Pv4/IPv6 protocol conversion for web



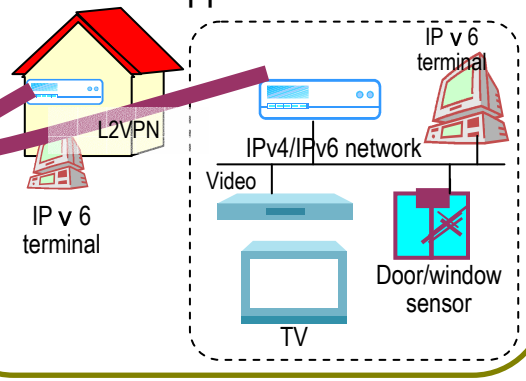
ISP

- IPv6 transition for ISPs using CATV, ADSL, FTTH, mobile accesses
- MP/MH technology enabling multiple network services on a single line.

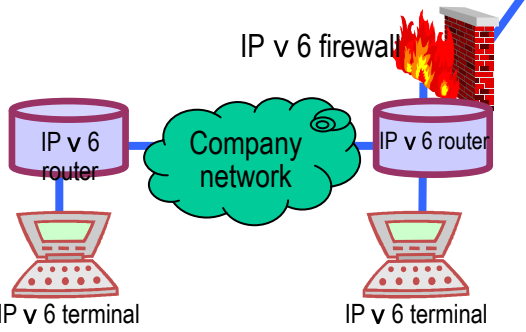


Home

- L2VPN technology
- Multiple network services
- IPv4/IPv6 information appliances, service and applications

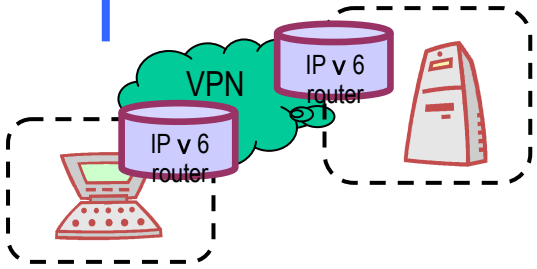


Large enterprises



- Security model for P2P and multicast
- Solutions utilizing IPv6
- IPv6 multicast services introduced at actual intranet

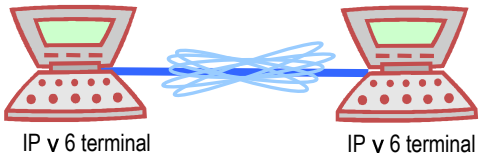
SMEs



- Help desk solution
- Mobile access to LANs
- External use of PCs for LANs
- IPsec communications

Others

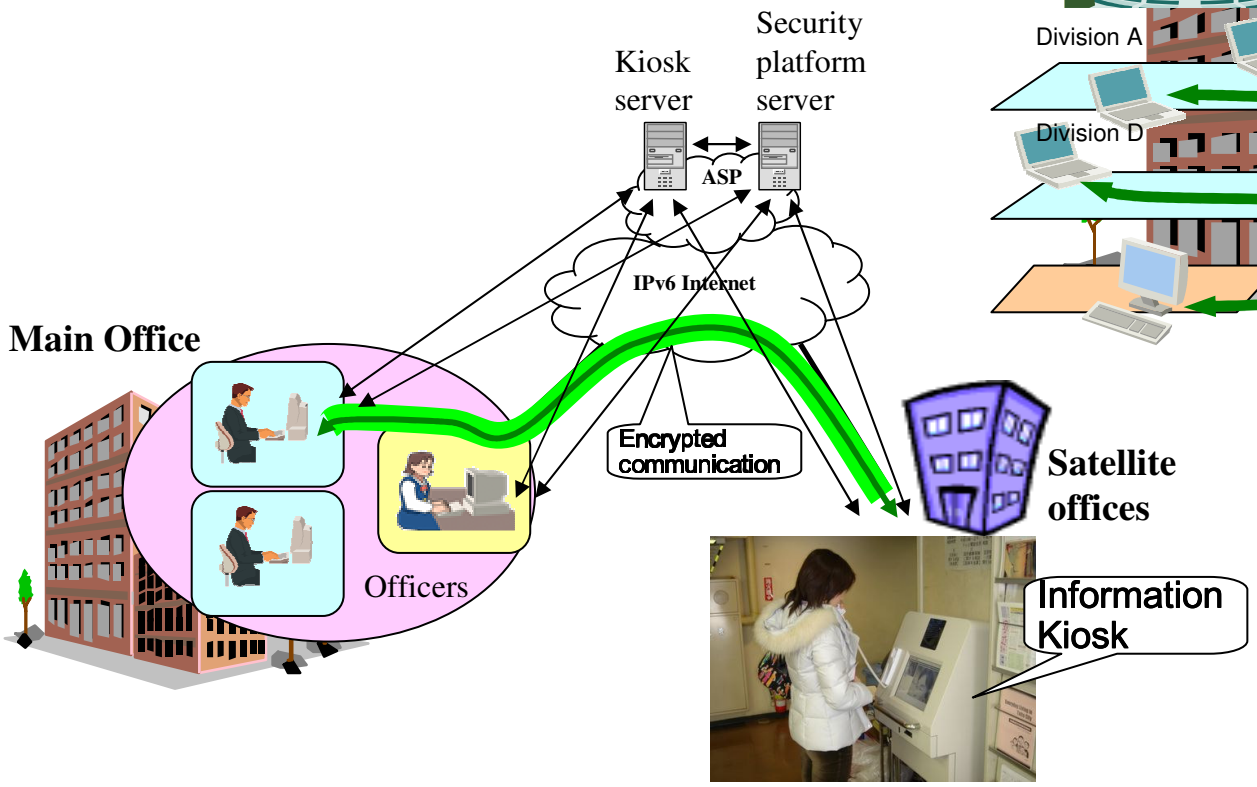
- Specifications and senarios for compatibility of IPv6 devices
- Interconnectivity of IPv6 phones
- Improvement of security anti-virus software and firewalls



Municipal Government Applications

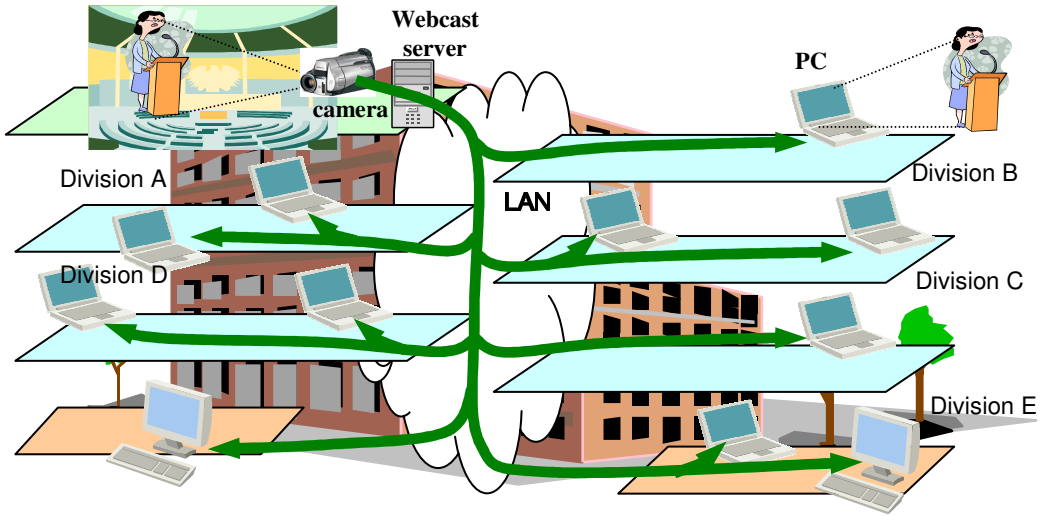
Information Kiosks

- Customer-officer interactions between separate locations with IPv6 based TV conference capabilities.
- Secure communications enabled with terminal authentication and encryption.
- Server operations outsourced to ASPs, improving efficiency.



Assembly multicasting

Assembly/Committee meetings



PCs in public areas

Lessons from IPv6 Trials

- IPv6 is ready to go into professional and business operation
  - Initial cost:
    - New services;

      Especially, when you can start some new services/applications, the cost of IPv6 is almost same as of IPv4. Sometime, cheaper than IPv4, due to simple network design.
  - Running cost / life-time cost
    - How will you come up with merging, restructuring of organization

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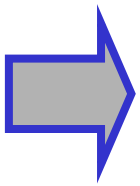
- Introduction
- Potential IPv6 Application Area
  - Legacy Networks
  - **New Fields**
  - Live E! Project
- Summary

Potential Application Areas of IPv6

- (Legacy) Network Service
  - NGN
  - FMC
  - Triple Play
  - Wireless
- **New Areas**
  - **Non Computer Devices**
    - **Sensor**
    - **Controller/Actuator**
    - **Embedded**
  - **Applications**
    - **Building System; Energy, Emergency, Security, IT**
    - **Facility**

How to use the sensor network

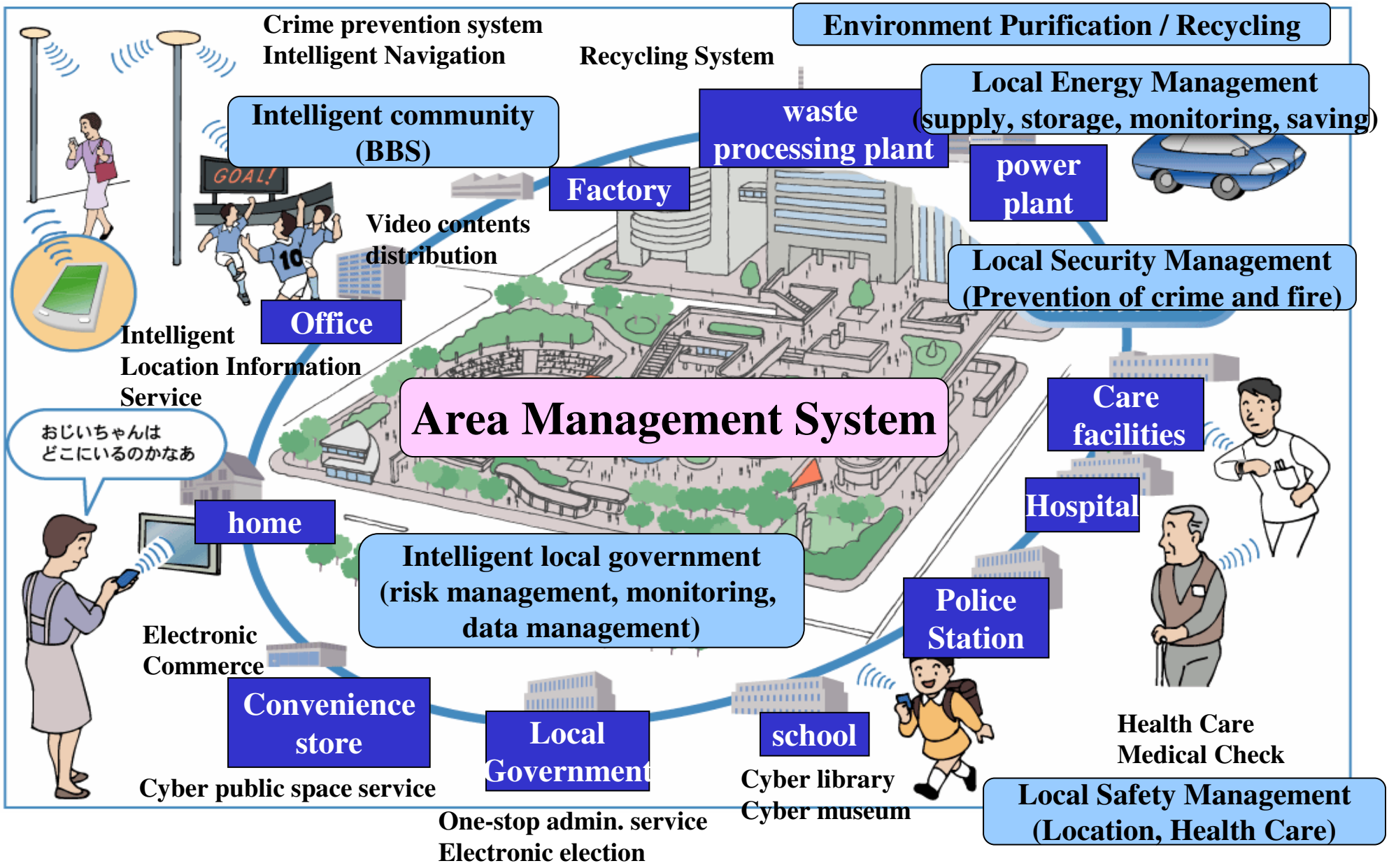
- **Public Services**
  - **Public safety**
  - **Disaster protection/recovery**
  - **Grasp the state of town/nation/earth**
- **Business**
  - **Improve operational efficiency, e.g., Energy saving**
  - **New services**
- **Educational material**



