

The Review of the e-JIKEI Project:

A Project for Realizing Community Security and
Privacy Protection using a Novel Security Camera System

Abuse Prevention of Street Camera Network
by Browsing-History Disclosure

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Professor, Gunma University.

President, NPO e-JIKE Network Promotion Institute.

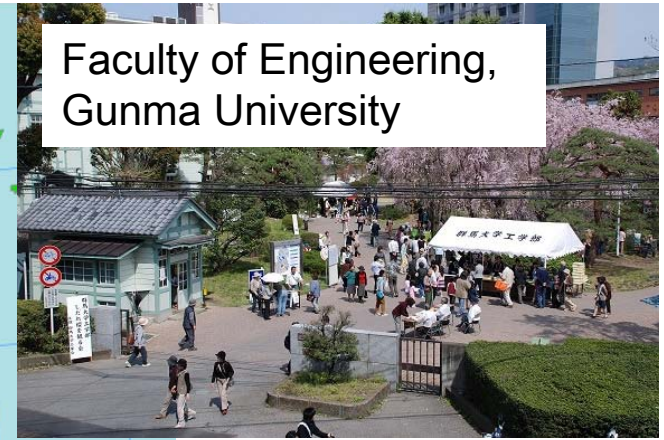
Hot-spring in Gunma Pref.



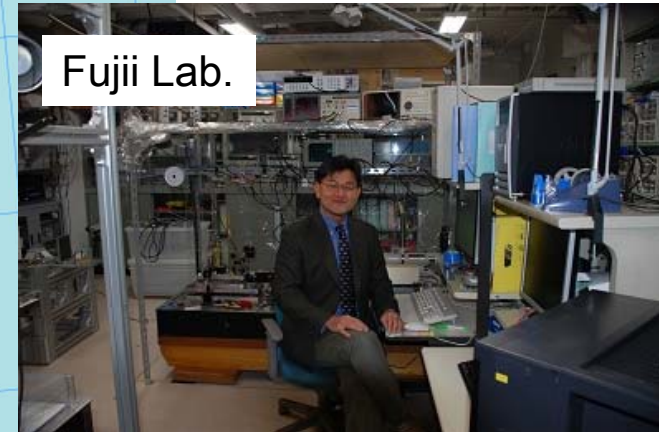
Sky in Gunma Pref.



Faculty of Engineering,
Gunma University



Fujii Lab.

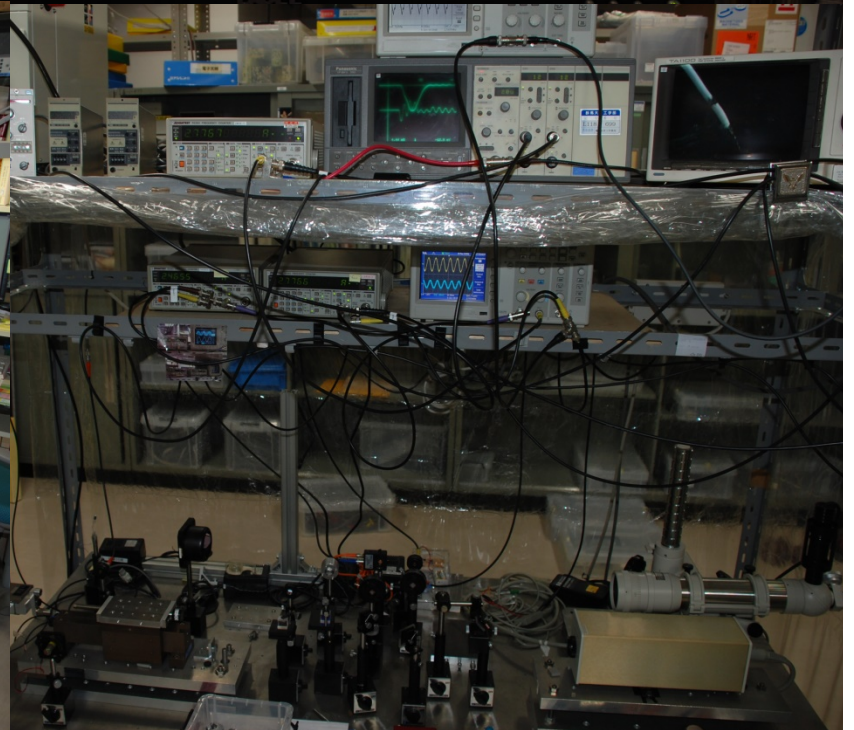
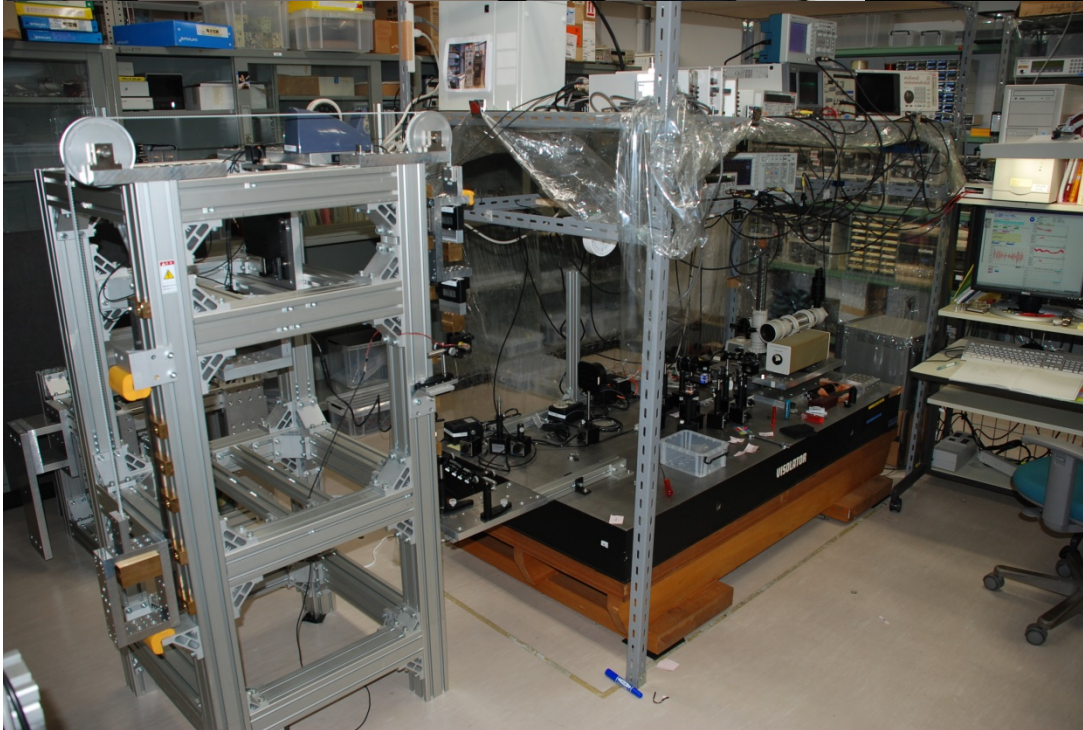
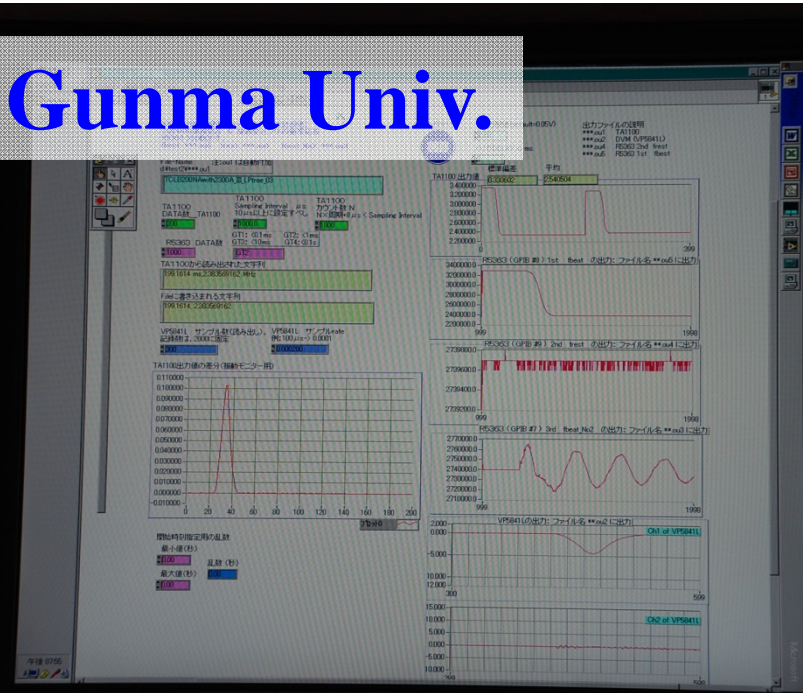
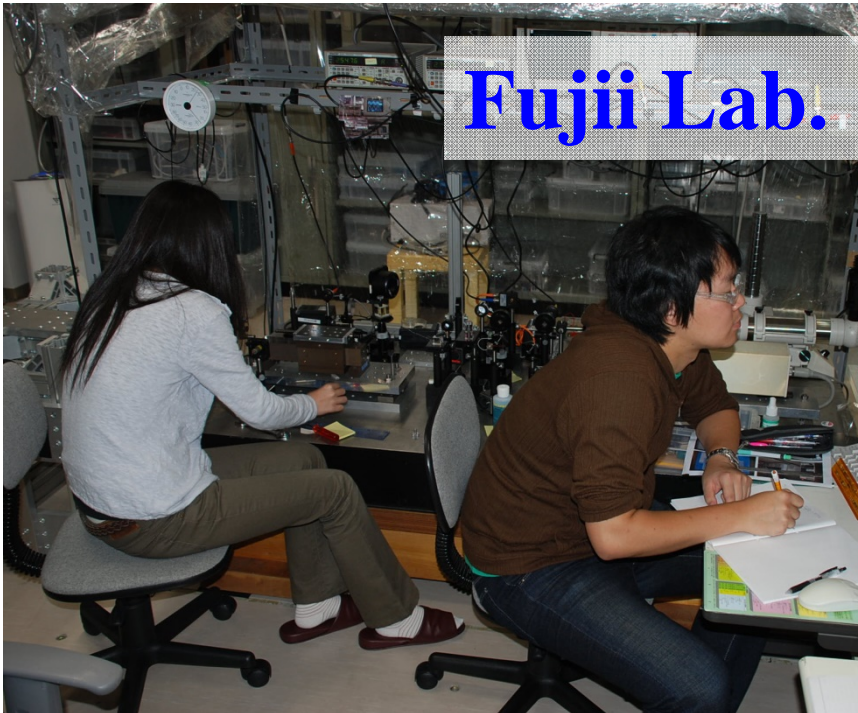


BBQ at Prof. Fujii's house



Kiryu locates 100 km north of Tokyo

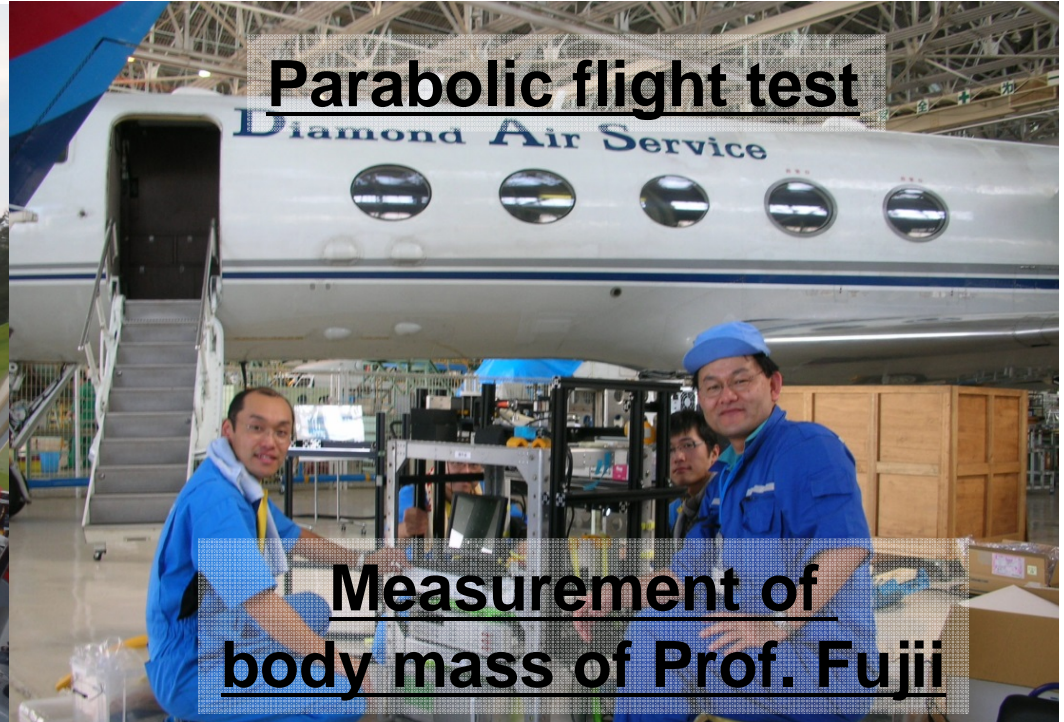
Fujii Lab. @ Gunma Univ.