Let all of your information available for any-node on the Internet for "possibilities"

Metropolitan designing; Real-Space Internet with IPv6

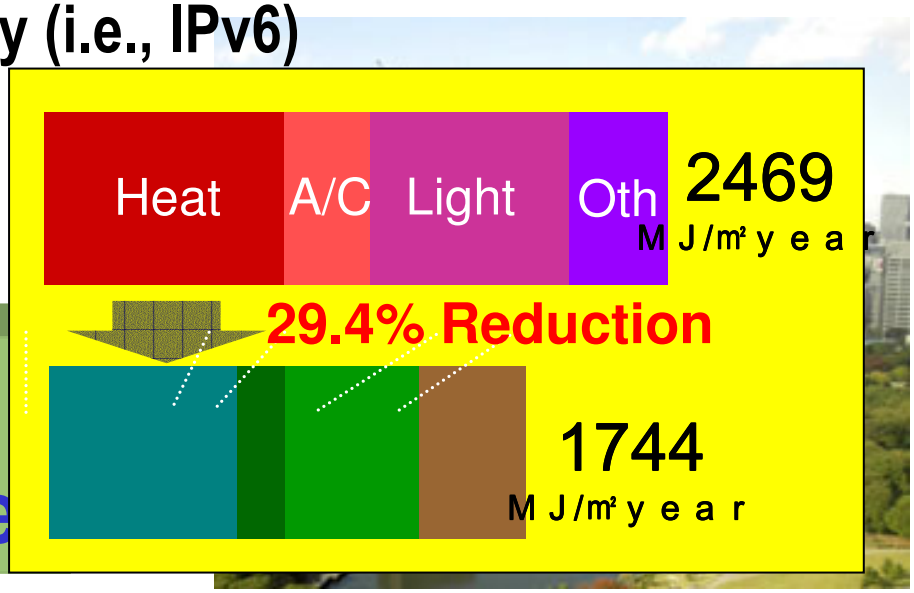
Source: Matsushita Electric Works



How to use the sensor network e.g., saving energy in building system

- **Huge operational cost**
  - **Large energy (e.g., gas, electricity) cost**
  - **About 30% energy saving has achieved !**
- **Proprietary technologies**
  - **Large complex has more than 200K monitoring and controlling points**
  - **Each systems use different technology**

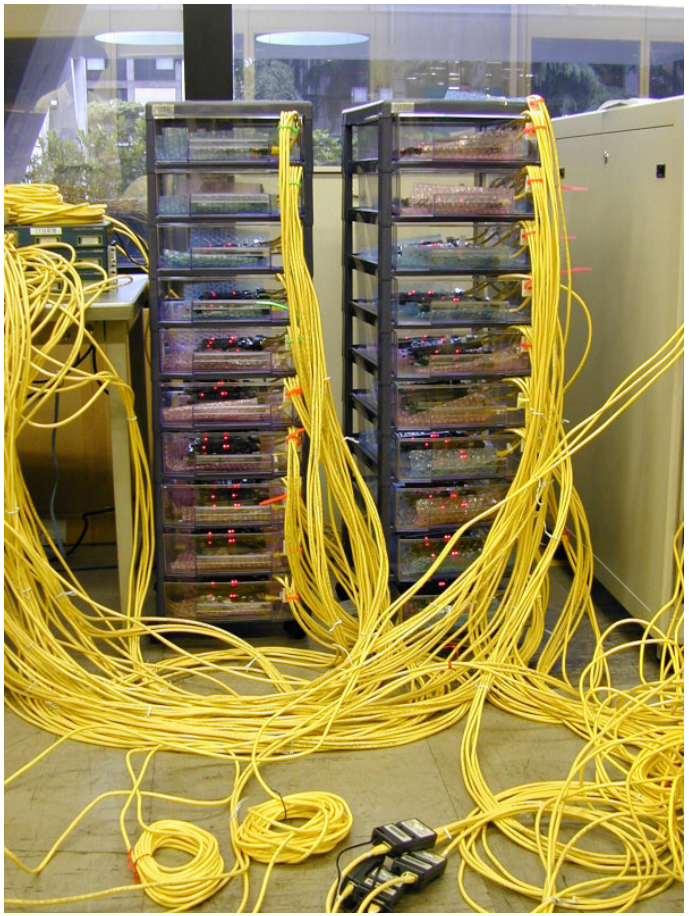
  ➔ **Let it be open TCP/IP technology (i.e., IPv6)**
- **COP3 by United Nation**
  - **10%-30% energy saving**



1. **Improve portfolio**
2. **Increase asset value**

Experiments ; Temperature Sensor Nodes at NetWorld+Interop Tokyo

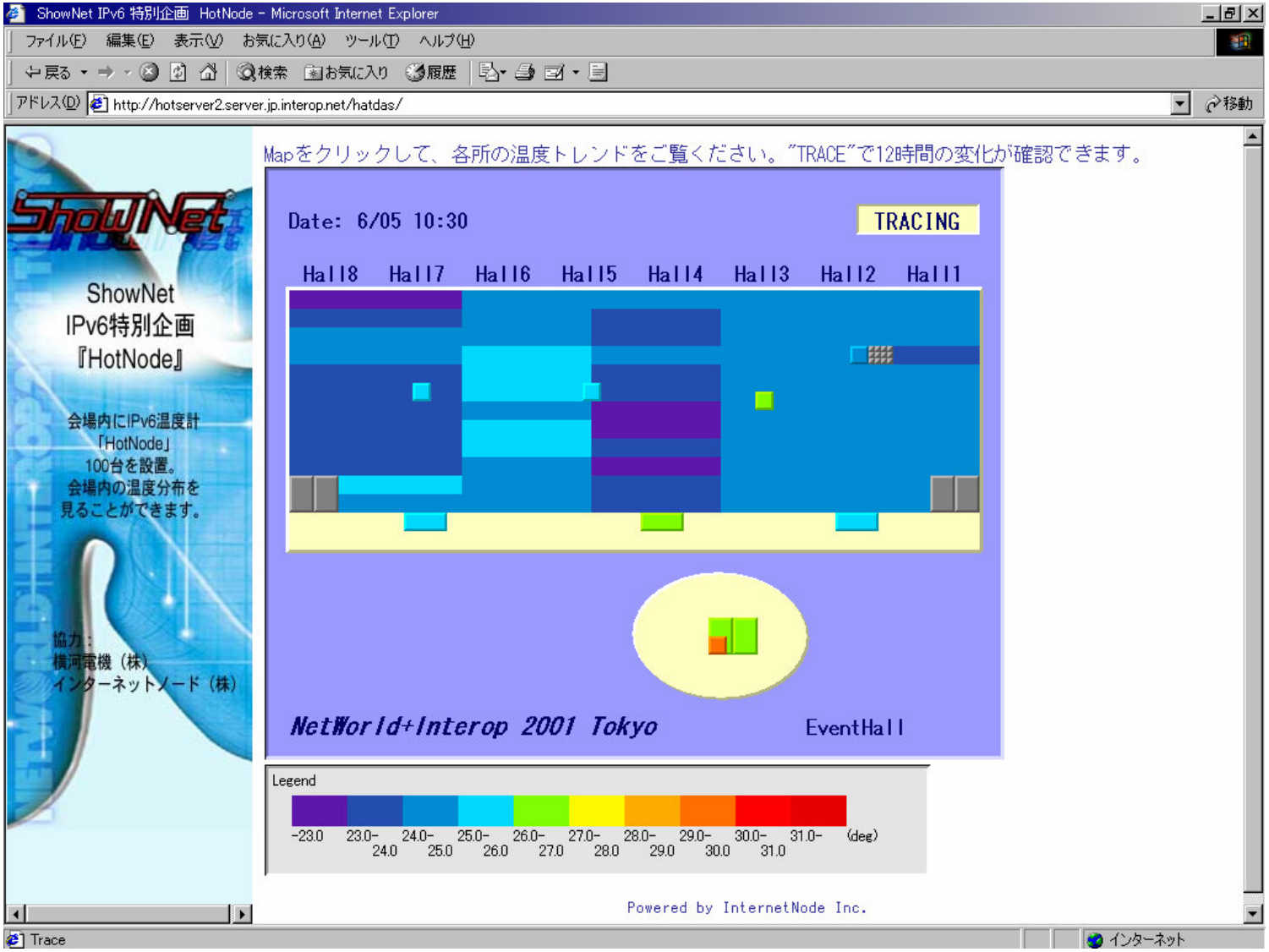
温度センサーノード



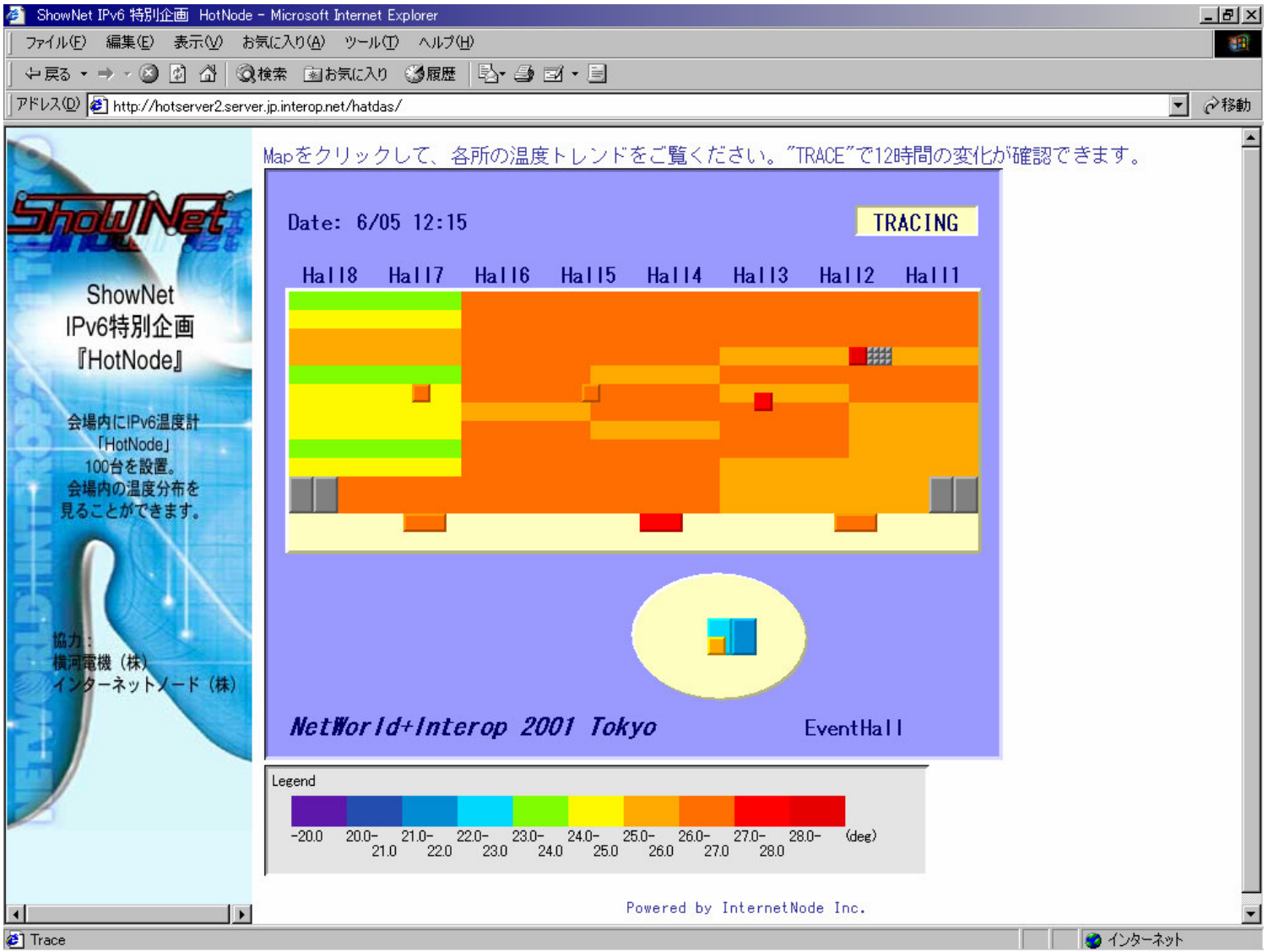
100台規模の温度センサーノード実験

フル稼働中のセンサーノー

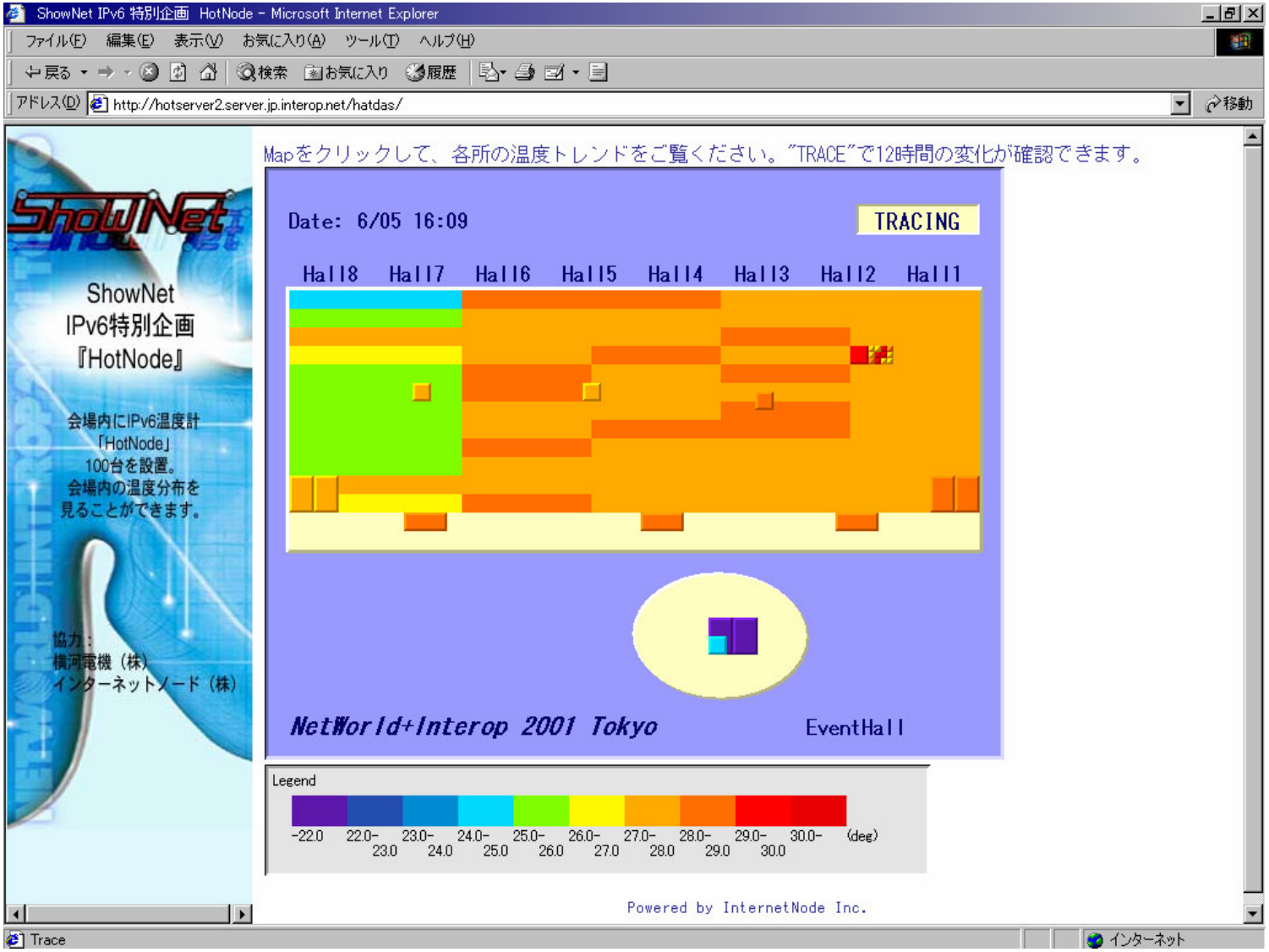
Temperature at ShowFloor



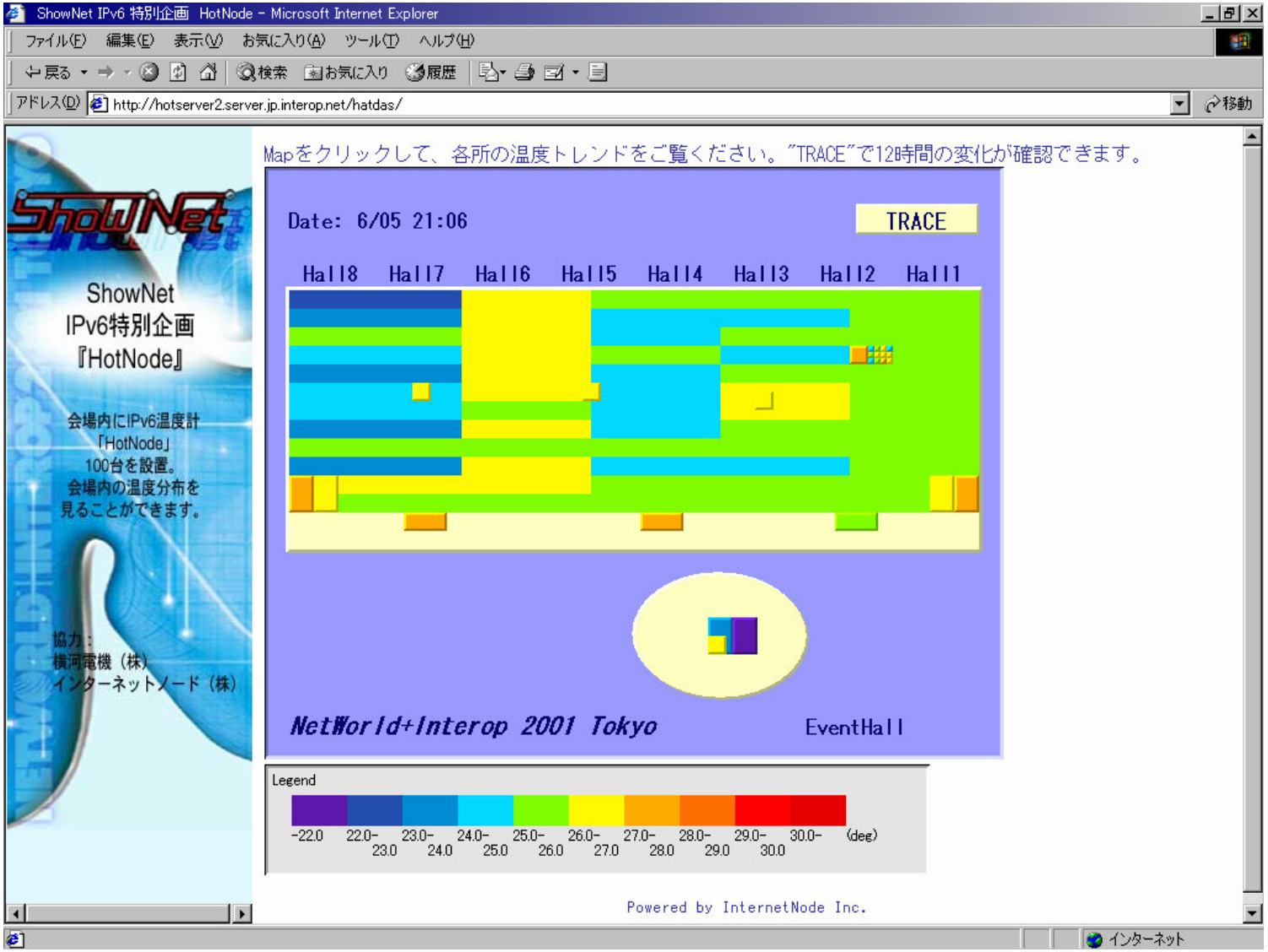
Temperature at ShowFloor



Temperature at ShowFloor



Temperature at ShowFloor

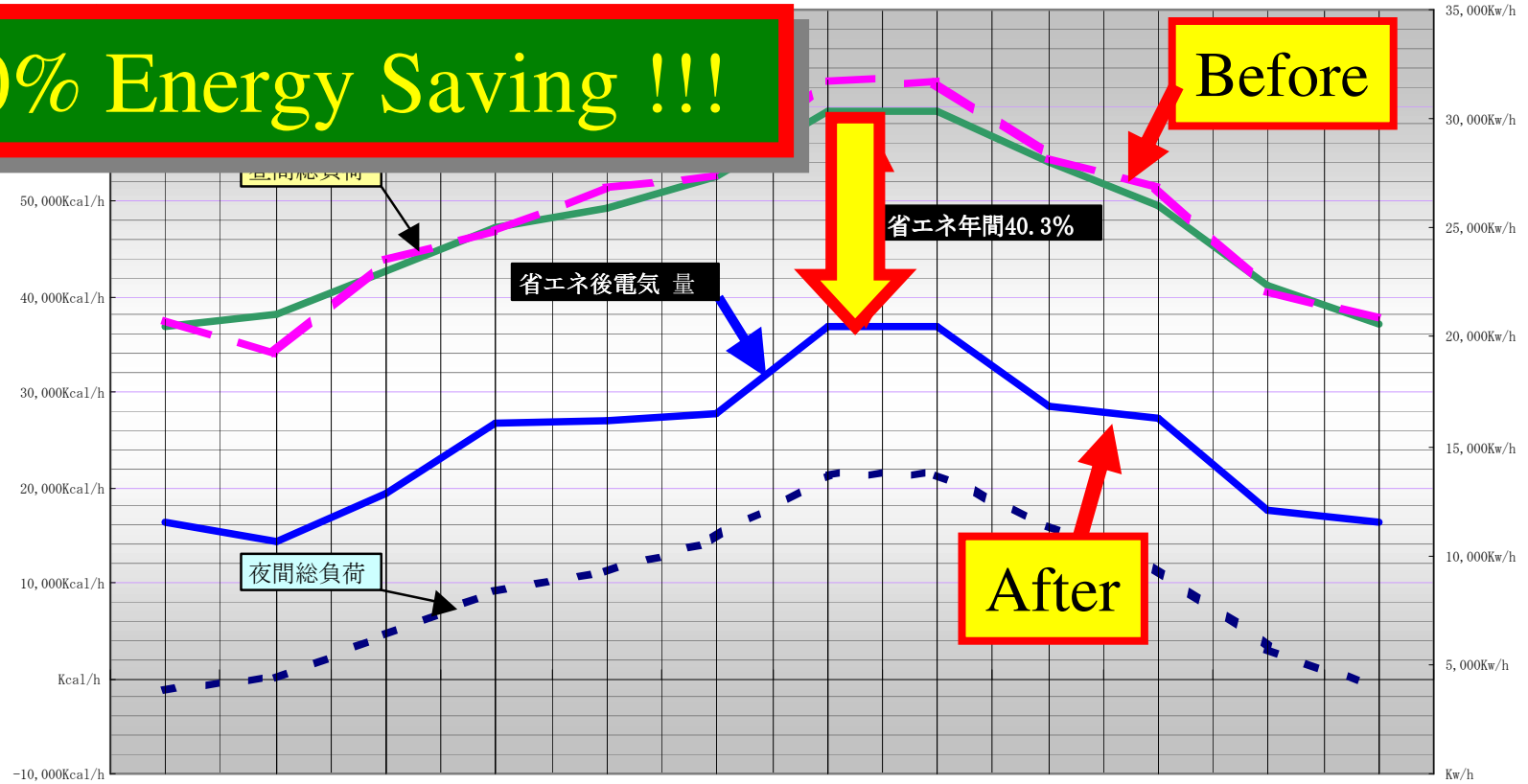


資料提供：(株)大崎コンピュータエンヂニアリ

http://www.oce.co.jp/

電算・サーバ室発熱量と空調機消費電力比較表（計算値）

40% Energy Saving !!!