Golf



Parabolic flight test



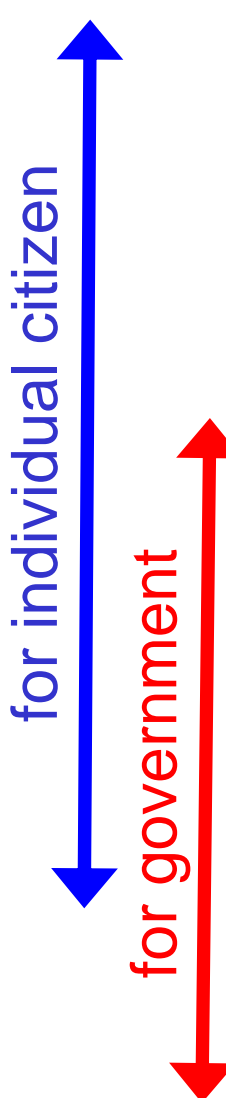
Measurement of
body mass of Prof. Fujii



8-03-21 12:07:04
00:11.53 Z +0.01
X -0.00 Y +0.01

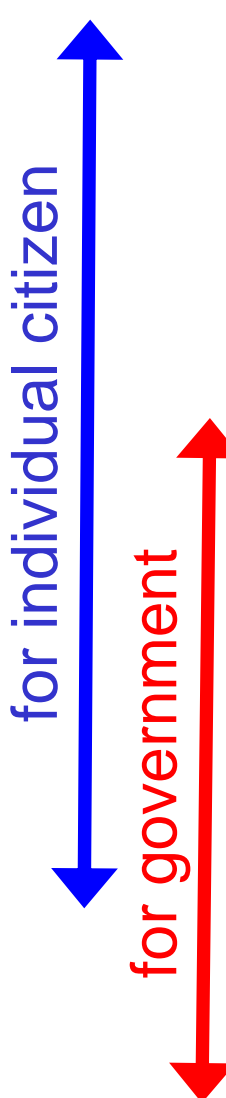
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The e-JIKEI Network, a concept for realizing a safer and more comfortable community, is reviewed.

- 
- (1) 1st concept for community safety using huge amount of cheap cameras:
The e-JIKEI Network
 - (2) 2nd concept for privacy protection:
The e-JIKEI with Privacy
 - (3) Development of an all-in-one type device (no more PC):
The e-JIKEI Camera, The e-JIKEI Light & The e-JIKEI Door-phone
 - (4) For installation of large amount of e-JIKEI Cameras
The e-JIKEI Camera with double encryption
 - (5) Development of the e-JIKEI Network Camera system
Abuse prevention by browsing-history disclosure

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1st Problem and Solution

1st PROBLEM:

When crimes, such as kidnapping, murder and robbery, occur, no witness is available in many cases.

1st SOLUTION:

If every resident watches in front of his/her house all the time through out the country, then every criminal is watched, memorized and can be traced and arrested easily.

2nd Problem and Solution

2nd PROBLEM:

Everyone is too busy to keep watching in front of his/her house all the time.

2nd SOLUTION:

If security cameras are installed in every house and watch the road in front of the house, then the 2nd problem is solved.

The e-JIKEI Concept

We contend that a community will have a strong ability to prevent crime only if some residents keep watch on what happens around their houses.

The concept of the e-JIKEI Network is that

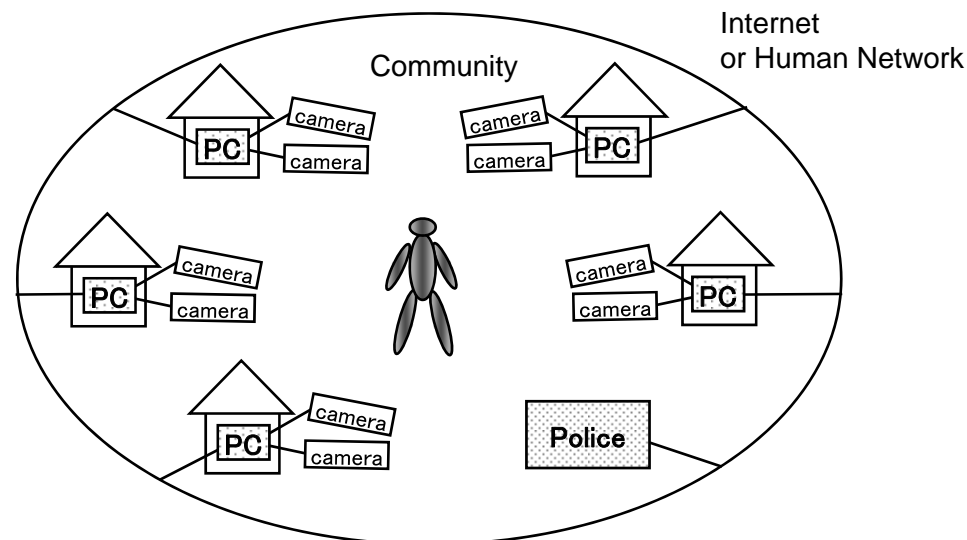
- Residents view their surroundings using

- *cheap cameras as their own eyes

- *home computers as their own brains

using

- *free software thorough the Internet.



Free software for e-JIKEI Concept: Dairi EYE Series

Free download at www.e-jikei.org



Dairi EYE Standard



Dairi EYE Smart



Dairi EYE Frontier



Dairi EYE Easy

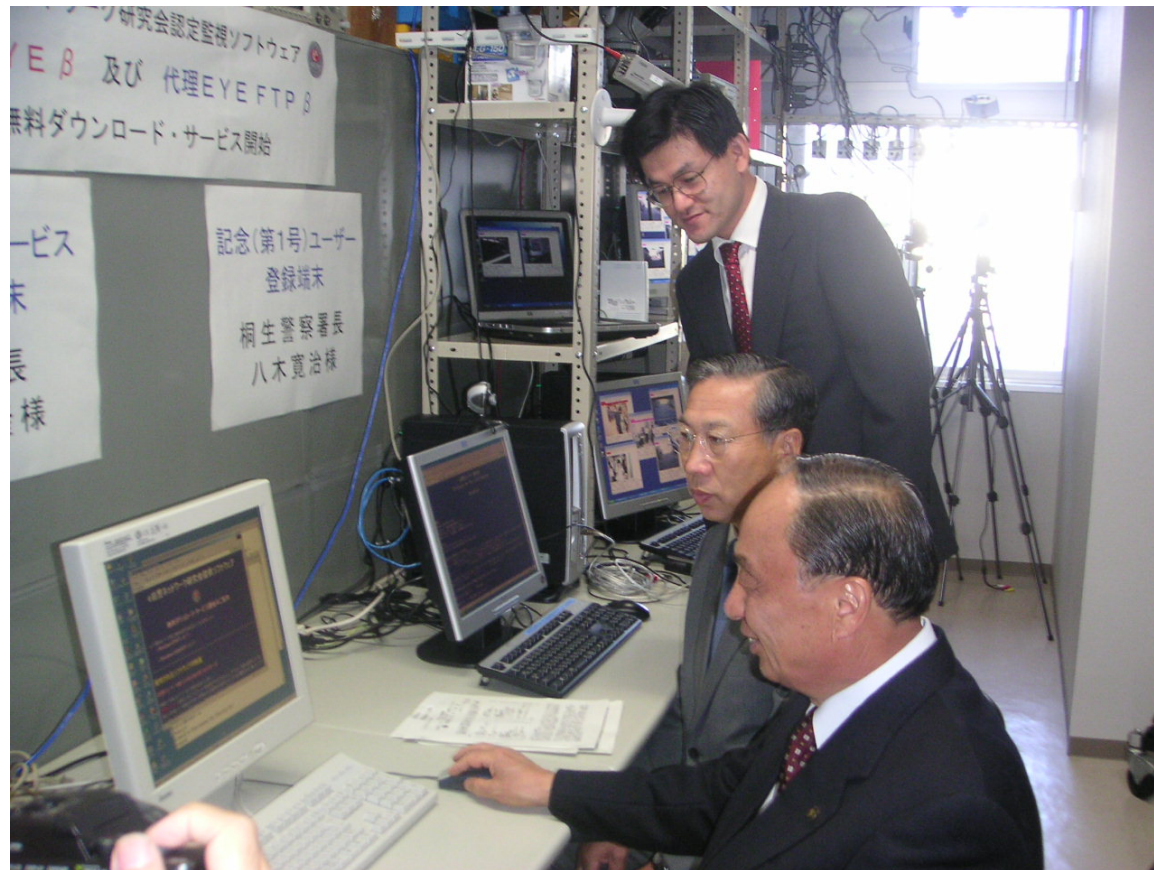


Dairi EYE Smart UX

Open to public since September 2004

Free download at www.e-jikei.org

Ceremony for Dairi EYE opining to public on 16 September 2004
with *Mayor of Kiryu city* and *Head of Kiryu Police Department*



Up to now, our free software has been downloaded more than 6000 times.