計測日時：2005年2月１６日から2月２３日

電算・サーバ室設備設置状況　　部屋の大きさ　18,000(W)×15,000(D)×2,700(H)
室内空調負荷設備：HostComputerSystem　2式　ｻｰﾊﾞ機器類　20ﾛｯｶｰ
空調設備：水冷式床下送風型空調機　15ps　　6台
電源設備：三相UPS　200KVA 2台（並列冗長）,単相UPS　1.4KVA 約25台

Operation at Tokyo HQ Office of Matsushita Electric Works

Shiodome HQ in Tokyo

Even with a lot of glasses !!!

	Improvement	Notes
Electricity	**18%**	Versus 2003/9-2004/8 Osaka HQ office ; **29.4%**
CO2	312t **(6.1%)**	2004 versus 2003

(*) In 1990, based on the Kyoto Protocol (COP3) by UN (United Nation), Japan targets and mandates 6% improvement to prevent and improve the greenhouse effect, e.g., reduction of CO2.

Building Automation Components enabling IPv6 (now and plan)

FreeFit
Lighting control unit

Icont
Integrated control module

BX(Building eXchange)
Virtual IPv6 Gateway

FS (Field Server)
Internet Sensor Node

Building Automation
by LONWORKS

Roppongi Hills

「サンピエトロ大聖堂」

「ルーブル美術館」

HERBIS ent

「大阪　ハービスENT」

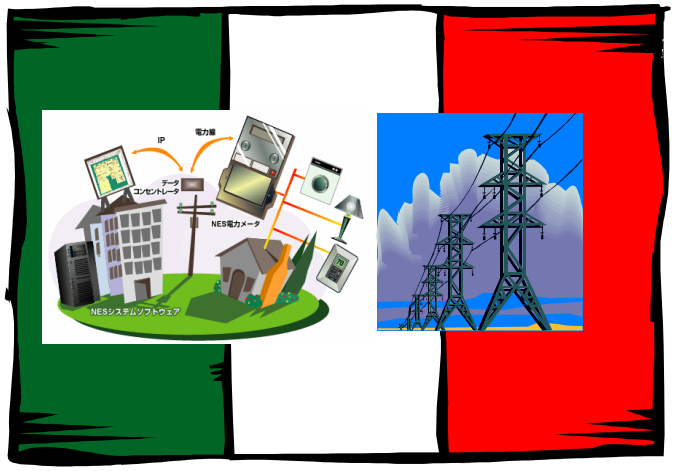
「ニューヨーク市学校」

「MOMA」

Facility Automation
by LONWORKS

New York Transit

水源マネジメント（上海水道局）



イタリア　エネル社

グリーンプロジェクト
（ハウスにおけるトマト栽培）

Home Automation
by LONWORKS

未来之家
Future House

未来の家
プロジェクト
（北京）

クラウドナイン

Nico
Technology

無線接続を使った
集合住宅のファシリティ管理（北京）

HOME
VITA
Total Living Solution

http://www.v6pc.jp/en/wg/fnSWG/index.html

Developing “Facility Networking System”

- Facility Networking SWG (IPv6 promotion council) and Open Facility Network Interoperability Consortium aim at reducing the life cycle cost of buildings by employing IPv6 network technology in an open and multi-vendor system.
  - Enable to monitor and control every digital devices from every client supplied by other vendors (LONWORKS and BACnet, de-facto protocols of facility management)
  - Enable to operate and re-design facility management system using existing Ethernet
  - demonstrate interoperability at several tradeshows

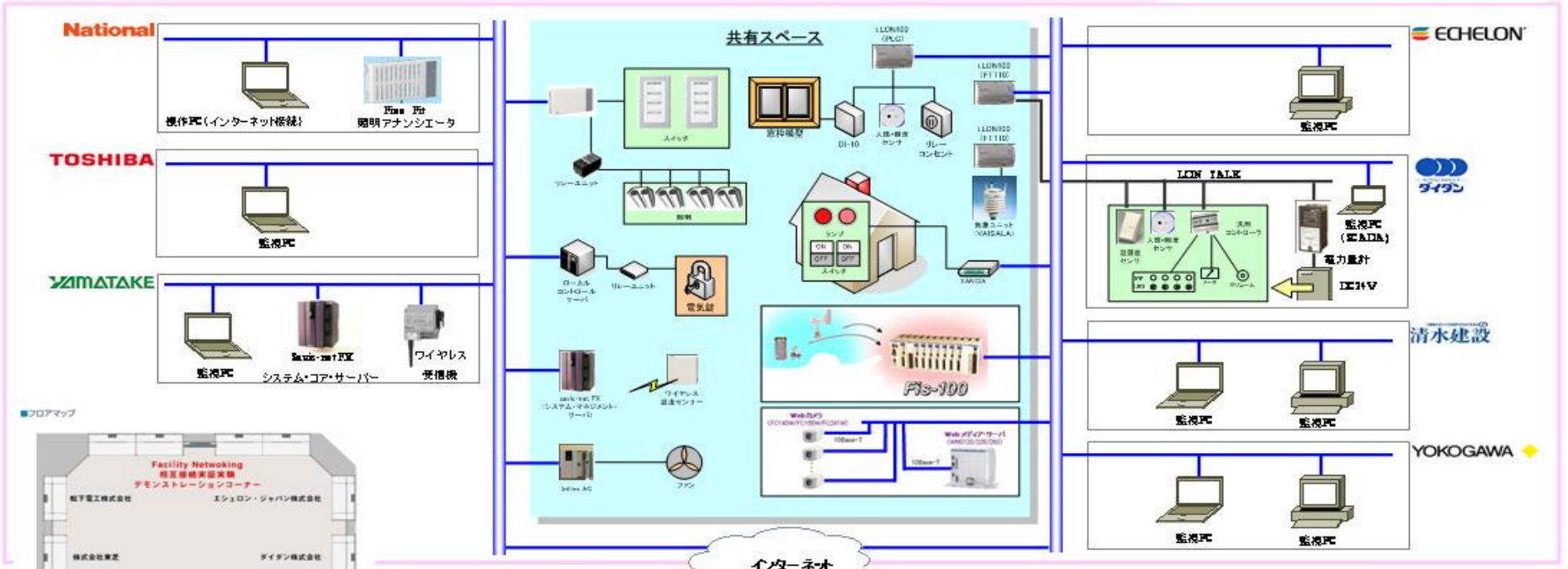
World first interoperability of BA controllers via IPv6 transport with LON Works and BACnet

業界の2大標準ともいえるLONWORKSやBACnetといった既存ファシリティ管理等用プロトコルについて、IPv6ネットワークに集約することで、各社のデバイス等を他社の監視用クライアントで制御・監視できる等、世界初のIPv6でのマルチベンダーによるファシリティ・マネジメント・ネットワークを実現いたしました。
仕様のオープン化、IPv6ネットワークの利用、そしてこれらの下で機器を個別にきめ細かく制御することで、大幅なコスト削減と省エネルギー効果が期待できます。

既設のイーサーネットをインフラとして活用でき、管理の用途や環境にあわせて、様々なベンダーからデバイスや管理ツールを選択・接続できるユビキタスなファシリティ管理環境を体験してください。

Facility Networking ShowCase

世界初！ IPv6でユビキタス制御が可能になる
ファシリティネットワーキング相互接続実験
～IT業界とファシリティ業界の大手有力7社が参加～



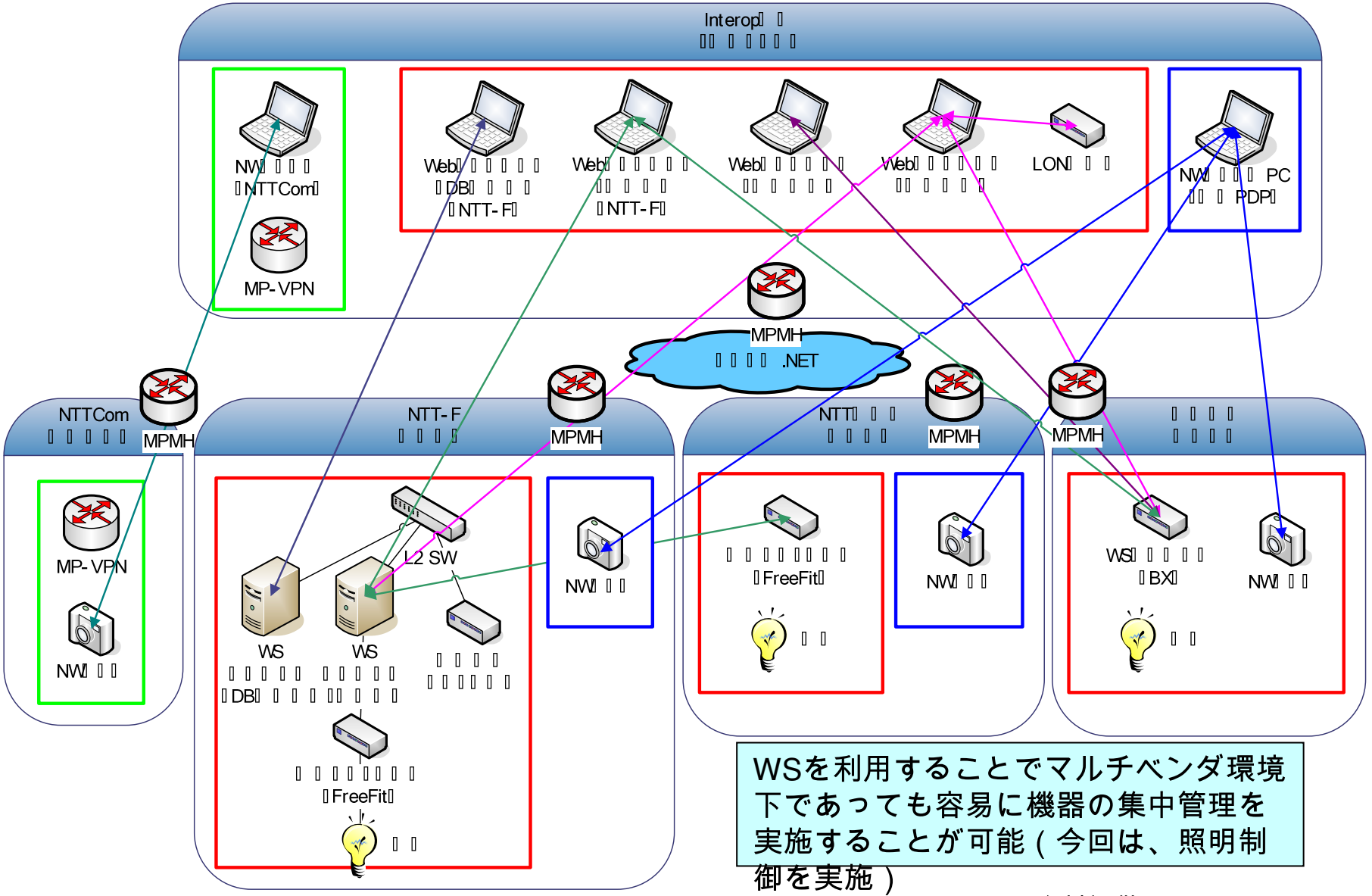
■参加企業・団体

ECHELON エシェロン・ジャパン株式会社
清水建設 清水建設株式会社
ダイダン ダイダン株式会社
TOSHIBA 株式会社東芝
National 松下電工株式会社
MRI 株式会社三菱総合研究所
YAMATAKE 株式会社山武 ビルシステムカンパニー
YOKOGAWA 横河電機株式会社

2004.11.16

Demonstrations at INTEROP Tokyo2006

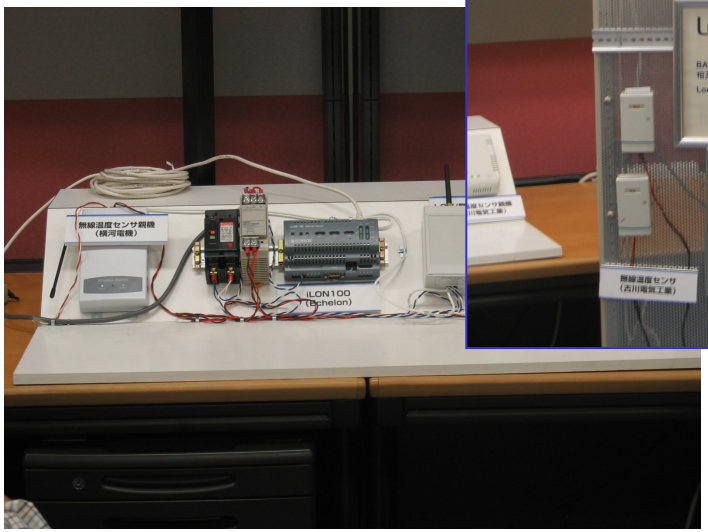
Integration of BACnet and LonWorks via Web Service



WSを利用することでマルチベンダ環境下であっても容易に機器の集中管理を実施することが可能（今回は、照明制御を実施）

資料提供： NTT Facilities, Inc.

Just open the FNIC Lab.



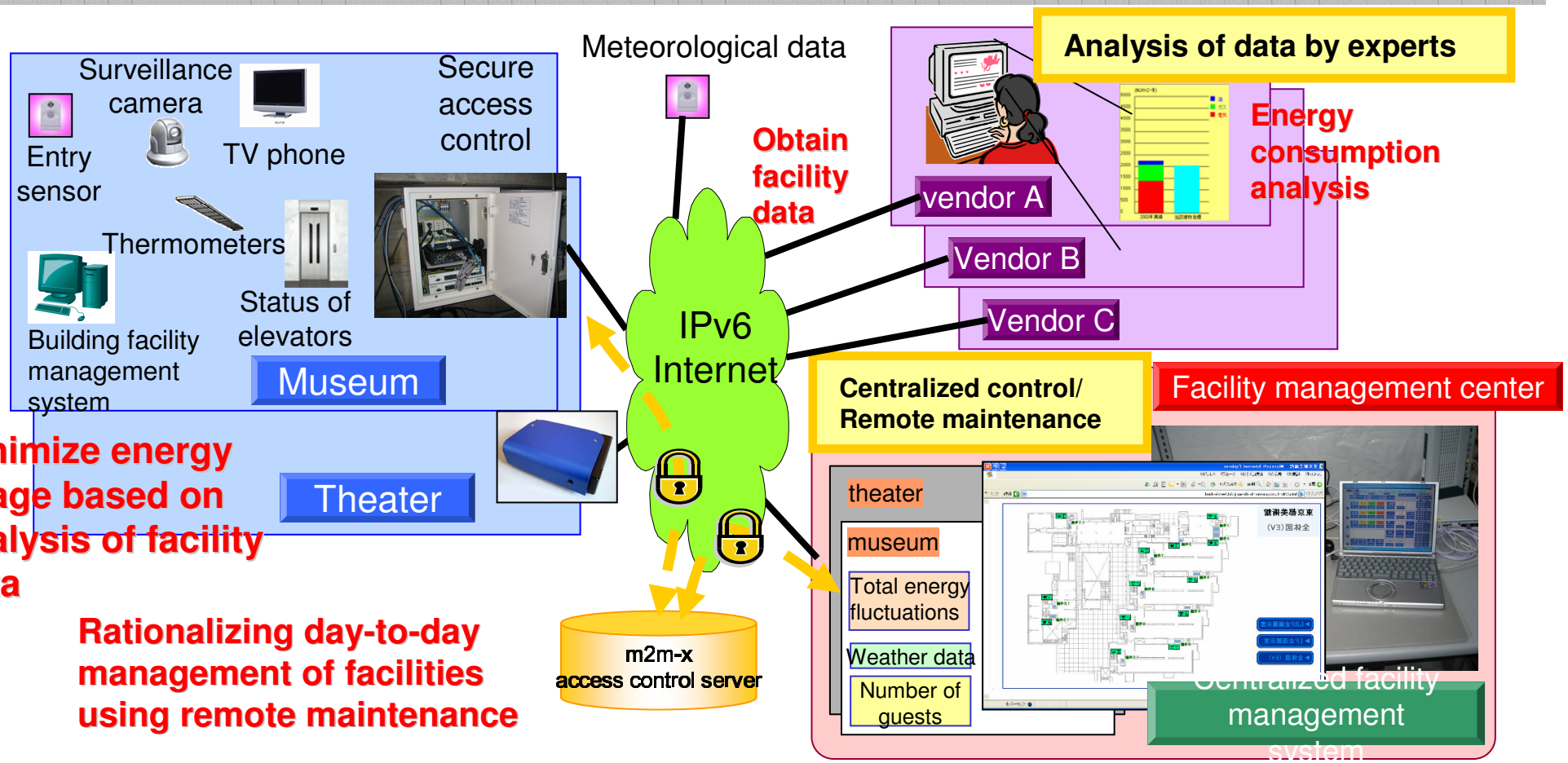
[Founders]

Keio Univ.
Univ.of Tokyo
WIDE Project
Yokogawa
Echelon
Panasonic(MEW)
Shimizu
NTT Data
NTT East
NTT Facilities
Yamatake
Toshiba
Daidan
NTT Comm.
IRI Ubiteq
Furukawa
Intec Netcore
Johnson Control
Semens Bld Tech.
Broadband Eng.

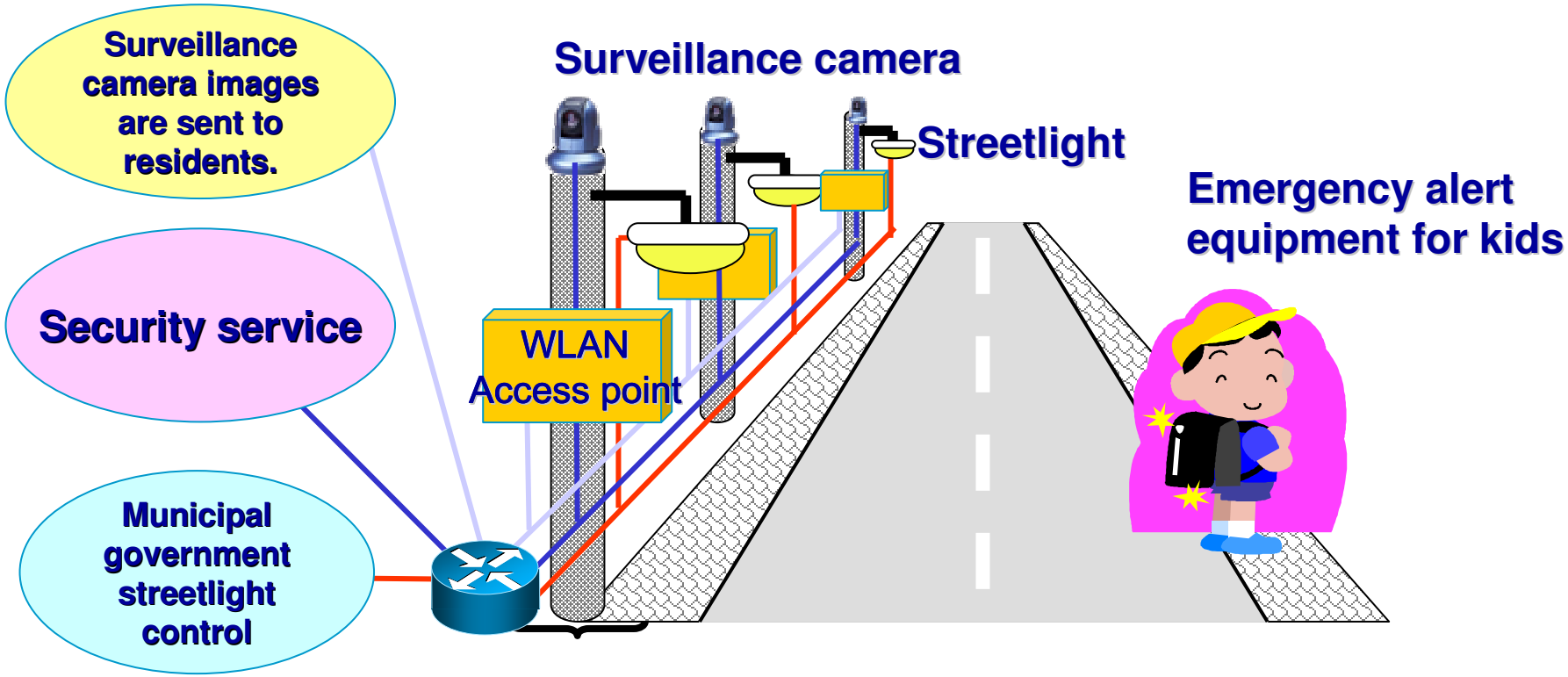
Facility management

IPv6 based P2P control of facilities

- Status of elevators, AC or ventilators, movement of guests in the museum, temperature of rooms, surveillance camera images may be monitored in a facility management center.
- Shared use of networks among IP phone, Internet access and facility management.
- Cost reduction
- Where experts' analysis of data on the number of guests in respective rooms and temperatures are available, it is possible to minimize energy consumption.



Community Security Systems



The security service and streetlight control share the IPv6 network, maintaining mutual independence of the services (Multi-prefix/multi-home (MP/MH) technology).