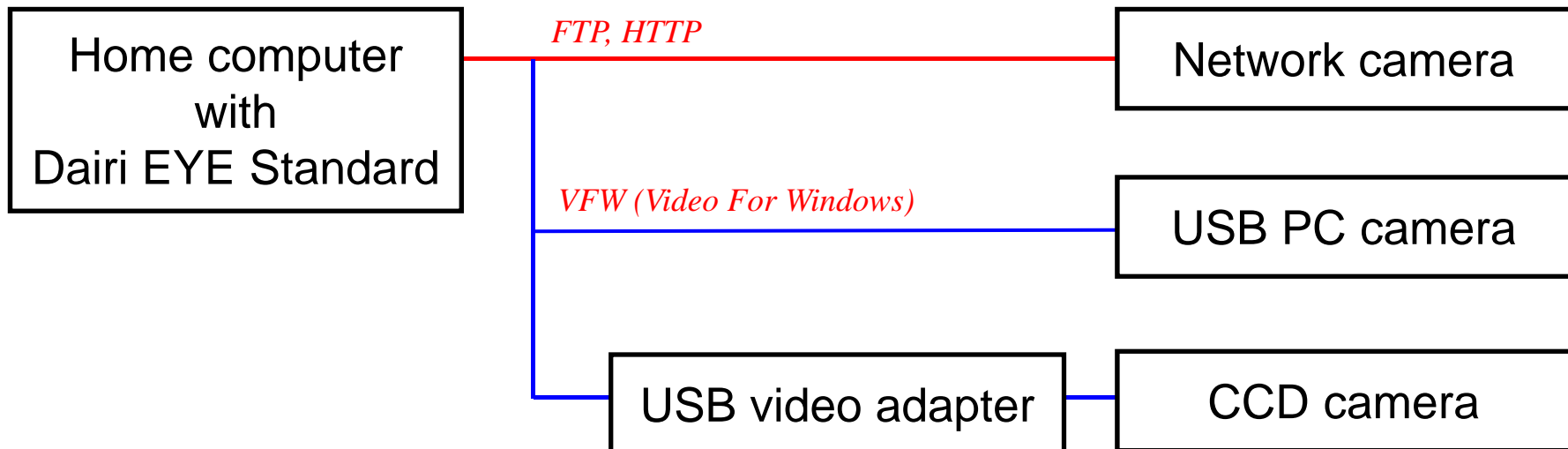


Dairi EYE Standard (1)

Free download at www.e-jikei.org

The major features of "Dairi EYE standard:

- **Compatibility with many types of camera:** Software can operate in the VFW mode (PC cameras and USB video adapters) and FTP & HTTP mode (network cameras).
- **High stability:** Continuous running of more than 100 days has been confirmed.
- **High operability:** The file name and its path express time and location information.



Dairi EYE Standard (2)

Free download at www.e-jikei.org

USB camera



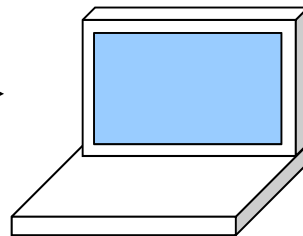
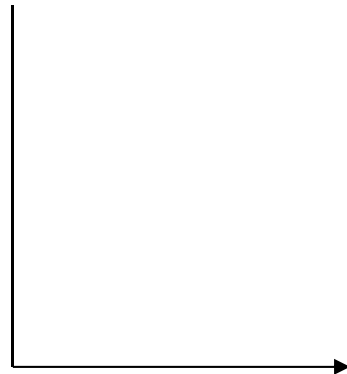
Network camera



CCD camera



USB Video Adapter



PC + Dairi EYE Series



Dairi EYE Standard (3)

Free download at www.e-jikei.org

- **Automatic delete:** Folders that are older than the save period set by the owner are automatically deleted
- **Simultaneous operation:** Software can operate several cameras connected to a PC.

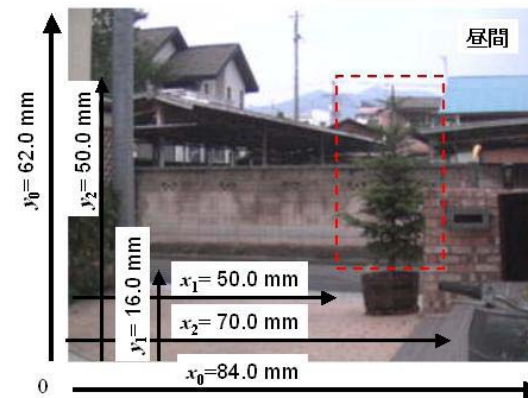
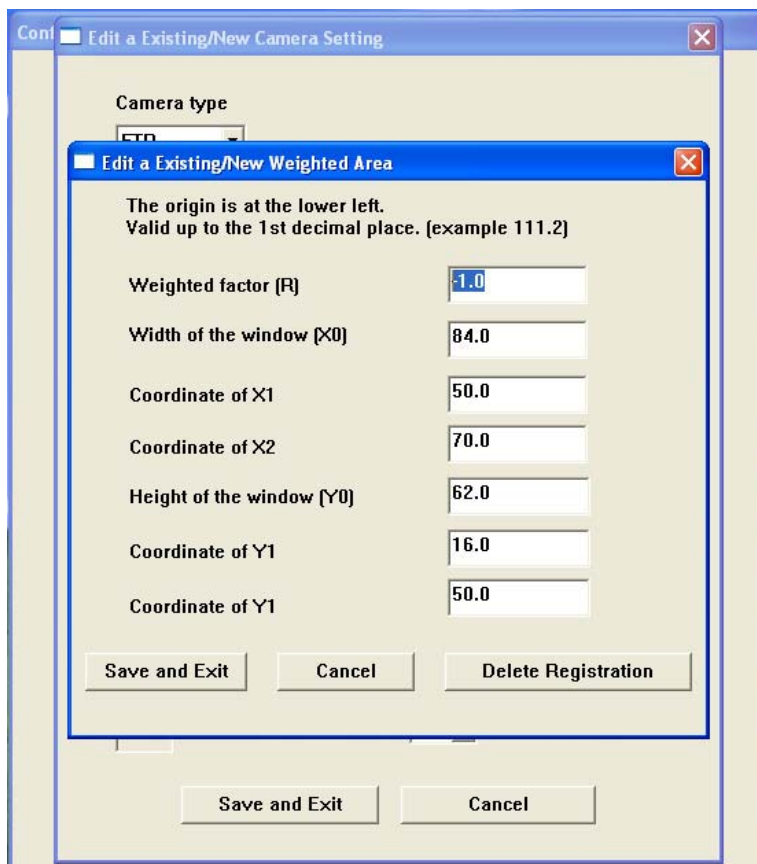




Dairi EYE Standard (4)

Free download at www.e-jikei.org

- **Minimum necessary storage:** Simple picture selection software has been adapted. The software saves a picture only when the difference between two consecutive pictures exceeds the threshold.
- **Introduction of weighted area:** Sensitivity can be adjusted by square area.



Installation by D.I.Y.

(a) Setting of a network camera
(outside of a house)



(b) Setting of a PC camera
(inside of a house)



In case (a), an inexpensive network camera is installed outside a house.

In case (b), an inexpensive USB PC camera is installed inside a house just using adhesive tape.

Introduced by the Media

To promote **the e-JIKEI Network**,
it is VERY important to be introduced by the media.

We want everyone realizes the followings,

- Every person can watch around him/her easily at low cost.
- If every person watches around him/her, then it will be difficult for criminals to escape.

Experimental Introduction to School



NHK news on 21 January 2005

Introduced to all the 42 schools in Kiryu City

平成18年(2006年)1月17日 火曜日 産経新聞

隣近所の目 PCで再現

群大助教授ら開発「e自警ネットワーク」

全国各地で児童を狙った凶悪事件が相次ぐ中、市販のビデオカメラとパソコンを使った防犯カメラシステムが注目を集め、学校や住宅街での導入が進んでいる。群馬大工学部(桐生市天神町)の藤井雄助教授らが開発した「e自警ネットワーク」で、「学区安全化構想」として、小学校の通学路や住宅街で効果を発揮している。

このシステムは藤井助教授が開発したソフトウェアを使い、デジタルカメラとパソコンを接続。カメラが動く物に反応すると自動撮影し、パソコンには時刻が記録される。カメラが壊されても記録された画像が自警者の代わりとなる仕組みだ。

藤井助教授は「住民ネットワークが防犯に威力を発揮する。昔ながらの隣近所の目をパソコンで再現するシステム」と説明する。システムが網の目のように広がれば、逃走する犯人を各所に設置したカメラがとらえ

事件解決につながるというわけだ。

前橋市日吉町二丁目では十七年一月、三百八十戸の住宅街にNPO法人(特定非営利活動法人)「飛組」(金子晴義理事長)がカメラ三十五台を設置。桐生市では十八、十九の両年度で市内全域の小・中学校、幼稚園、保育園に導入する計画という。

また、藤井助教授らによる「e自警ネットワーク研究会」は「学区安全化構想」として、小学校を中心とした学区内で多くの住宅に防犯カメラを設置し、通学路の安全を図ることを提言している。藤井助教授は「一台だけではただの安いカメラ。自宅前を見張るカメラが多くなるほど犯罪抑止効果上がる」と、カメラをネットワーク化する重要性を強調する。

課題となるのはプライバシーとの兼ね合い。システム導入に当たっては、「警察による犯罪捜査以外に、知れた情報を第三者に漏らさない」とするガイドラインがあり、研究会が配布するポスターには、設置者の宣誓として「取得した画像は特別な理由がない限り閲覧されることなく自動消去される」と記してある。

システムは研究会のホームページ(www.ev.gunma-u.ac.jp/)でダウンロードできる。

開発した防犯カメラシステムの普及に力を入れる藤井雄助教授
|| 桐生市天神町の群馬大工学部

学区安全化構想 桐生市 全域で導入へ

産経新聞 2006年1月17日(火)

Sankei Newspaper on 17 January 2006

Introduction to Residential Area by NPO Higumi



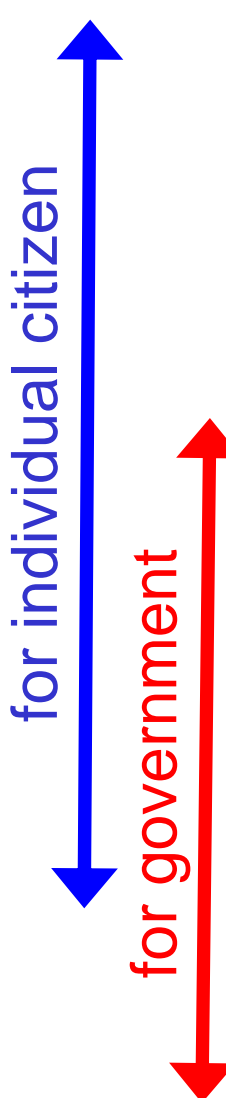
Award given by
the Prime Minister of Japan



NPO Higumi is very powerful
and ambitious to make their area,
Hiyoshi-cho in Maebashi City,
safer.

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3rd Problem and Solution

3rd PROBLEM:

Some people sometimes strongly complain of the violation of their privacy, when the security cameras watch every pedestrian walking outside.

3rd SOLUTION:

If the images are viewed only when the crime occurs,
then the 3rd problem will be solved.