Disaster Prevention System

Municipal office

Experienced floods and tsunamis

Current work style

Officers sent to disaster sites report with telephones or radios

IPv6 disaster prevention system

- Officers are assisted with detailed visual information obtained at cameras installed at places in the town.
- Residents provide officers with/ receive information using PDA's.

camera

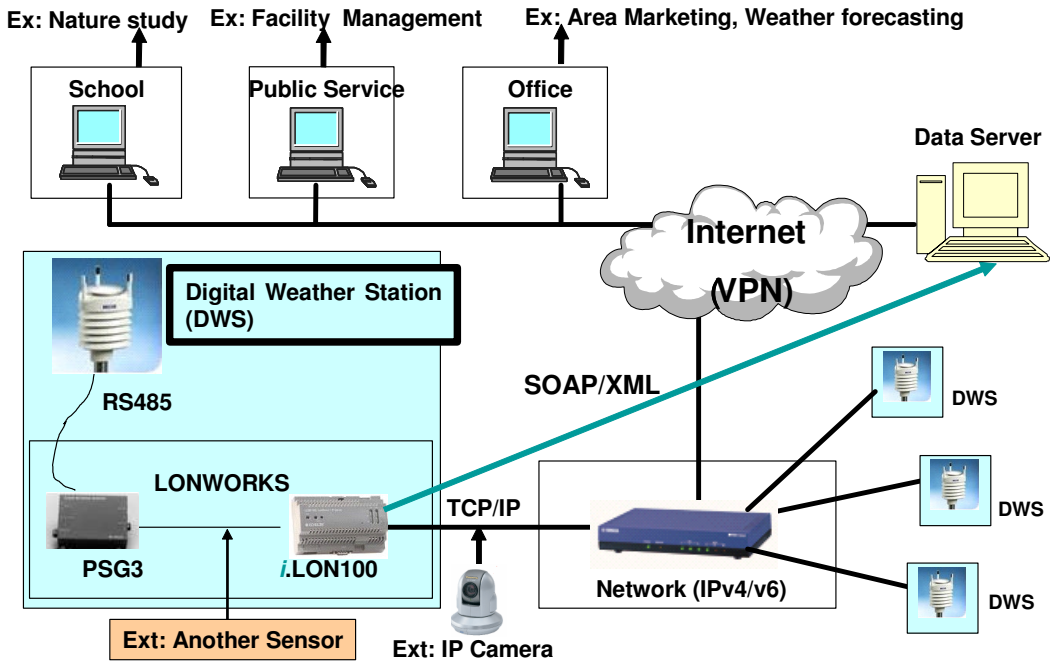
AGENDA

- Introduction
- Overview of IPv6 Promotion Council
- Potential IPv6 Application Area
  - Legacy Networks
  - New Fields
  - **Live E! Project**
- Summary

Initiated “Live E!” Project
-- Sensor network for the earth --

Live E! Project
http://www.live-e.org/

- Live E! is a project establish an network infrastructure that can generate, collect, transmit, process, and share digitized “Environmental Information”.
- “Environmental Information” is generated and let available from anywhere on the global Internet by "Digital Weather Station“, or by any other sensor devices, such as IP camera, that are installed by individuals and by organizations.
- “Digital Weather Station” generates the weather information with low cost and provides the information to any node on the global Internet
- By the installation of larger number of “Digital Weather Station”, the environmental information can be richer and finer, i.e., connectivity (installation) is own rewards.
- It has been recognized that the applications of Live E! project contents can be for education, public service and for business cases.



Live E! Project

Initiated “Live E!” project.

- Install weather sensor units

- Let information available for anyone

- Targeting mile-mesh sensor network

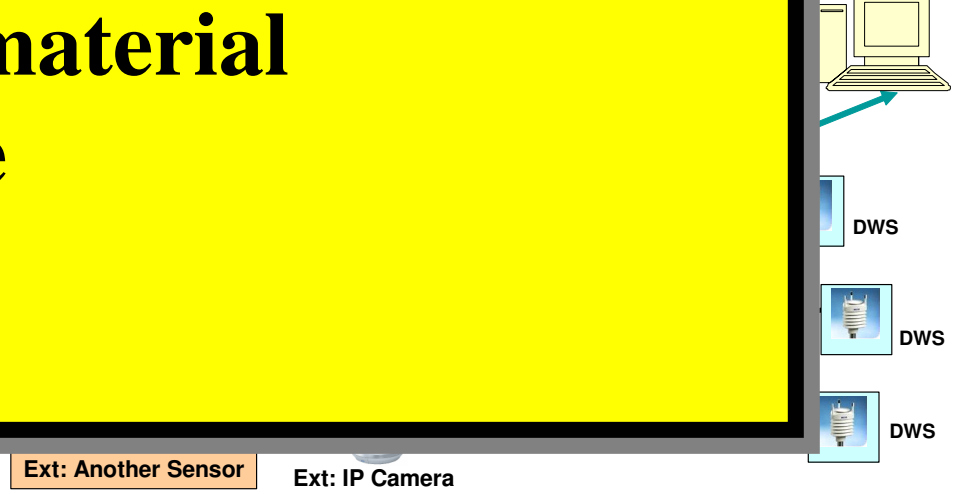
- Three application areas

1. Educational material

2. Public service

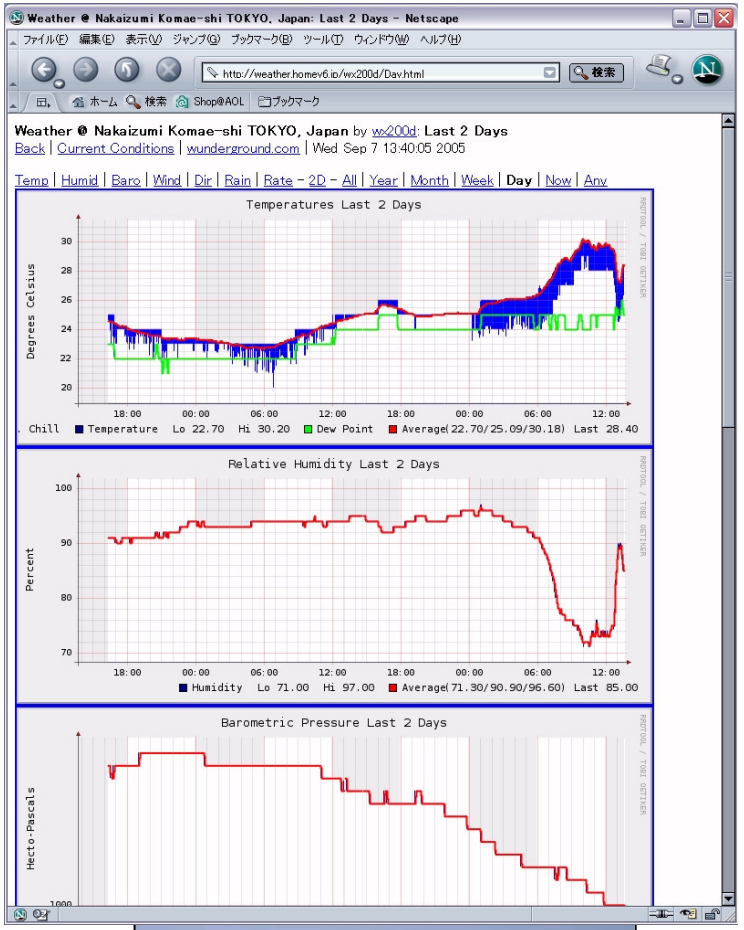
3. Business use

- Live … ct, trans…
- “Env… the g… s, such…
- “Dig… the v… …sting cost… to ar…
- By t… of “L… envi… riche… (inst…
- It ha… appli… contents can be for education, public service and for business cases.



Installing Internet Weather Stations in Nation-Wide Japan

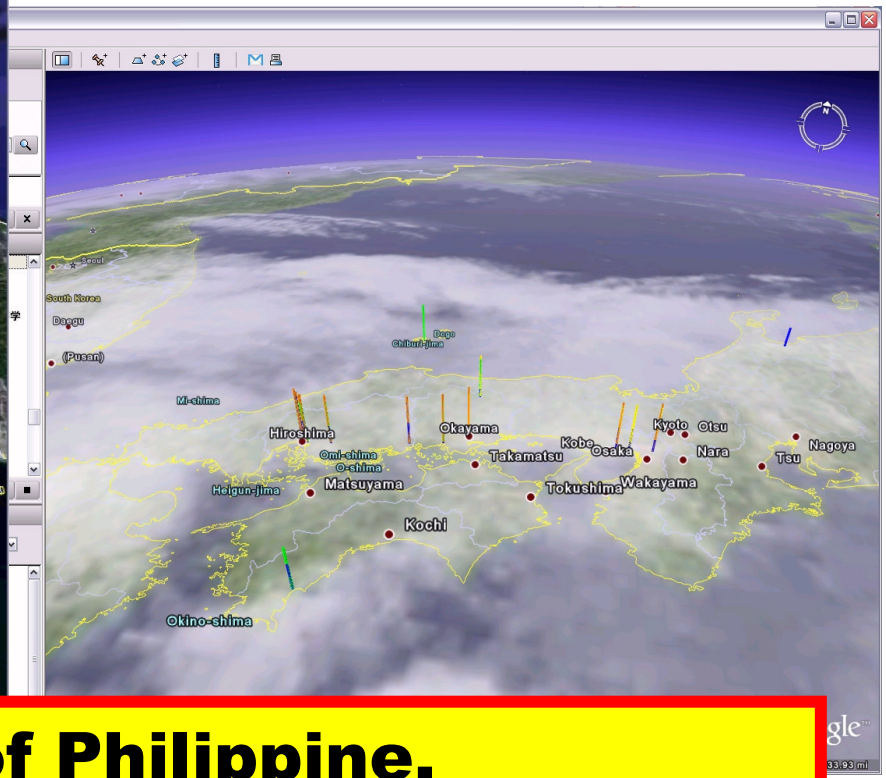
Sponsors:
NetOne Sytems, WILLCOM, NTT-Neo-Mate-Chugku, WeatherNews, IRI UBITEQ, Echelon, Daidan, Univ.of Tokyo



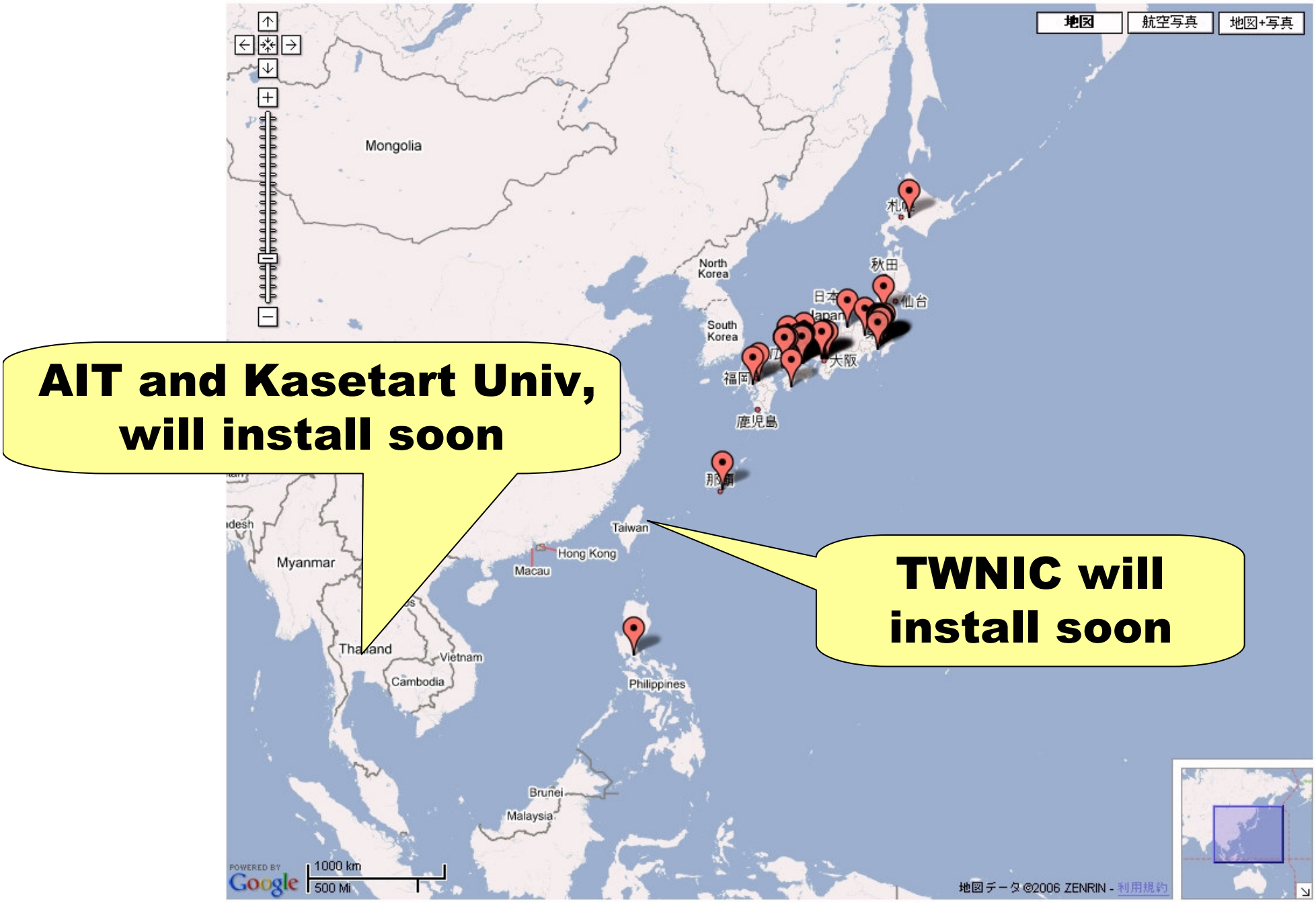
Dense Installation Areas

- Minato-ku in Metropolitan Tokyo
  - Education for elementary schools
  - Public service, e.g., against heat-island phenomenon or evacuation guide for earthquake
- Kurashiki City in Okayama
  - Disaster protection (against flooding by heavy rain)
  - Education for elementary and junior high schools
- Marunouchi-Otemachi-Yurakucho
  - Sense and control the activity of distr