Difficulties in Introducing to Non-busy/Non-dangerous Area

The major difficulties in introducing security camera system to non-busy area, such as residential area,

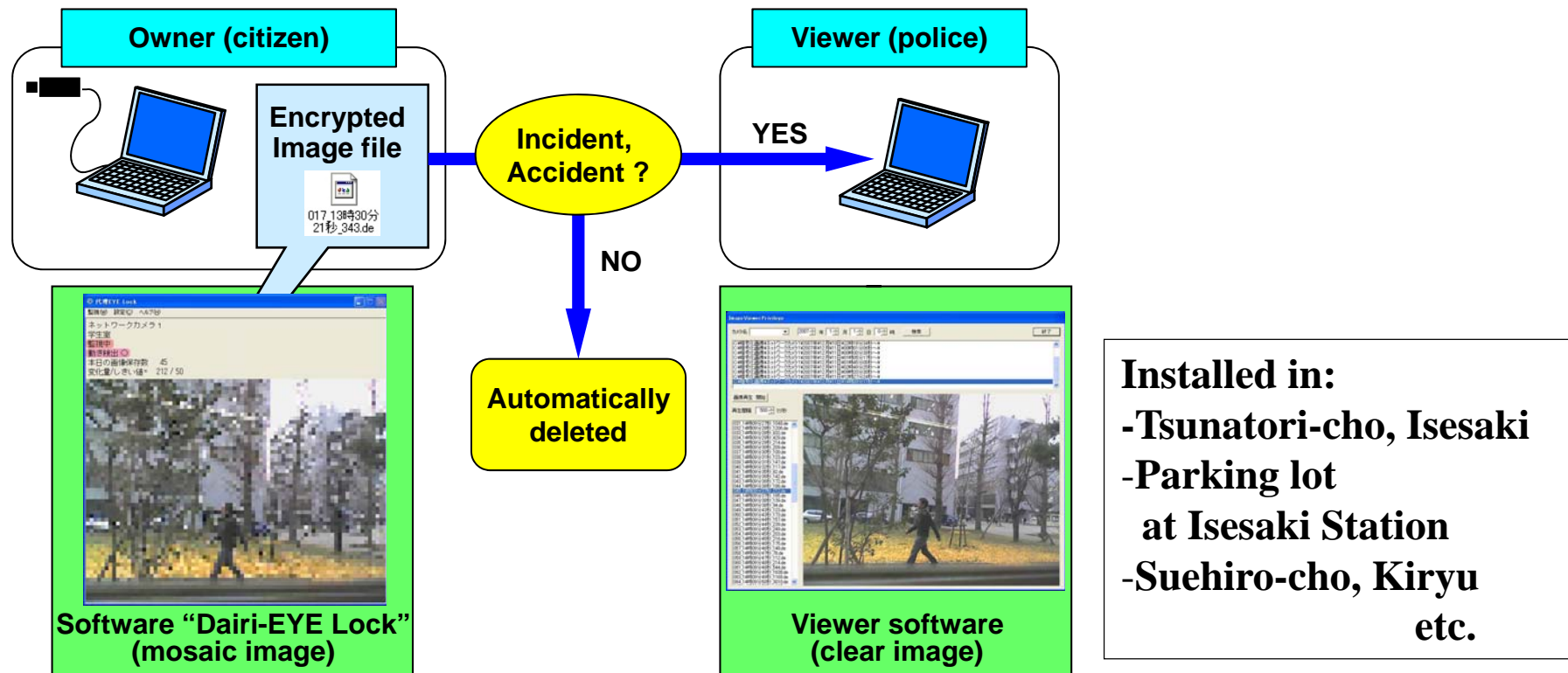
[Difficulty-1] Concern with violation of privacy

[Difficulty-2] High Initial cost and high maintenance cost.

The e-JIKEI Network overcomes [Difficulty-2].

However, [Difficulty-1] still remains.

The e-JIKEI with Privacy Concept



We propose a new concept, **e-JIKEI with Privacy**, regarding the management of security cameras in which those who own and manage images (the owner) and those who have the right to view the images (the viewer) are separated by means of the encryption of the images.

Using this concept, encrypted images are transferred from the owner to the viewer only when both the owner and the viewer consider it necessary, such as in the case of crimes; then the encrypted images are restored for being viewed by the viewer.

By this method, the images can be viewed only when absolutely necessary.

This concept was proposed to prevent the risk of privacy violation, as well as to reduce the unnecessary psychological burden that third parties may be subjected to, with the aim of promoting the placement of security cameras throughout local communities.

Introduction to Residential Area(2)



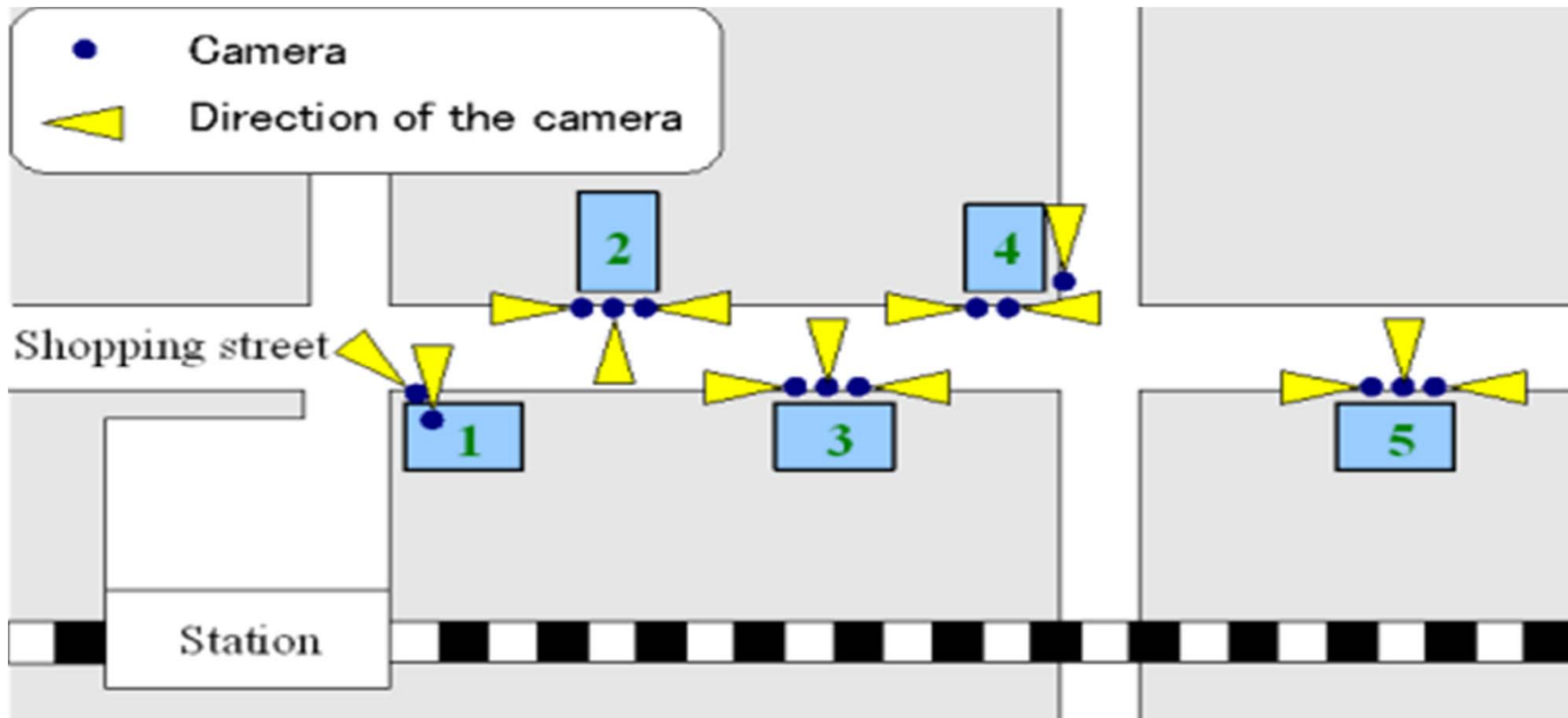
TBS news broadcasted on 20 July 2008

Introduction to Bending Machine(3)



NHK broadcasted on 19 November 2007

Introduction to Shopping Street(1)



14 cameras are installed to Suehiro-cho Shopping Street.

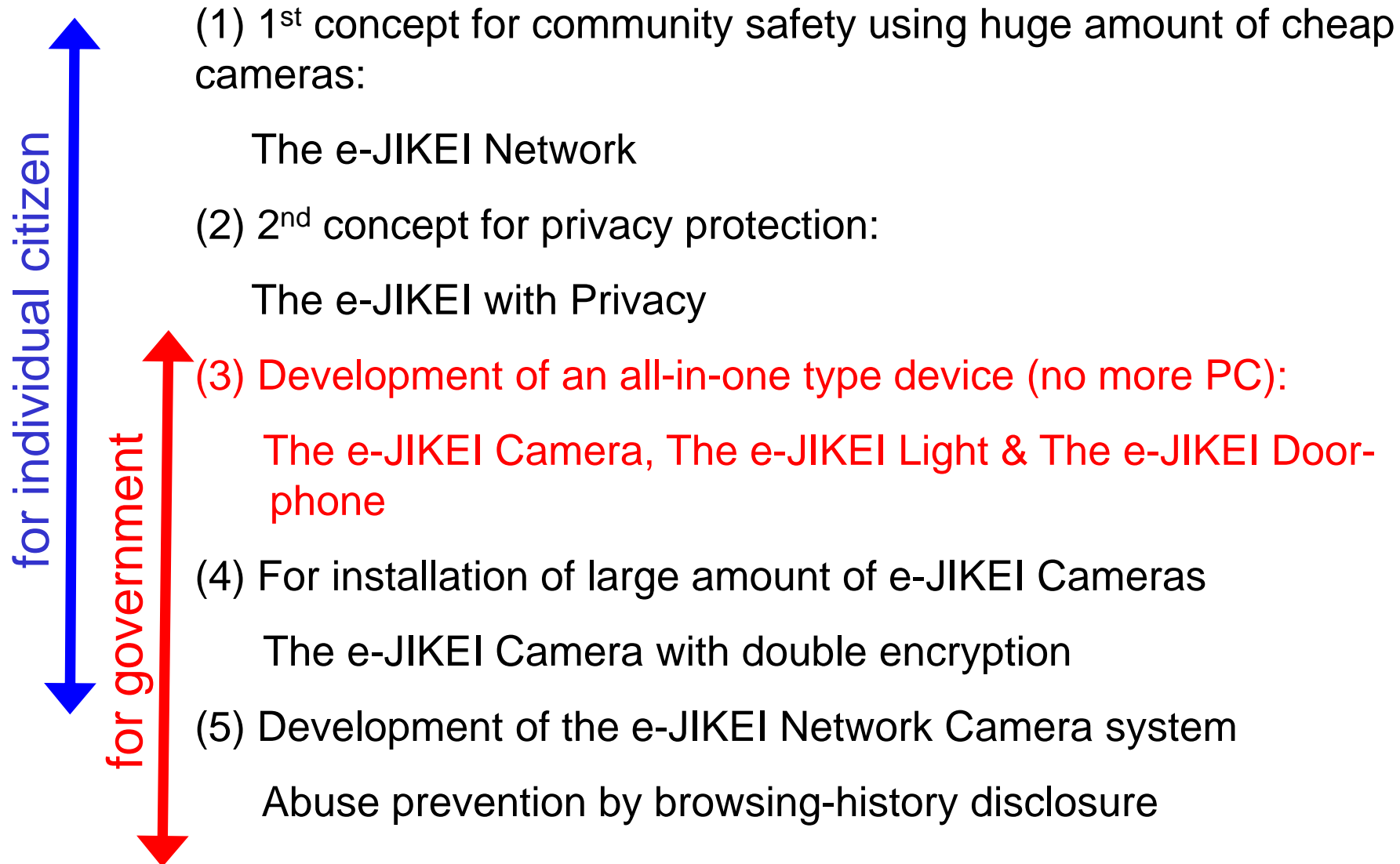
Introduction to Shopping Street(2)



NHK news broadcasted on 1 July 2007

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4th Problem and Solution

4th PROBLEM:

In the PC based system ,PC should be turn on 24 hours 365 days. That is not easy for ordinary people.

4th SOLUTION:

If a stand alone camera is developed, then the 4th problem will be solved.

Difficulties in Using the PC-based system

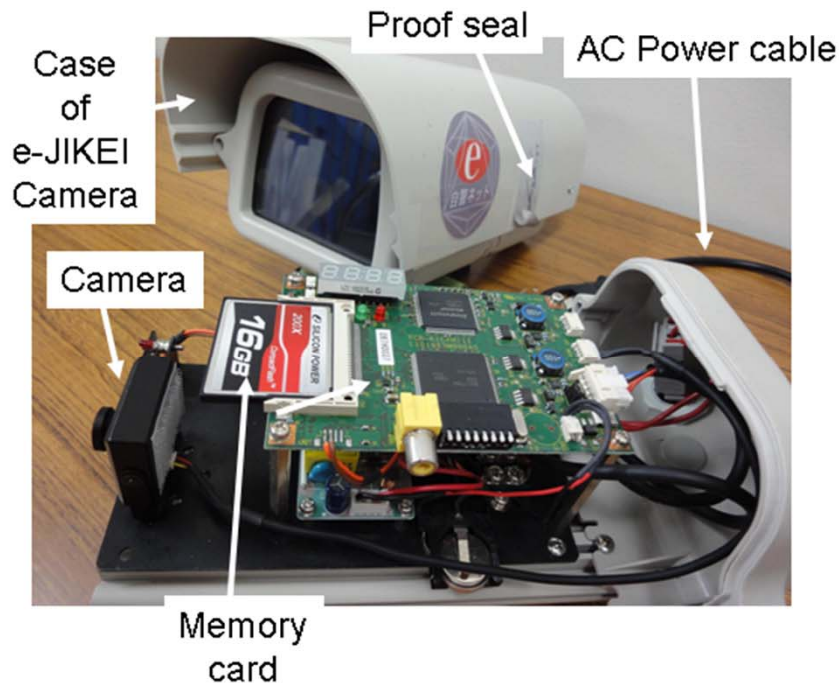
We have realized that the PC-based system is not user-friendly very well, since it is difficult for ordinary residents to maintain and operate PC.

In the near future when the home automation widely spread, this problem in PC operation will be solved.

However, at this moment, it is a serious obstacle for the e-JIKEI Network widely spread through out the nation.

Therefore, we decided to develop an all-one-system without use of PC.

e-JIKEI Camera (1)

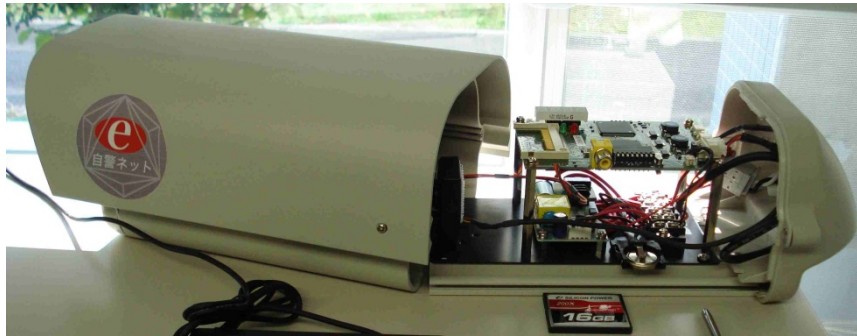


(a) Inside of the e-JIKEI camera



(b) Installation of the e-JIKEI camera

e-JIKEI Camera (2)



(1)	Privacy protection: All images are encrypted and stored in the memory card.
(2)	Low installation cost: All it requires are only the power supply of AC100-240V. (No need to connect them to monitor/recording room.)
(3)	Low maintenance cost: Only when crimes occur, the SD cards are pulled out and the images are viewed.
(4)	It has a card-type memory, in which the images for a few days to 1 week are recorded.
(5)	It can be installed out-door.(rain proof)

Social Experiment: Introduction to School District(1)

Opening ceremony with the **Mayor of Kiryu City**, the **Head of Kiryu Police Department**, the **Dean of Faculty of Engineering**

プライバシーに配慮 防犯カメラ

桐生市民の安全を守る

群大が開発
住宅地に設置

プライバシーに配慮した防犯カメラの普及を目指す特定非営利活動法人（NPO法人）「e自警ネットワーク研究会」は三十日、防犯灯に取り付けられる新開発の防犯カメラを桐生市内の住宅街に十台設置し、運用を始めたと発表した。

同研究会の防犯カメラは、撮影した画像データを「暗号化」し、専用パソコン以外で閲覧できないようにするのが特徴。専用のパソコンは地元警察署に管理する。暗号化された画像データは地元小学校のPTAの所有とし、犯罪などが発生した場合はデータが保存されたメモリーカードを桐生署に提出することとした。

価格は一台約五万円だが、量産化で二万円程度にまで下がる見通しが立っている。同研究会理事長を務める群馬大工学部の藤井雄作教授は「プライバシーを侵害しないことを納得してもらい、広く一般に普及させたい」と話している。

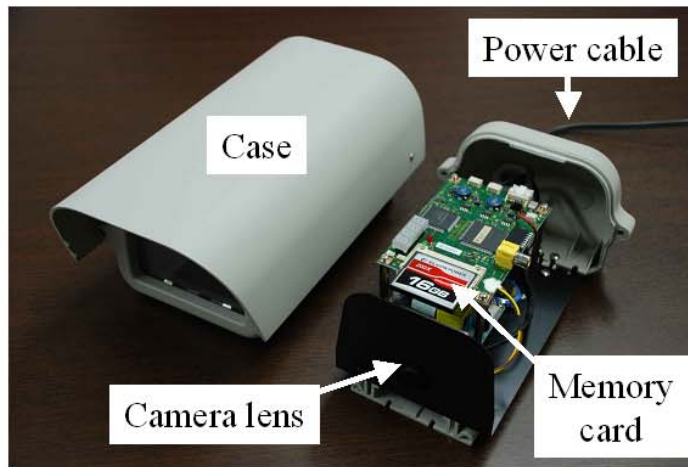
（加藤益丈）

防犯灯に取り付けられた新開発の防犯カメラ―桐生市東5丁目で





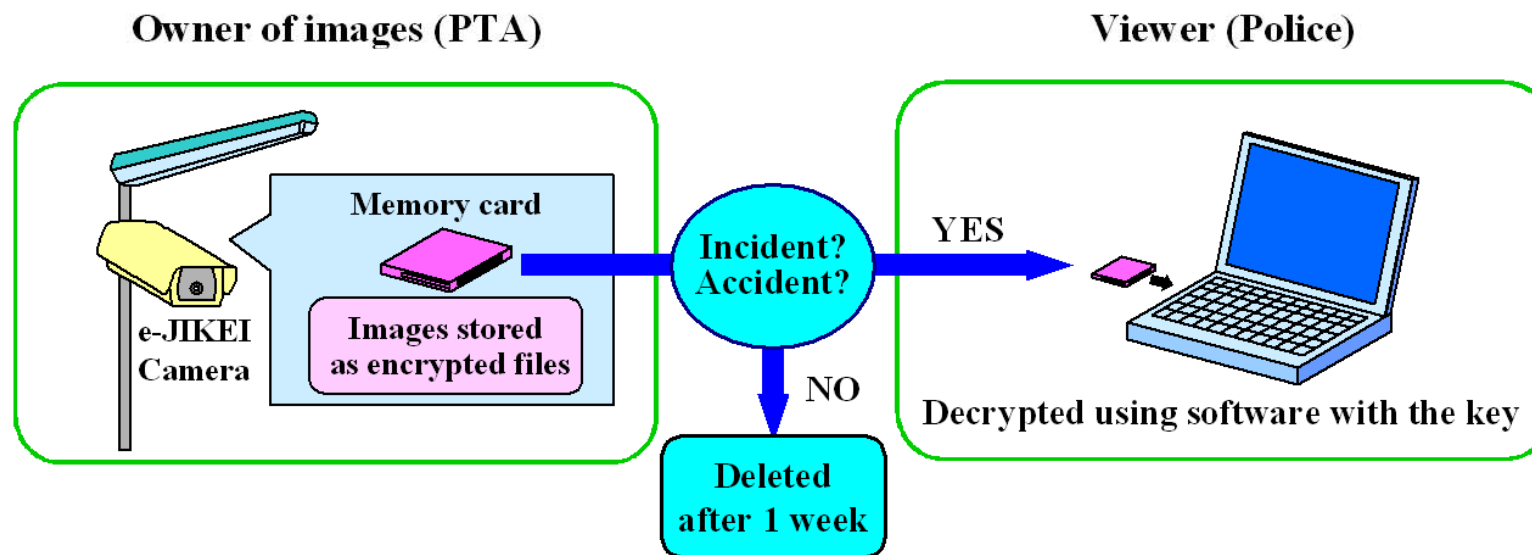
Social Experiment: Introduction to School District(2)



(b) Inside of the e-JIKEI camera



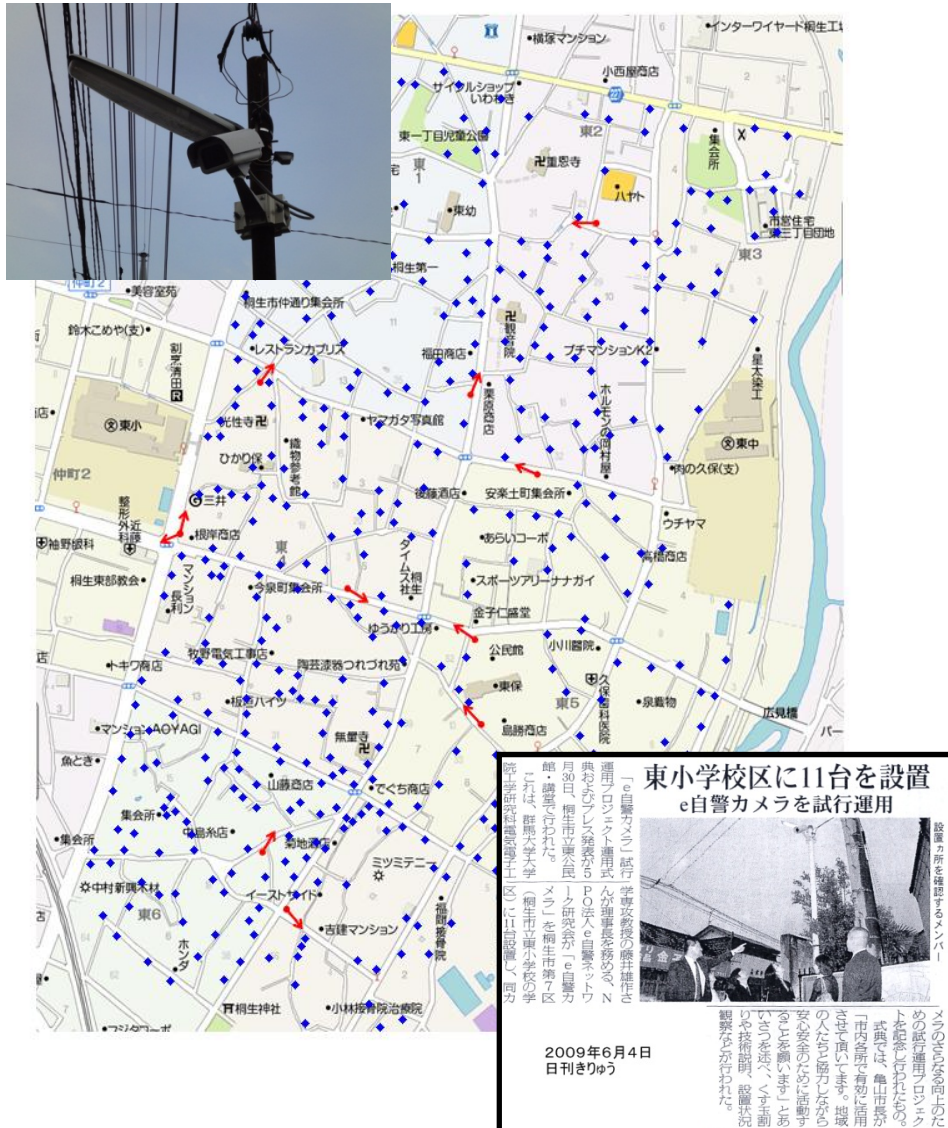
(b) Installation of the e-JIKEI camera



(c) Procedure of usages of the e-JIKEI camera system in the experiment

Social Experiment: Introduction to School District(3)

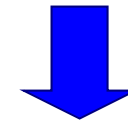
- Location and direction of e-JIKEI camera
- Location of Street lamp



Since 30 May 2009, 11 e-JIKEI cameras has been operated in a **quiet residential area** in Kiryu-city, Japan.