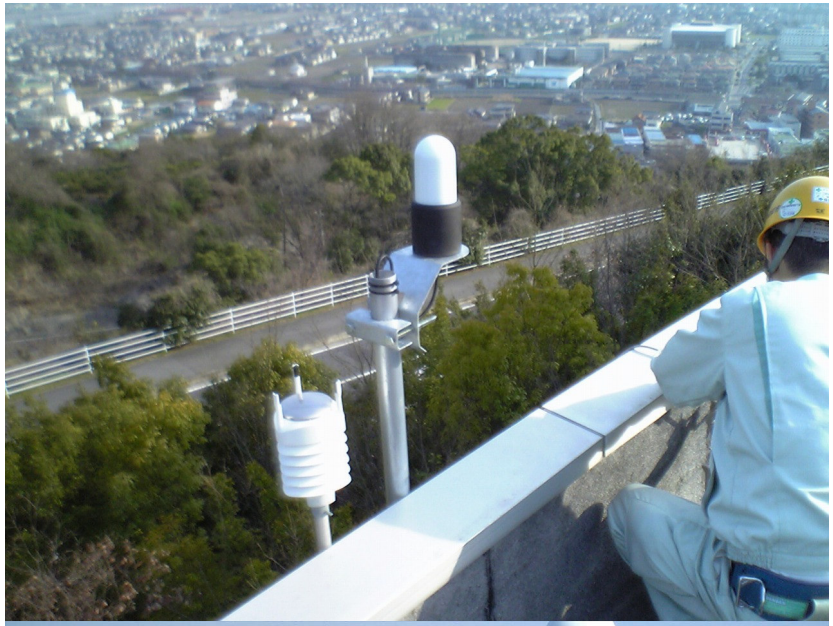
LIVE E! ; example of user application



- Has joined from ASTI of Philippine, PSU of Thailand and other locations (e.g., Taiwan and Malaysia) in Asian countries, collaborating with APAN and AI3.
- Integrating with other information systems, e.g., hurricane warning system

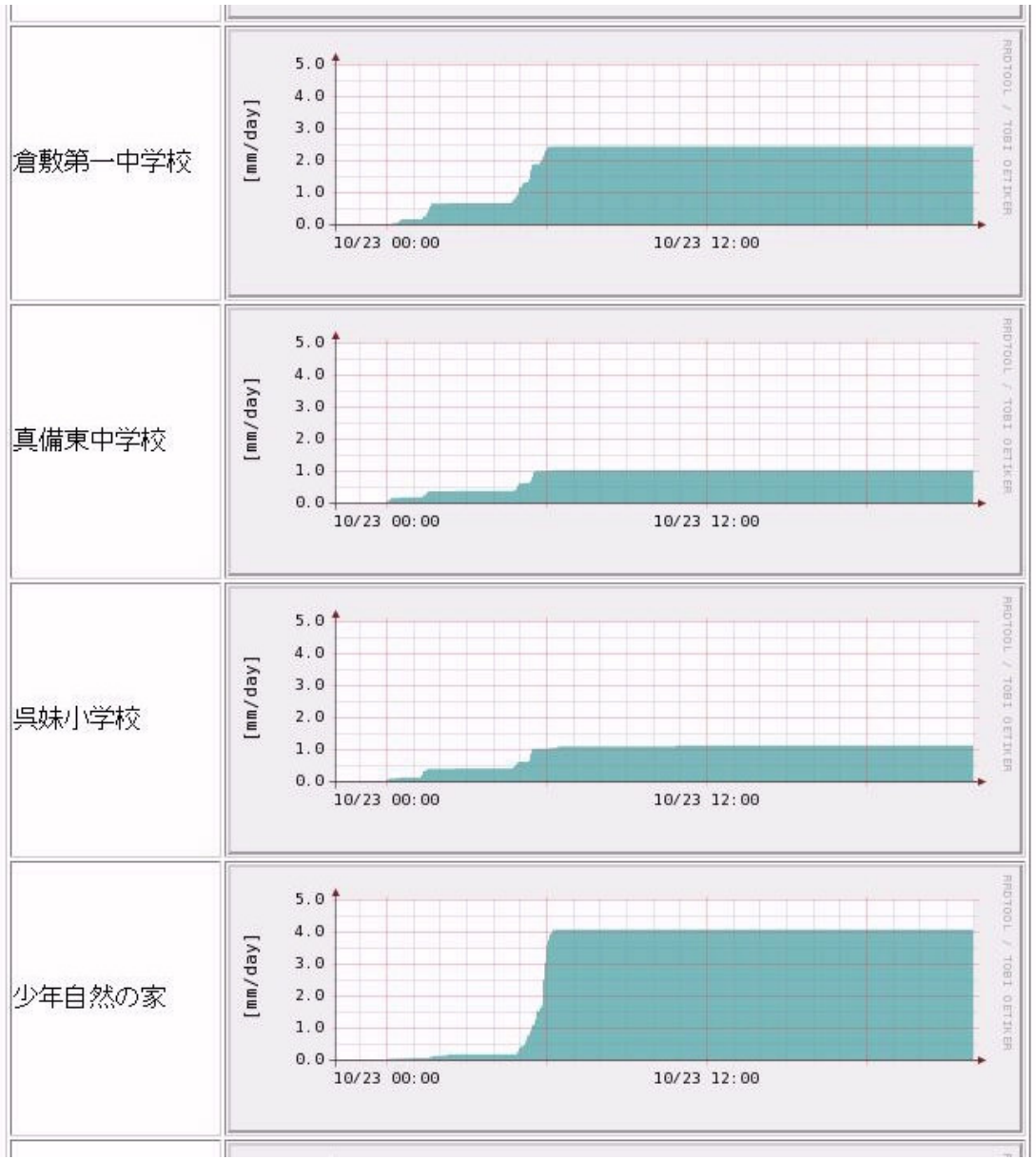

AIT and Kasetart Univ, will install soon
TWNIC will install soon
地図
航空写真
地図+写真
Mongolia
North Korea
South Korea
秋田
仙台
大阪
福岡
鹿児島
Taiwan
Hong Kong
Macau
Myanmar
Thailand
Vietnam
Cambodia
Philippines
Brunei
Malaysia
1000 km
500 Mi
Google
地図データ ©2006 ZENRIN - 利用規約