During 6 months, No troubles have been occurred.

During 1 year, the police asked PTA 4 times for the investigation of 3 crimes.



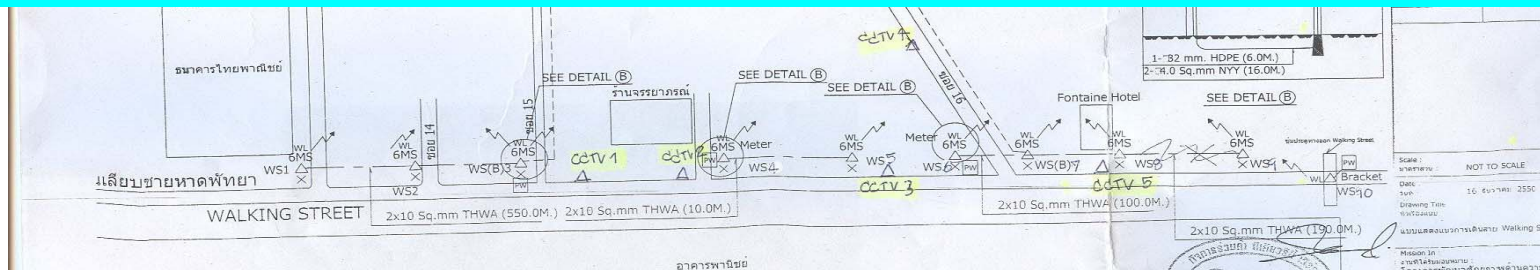
Number of cameras (11) are too small compared to that of street lamps (400)

Installation in Pattaya City (1)

Requirements:

For the Pattaya City, the followings are very important for the **sustainable tourism**, same as the other world-famous sightseeing cities in the world.

- Safety *of tourists*
- Privacy protection *of tourists*
- Low cost *in installation & operation*



Installation in Pattaya City (3)



Safety & Privacy Protection for tourists

In case that only Pattaya City has the key

- Only persons/companies, who are given the secret key by the Pattaya City, can view the recorded images.
- Even if the camera is stolen, the robber cannot view the images, then the privacy in the images are protected.

Other Products with the function of the e-JIKEI Camera

The e-JIKEI Light



Manufactured by
TOSTEC Inc.

The e-JIKEI Door-phone

防犯カメラ機能搭載
e 自警ドアホン

ドアホンと防犯カメラの両機能!
地域を見守るテレビドアホン

- **ドアホン機能**
 - 呼出時の映像を録画
 - 映像はモニターで再生
- **防犯カメラ機能**
 - 待機時の映像を常時暗号化録画
(最大約7日間分保存)
 - 映像は専用ビューアでのみ再生可能
 - パスワードによるプライバシー保護
- 2線式既設ドアホンとの置き換えが簡単!
- 録画データは専用SDHCカード(32GB)に記録
- 特許第5481632号

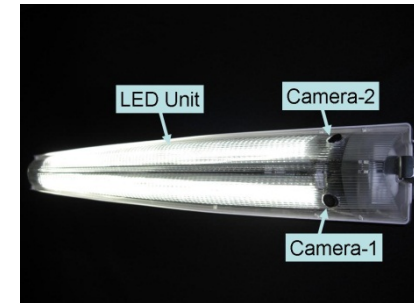
Manufactured by
ROCKY Inc.

24H recording with encryption



防犯灯＋防犯カメラ

e自警灯®



[1] All images are encrypted and stored in the memory card.



防犯カメラ内蔵のE/D防犯灯(右)と、設置された市道

伊勢崎市が初

住宅地防



安心安全なまちづくり
勢崎市は防犯カメラ
灯5基を市内各主要
の住宅地に設置した
人の出入りが多い同市
商業施設が集まる、
250㌔区間に、
安全なまちへ、

住宅地 防犯灯が監視

伊勢崎市が初

安全なまちへ
250区間に
カメラ付き5基設置

安心安全なまちづくりを目指すところ、伊勢崎市は防犯カメラを内蔵したLED防犯灯ら基を、市庁舎前と隣接する田中島町の住宅地に設置した。

富子町一帯で昨年、民家を狙った空き巣や忍び込み、車上荒らしなどが頻発していたことから、住民の要望も受け取り付けた。設置したのは住宅地の市街約2500㎡の区間で、市内に設置されるのは初めて。

防犯灯は、群馬大学大学院「学際科学研究科」教授佐藤孝一氏が率いるNTPP（法人）「e目撃ネットワーク」のメンバーが、高層市内のメーカが、商品化した。防犯灯と防犯カメラが、一体化してつら、コンパクトで、コトが抑えられる。

のが利点。プライバシー保護のため画像は暗号化され、特定の機材を持つ人しか見ること
はできない。

カメラ付き防犯灯を開発

e自警ネット研など4者

製品化めど 夜間でも鮮明画像

で飲料を飲む。フタを開けると、警報で騒音を解消
除するには解錠キーを、捜査に役立てられ
ドと専用のソフトウエア
をインストールしたハン
コンが必要で、町内の安
全・安心を脅かす事件・
事故が発生したときの
み、町内会が警報にメ
スと同様の6万く6万

[illegible]

2009年10月30日
桐生タイムス



●自警灯が設置された電柱と関係者ら＝前橋市で

カメラ付き防犯灯
「e 自警灯」6台
前橋市内に設置

市道や公園に計六台導入。飛組は街づくりや自主防犯活動を行っており、今回は県の補助も受け、同研究会などの社会実験に協力する。

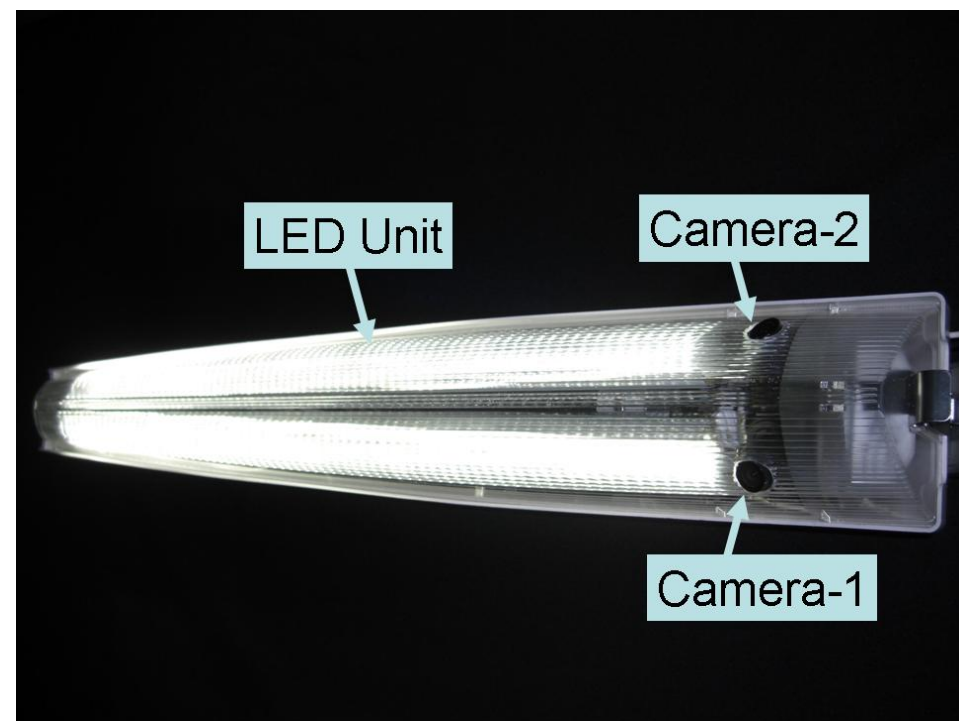
防犯カメラの普及を目指す特定非営利活動法人（NPO 法人）「e自警ネットワーク研究会」（桐生市）が開発したカメラ付き防犯灯「e自警灯」が、横浜市日吉町内に設置され、運用を開始した。同町二丁目の住民らでつくるNPO 法人「飛組」が二丁目内のパシール侵害を防ぐ。事件が起きた場合の目撃証言に調査提供する。同研究会理事長で群馬大工學部の藤井雄作教授は「比較的安全で通常の防犯灯と置きかえることができ、全国に普及すれば、価格もより下げられる」と期待を寄せている。（川口晋介）

(川口晋介)

2010年1月12日
東京新聞

2010年8月18日
上毛新聞

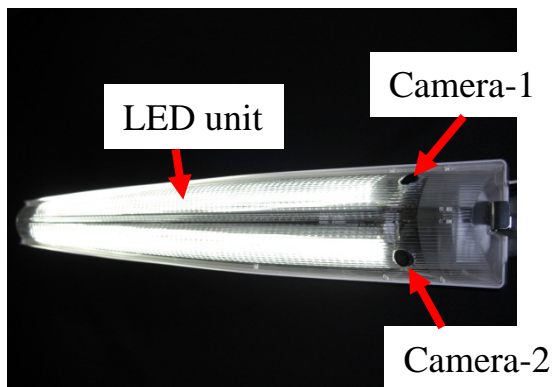
e-JIKEI Light (2)



Images taken by e-JIKEI Light (Daytime, after decoding the code)



e-JIKEI Light (3): Installation to Pattaya City



(a) e-JIKEI Light



(b) Installation of the e-JIKEI Light



(c) Decoded image from Camera-1



(c) Decoded image from Camera-2

For the Pattaya City, the followings are very important for the sustainable tourism, same as the other large cities in the world.

- Safety
- Privacy protection
- Low cost *in installation, operation and maintenance*

Present status in Pattaya City

- Number of CCTV cameras: 277
- Total cost with control room: 0.1 billion THB
- Real time monitoring at the control room



- Problem: There are many “dead angle”. However, the drastic increase of the cameras is difficult due to the heavy cost (cost of cameras/facilities/operating staffs).
- Question: Is the real-time monitoring required for all the area, such as a quiet street?



e-JIKEI Camera: Installation to Pattaya City

Proposal and Benefits

Proposal

- Introduce many (10,000 pieces) e-JIKEI Camera to support the existing 300 CCTV cameras.
- This will be the world first attempt to aim at realizing the **safety** for tourists, **privacy protection** for tourists and **low costs** at the same time.

Benefits Pattaya City will gain from the installation

- Safety** and **privacy protection** in a **low cost** are realized at the same time.
- Improving the total cost performance of the security camera system. Both the existing CCTV cameras and the additional e-JIKEI cameras are important.

e-JIKEI Camera: Installation to Pattaya City



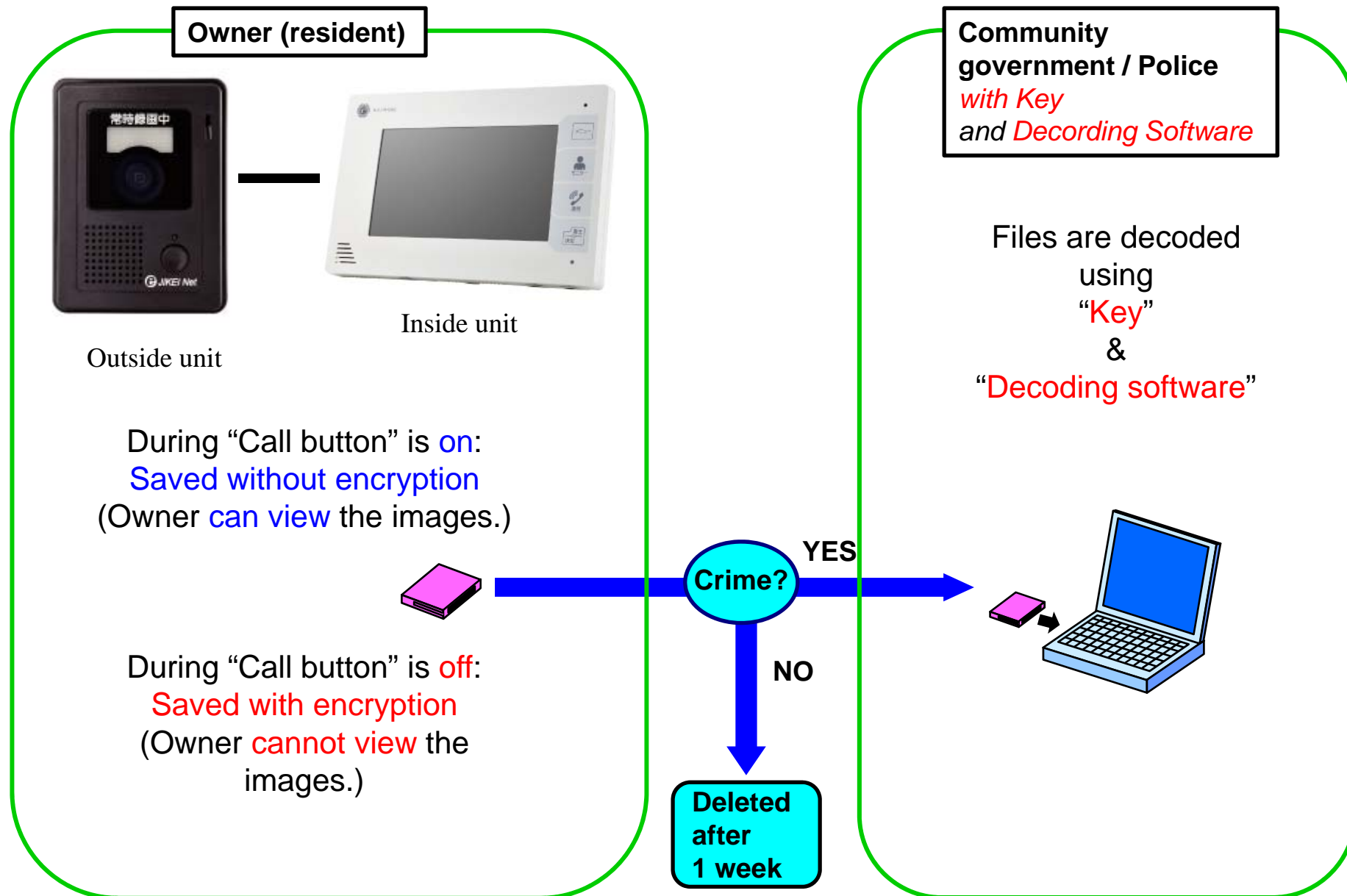
e-JIKEI Camera: Installation to Pattaya City



e-JIKEI Camera: Installation to Pattaya City



e-JIKEI Door-phone (1)



e-JIKEI Door-phone (1)

When “Call button” is **on**:
Saved without encryption

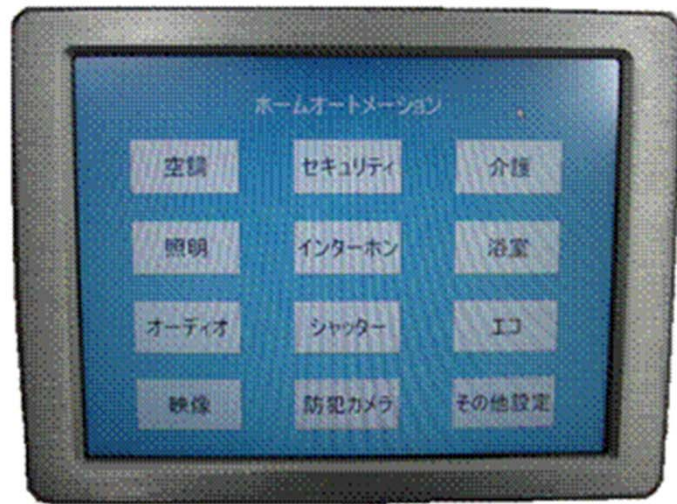


When “Call button” is **off**:
Saved with encryption

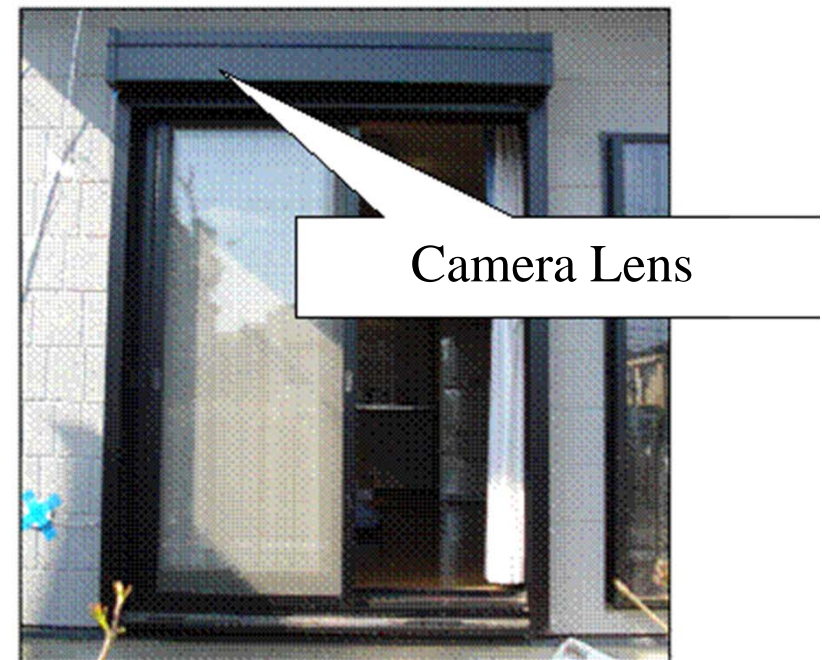


e-JIKEI Shutter (1)

A prototype of **e-JIKEI Shutter** has been developed under the cooperation with TOSTEM, the biggest window frame manufacture in Japan.

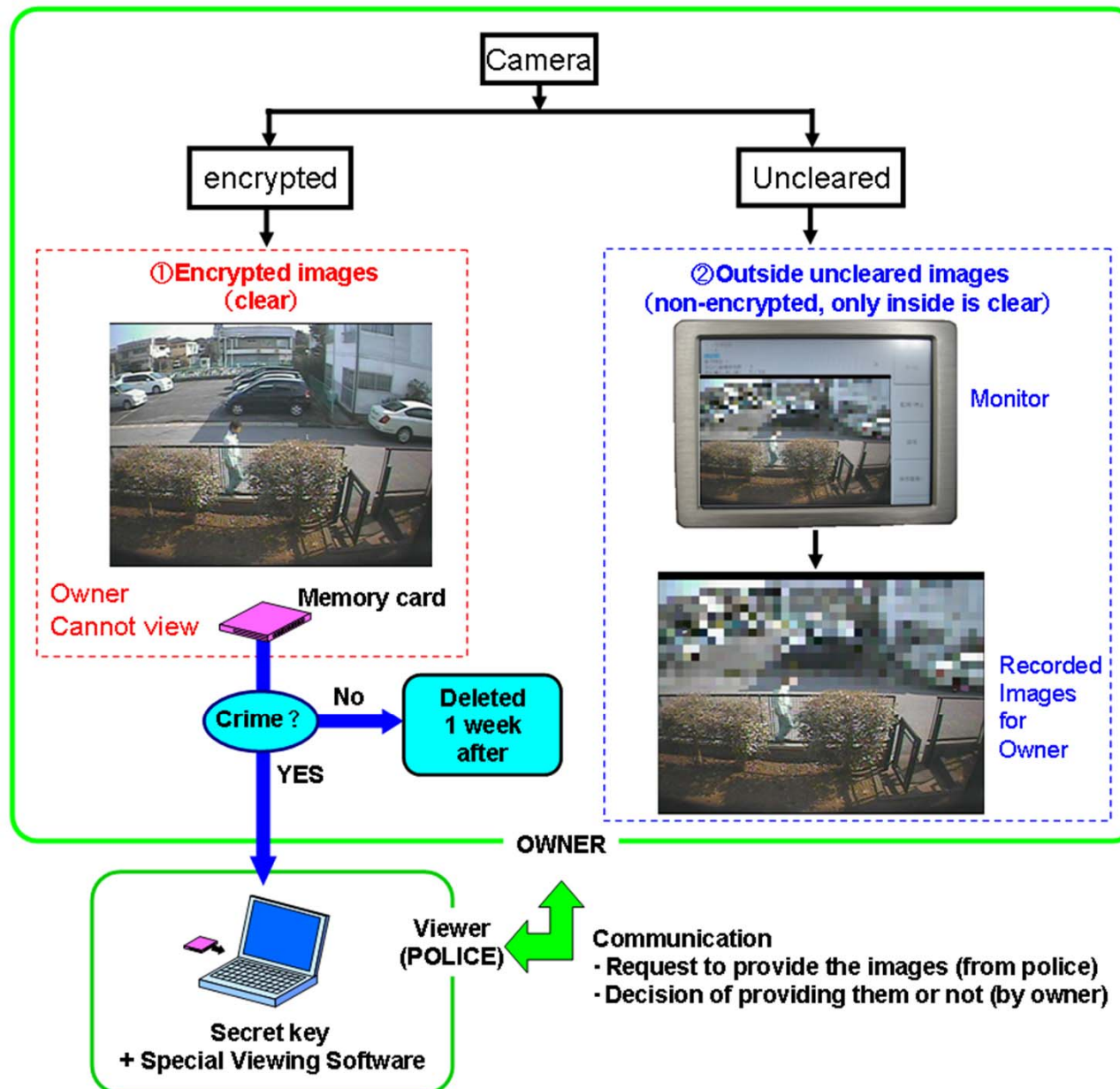


Monitor inside the house



Developed e-JIKEI Shutter

e-JIKEI Shutter (2)



プライバシーと防犯両立を模索
野田でカメラ開発中
群馬大学、NPOのe自警

ネットワーク研究会と、システム建築業振興財団が、野田市の某ビルで、プライバシー保護を備えた防犯カメラシステムの開発を続けている。

一般住宅用の「シャッター内蔵型e自警カメラ」。改良によって暗化した画像（モザイク入り）と、モザイクなし映像が同時に見られるようになった。

これまでの「e自警カメラ」は、犯罪の捜査を想定して一度保存画像を暗号化すると、閲覧権を持った者しか暗号を解除できず、カメラ所有者でもモザイクがかかった映像以外見ることができなかった。

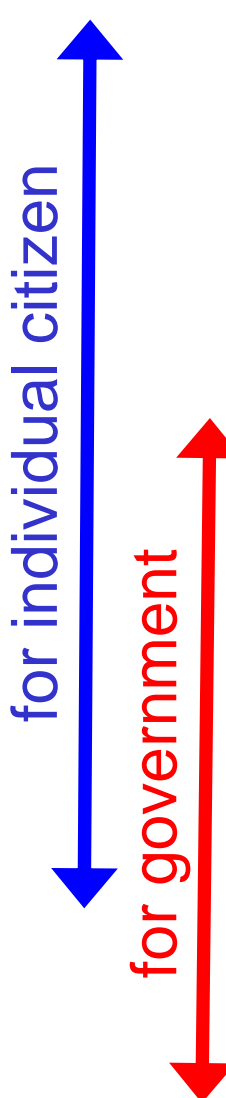
それが新システムは、カメラに映った自宅の敷地外の一部はプライバシー保護のため見られない一方で、自衛が必要敷地内は、鮮明な画像が見られる。

商品化には時間がかかる段階だが、システムを開発した、e自警ネットワーク研究会理事で、群馬大大学院の丸浩一・助教は、「近所のプライバシーを保護しながら、低コストの防犯カメラを普及させていくのが狙い。早い実用化に向けて取り組んでいきたい」という。

2009年11月27日
朝日新聞

Contents of the Presentation

The e-JIKEI Network, a concept for realizing a safer and more comfortable community, is reviewed.