倉敷芸術科学大学　環境センサー設置状況

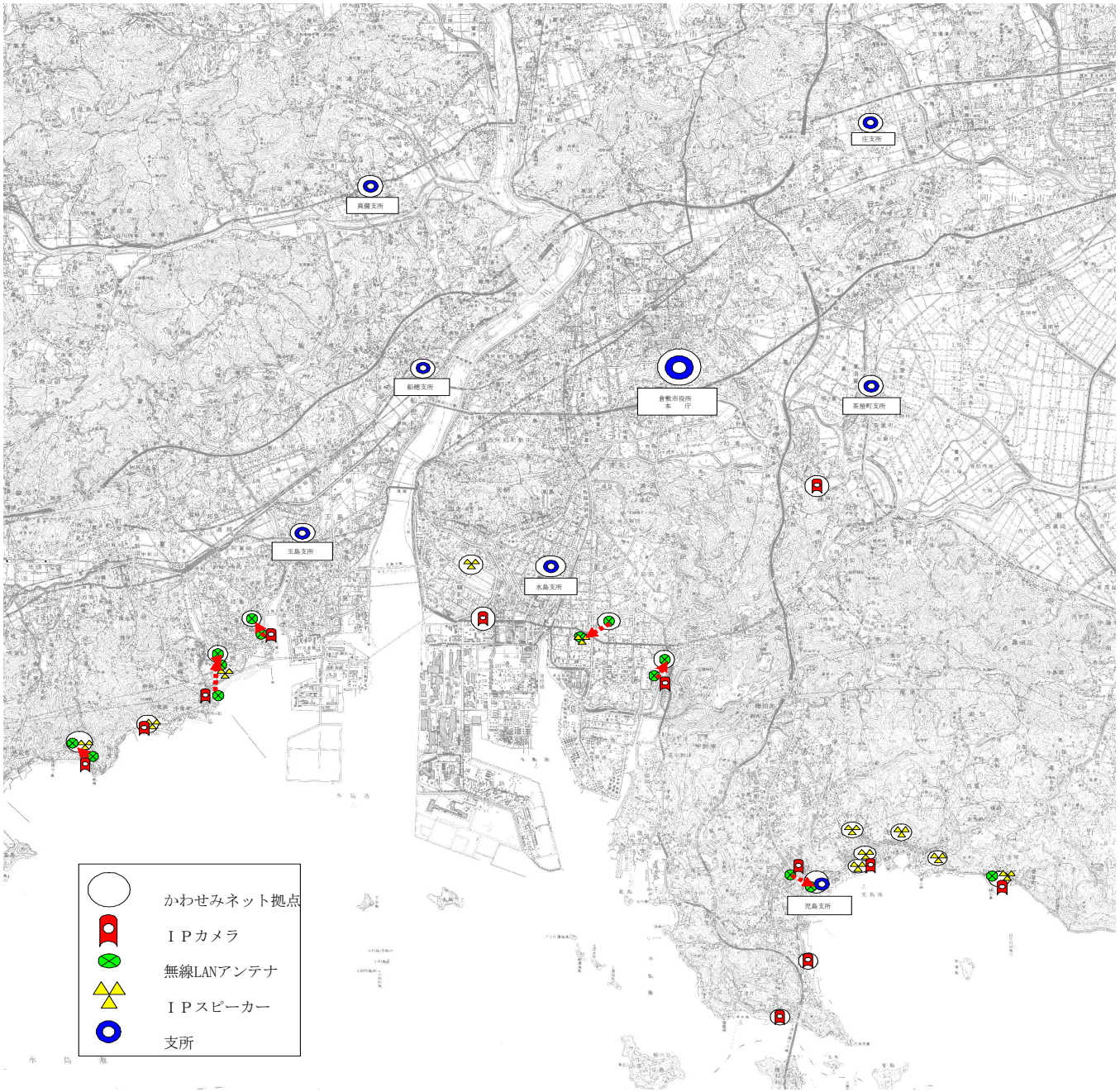


倉敷市　光ネットワーク　”かわせみネット”　を活用した
Live E! プロジェクト環境観測センサー設置予定図

Rain Fall in Kurashiki City, Okayama

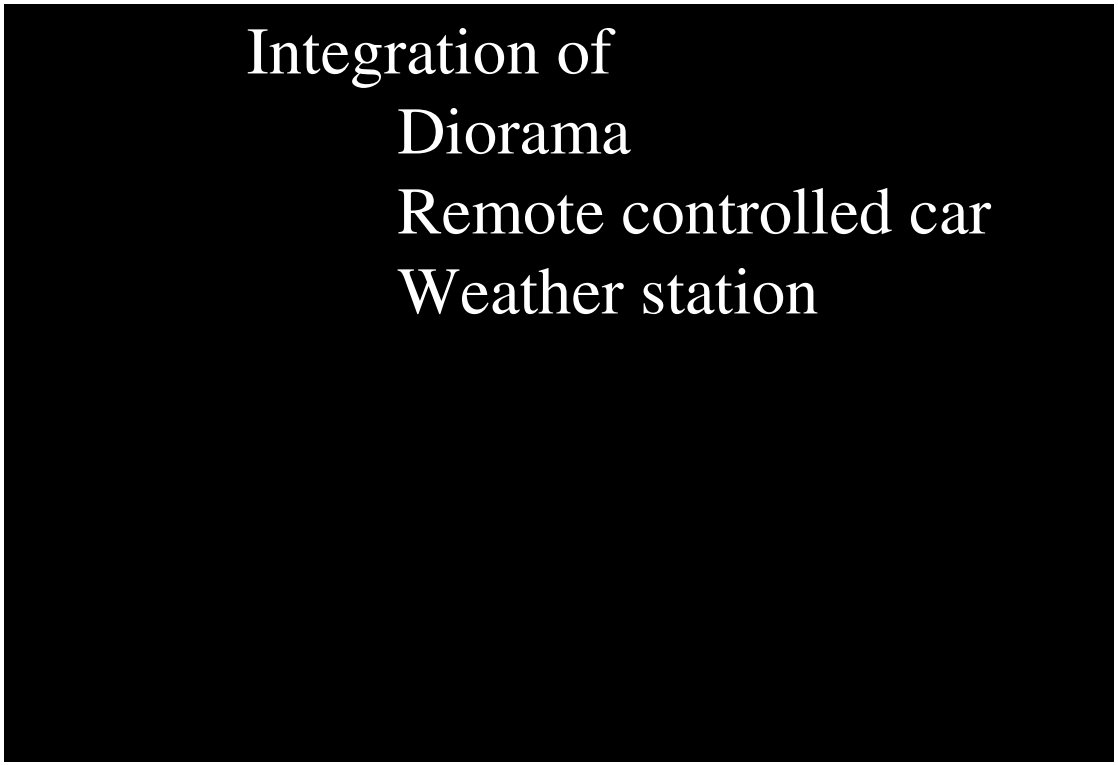


IP Camera and IP Speaker System for Providing Warning information to citizon



Integration of Real-space and Cyber-space - Application by high school students -

- Integration of
  - Diorama
  - Remote controlled car
  - Weather station
- Project institutions
  - Hiroshima City Technical High School
  - Fukuyama High & Junior High School
  - Hiroshima City University
  - Hiroshima University
- Diorama system
  - Hiroshima City Technical High School



(*) Supported by NICT's IPv6 development and deployment program

Integration of Automobiles

ファイル(F)　編集(E)　表示(V)　お気に入り(A)　ツール(T)　ヘルプ(H)

戻る　進む　中止　更新　ホーム　検索　お気に入り　履歴　メール　印刷　Real.com　リンク

アドレス(D)　http://www.ipcar.org/web/cgi-bin/ipc_www_infoview.pl　移動

情報種別

速 度
事 故
特定所要時間
任意所要時間
雨 量
凍 結

地区・情報

速度 地図情報　文字情報

更 新
拡 大
縮 小

地図サイズ: 400×400
縮尺: 1/20万

中心位置情報:

地名:	港南区大久保二丁目
緯度:	N35.24.14.52
経度:	E139.35.30.76

凡例:

10Km/h 未満
10Km/h 以上 20Km/h 未満
20Km/h 以上 30Km/h 未満
30Km/h 以上 40Km/h 未満
40Km/h 以上

事故情報表示

ページが表示されました　インターネット

ファイル(F)　編集(E)　表示(V)　お気に入り(A)　ツール(T)　ヘルプ(H)

戻る　進む　中止　更新　ホーム　検索　お気に入り　履歴　メール　印刷　Real.com　リンク

アドレス(D)　http://www.ipcar.org/web/cgi-bin/ipc_www_infoview.pl　移動

情報種別

速 度

事 故

特定所要時間

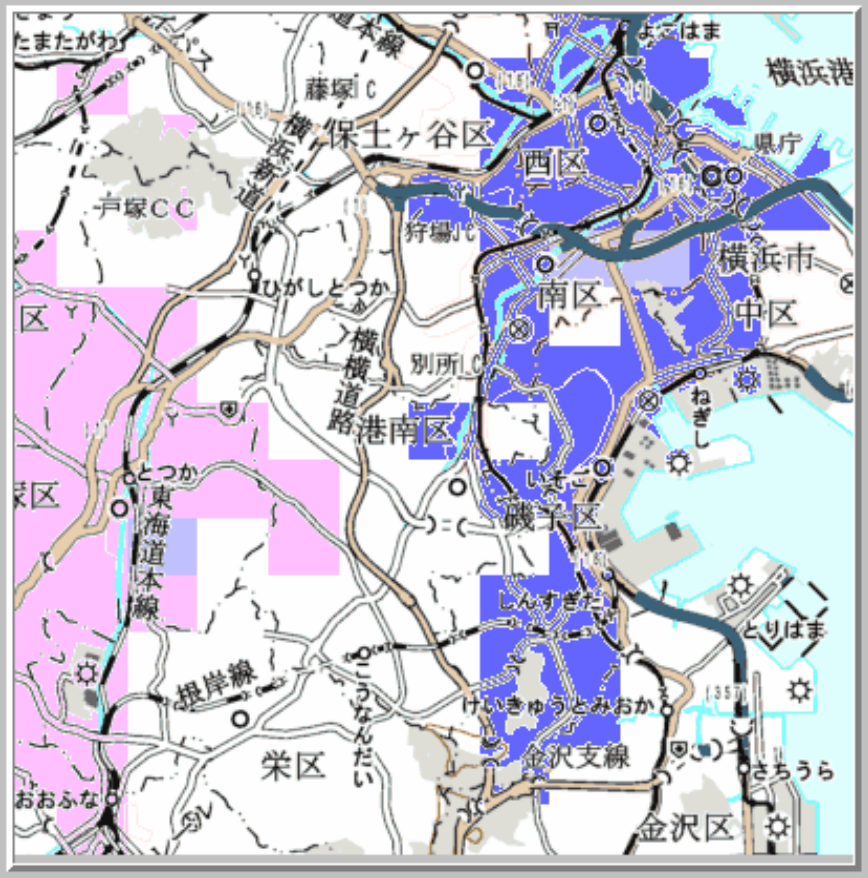
任意所要時間

雨 量

凍 結

地区・情報

雨量 地図情報　文字情報



更 新

拡 大

縮 小

地図サイズ: 400×400

縮尺: 1/20万

中心位置情報:

地名:	港南区大久保二丁目
緯度:	N35.24.14.52
経度:	E139.35.30.76

凡例:

不明　雨

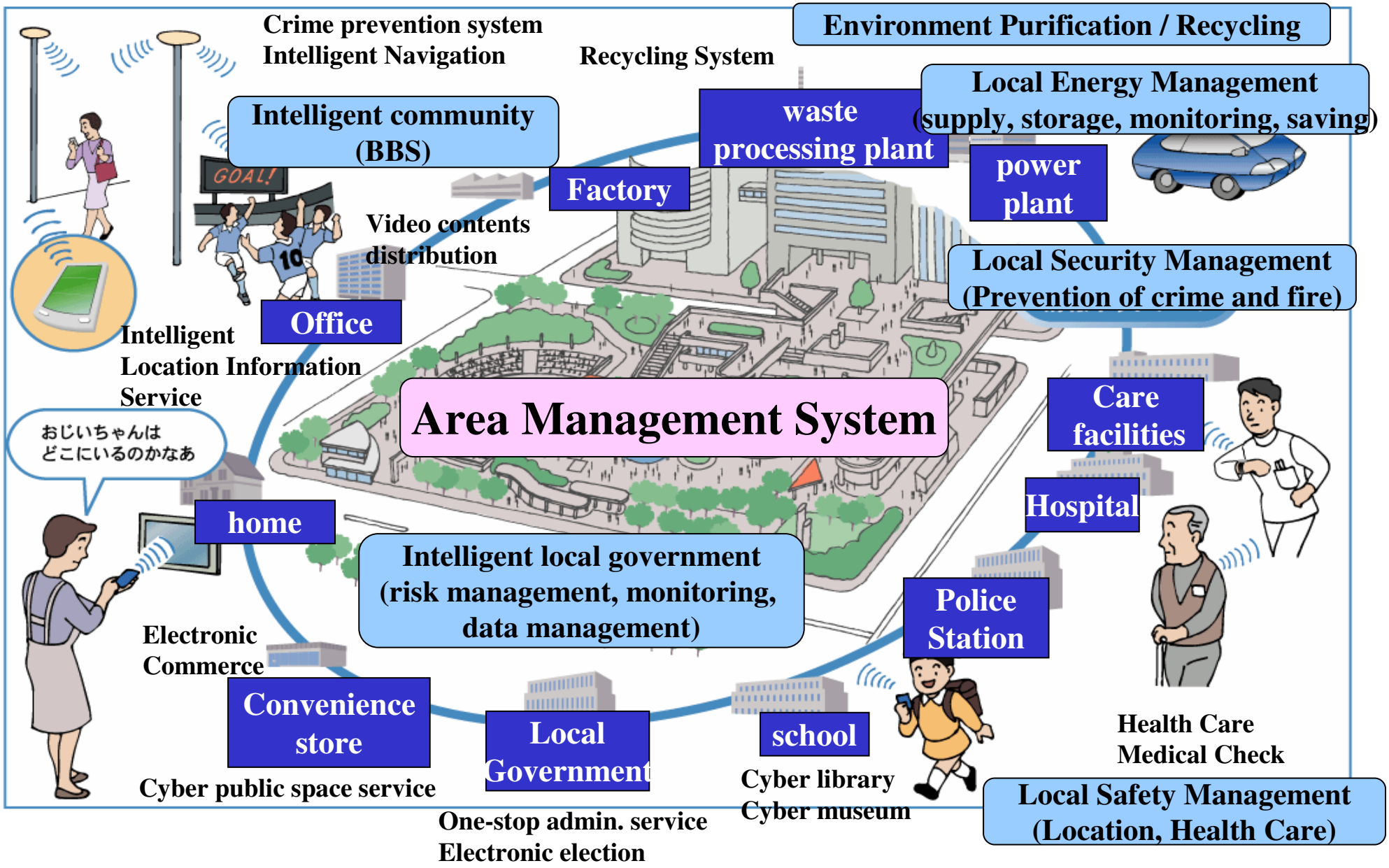
降雨なし　大雨

小雨

ページが表示されました　インターネット

Metropolitan designing; Real-Space Internet with IPv6

Source: Matsushita Electric Works



Summary; IPv6 Business drivers

- Improvement of RoI (Return of Investment) on IT biz
  - Initial cost : Design & Installation
  - Running cost & lifetime cost to operate
    - Easier trouble-shooting by global IP address
    - Introduction of new applications without NAT-boxes
    - Interconnection of service networks (start is fine, but is hard for future re-organization)
- Public services
  - Public safety, e.g., defense business
  - Disaster protection/recovery
  - R&D, R&E or government network deployment

THANK YOU

www.v6pc.jp

Hiroshi Esaki <hiroshi@wide.ad.jp>
Executive Director,
IPv6 Promotion Council of Japan