- 
- (1) 1st concept for community safety using huge amount of cheap cameras:
The e-JIKEI Network
 - (2) 2nd concept for privacy protection:
The e-JIKEI with Privacy
 - (3) Development of an all-in-one type device (no more PC):
The e-JIKEI Camera, The e-JIKEI Light & The e-JIKEI Door-phone
 - (4) For installation of large amount of e-JIKEI Cameras
The e-JIKEI Camera with double encryption
 - (5) Development of the e-JIKEI Network Camera system
Abuse prevention by browsing-history disclosure

5th Problem and Solution

5th PROBLEM:

When a large amount of e-JIKEI Cameras are installed, it is difficult to decide if the installation company can know the encryption key or not.

If YES, the security of the encryption key is weak.

If NO, the company has difficulties in setup the cameras and in maintenance of the cameras.

5th SOLUTION:

If the maintenance company can view only unclear/mosaiced images, then the 5th problem will be solved.

New e-JIKEI Camera (1) with double encryption

Prototype



eJKC-ZB102a



Basic features:

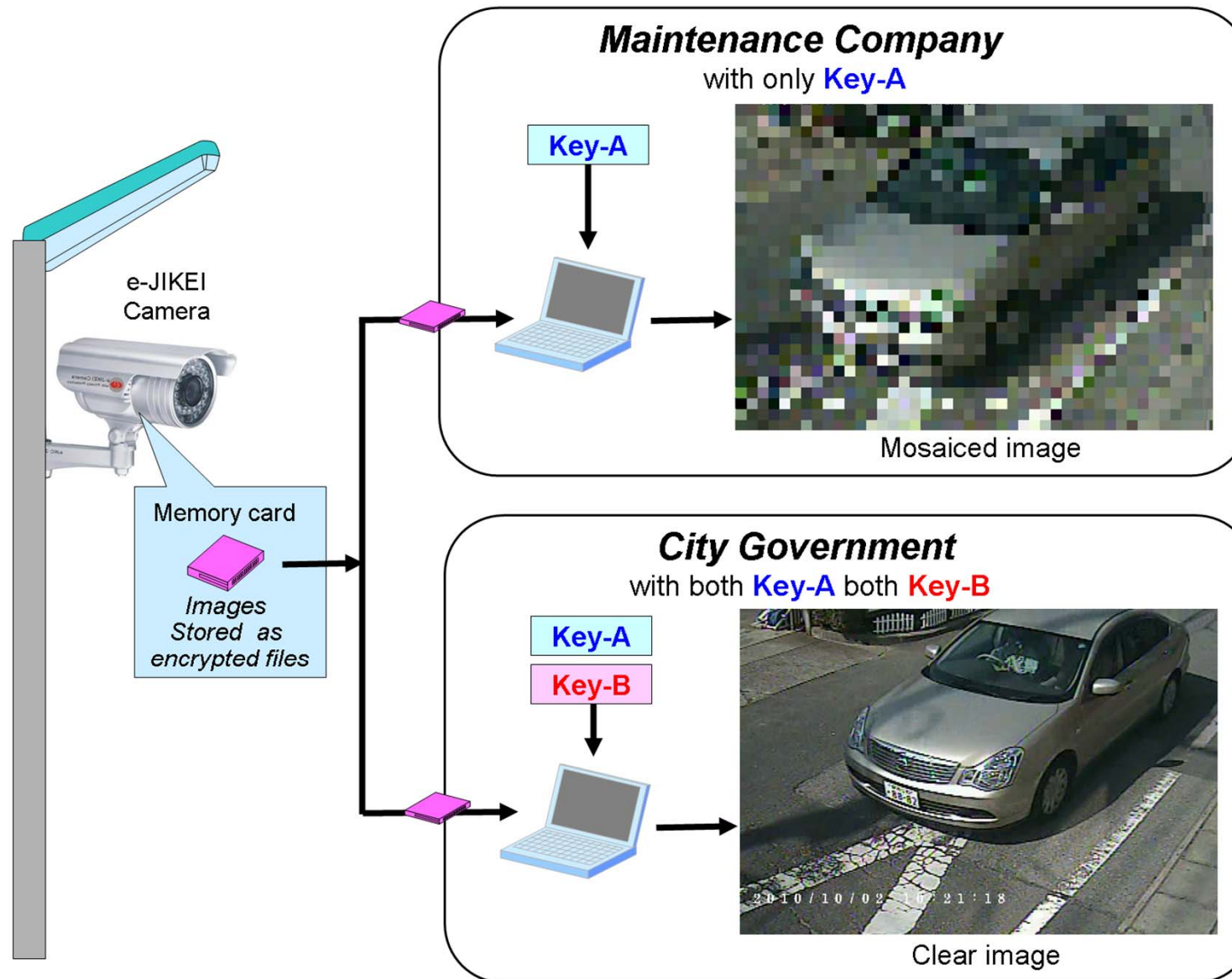
- *All-in-one type**
- *Image encryption**



- *Privacy protection**
- *Low installation cost**
- *Low maintenance cost**

New e-JIKEI Camera (2)

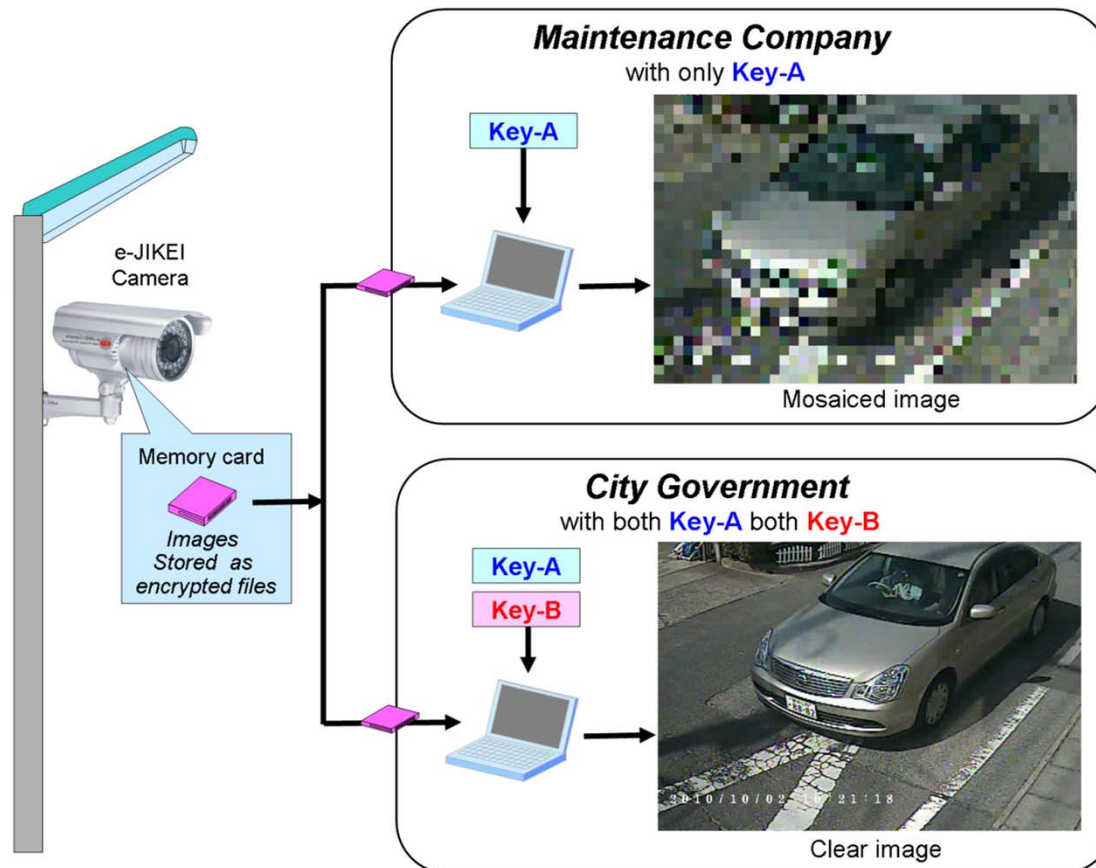
Double-Keys-Encryption for convenient operation has been applied to eJKC-ZB101a



New e-JIKEI Camera (3)

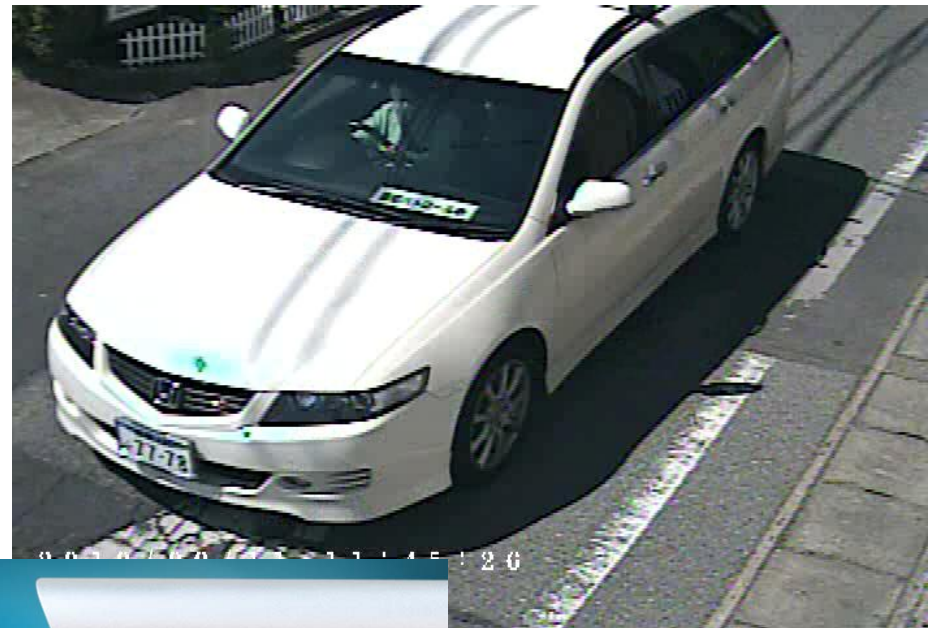
We recommend the following usage of double encrypted record function for the city governments,

- [1] **City government**, with both Key-A and Key-B, can decode the files completely and **can view the clear images/movies**.
- [2] **Maintenance company**, with only Key-A, can decode the files in-completely and **can view only the mosaiced (unclear) images/movies**.
- [3] Only when the crimes occur, the city government takes the memory cards out from the cameras, decodes the files and provides them to the police. (**No crime, no view.**)



2012年2月21日
上毛新聞

New e-JIKEI Camera (4)



e自警カメラ
Camera with Privacy Protection

Manufactured by
MATSUDA SHOJI Inc.



Another New e-JIKEI Camera

Double-Keys-Encryption has also been applied to the following product.

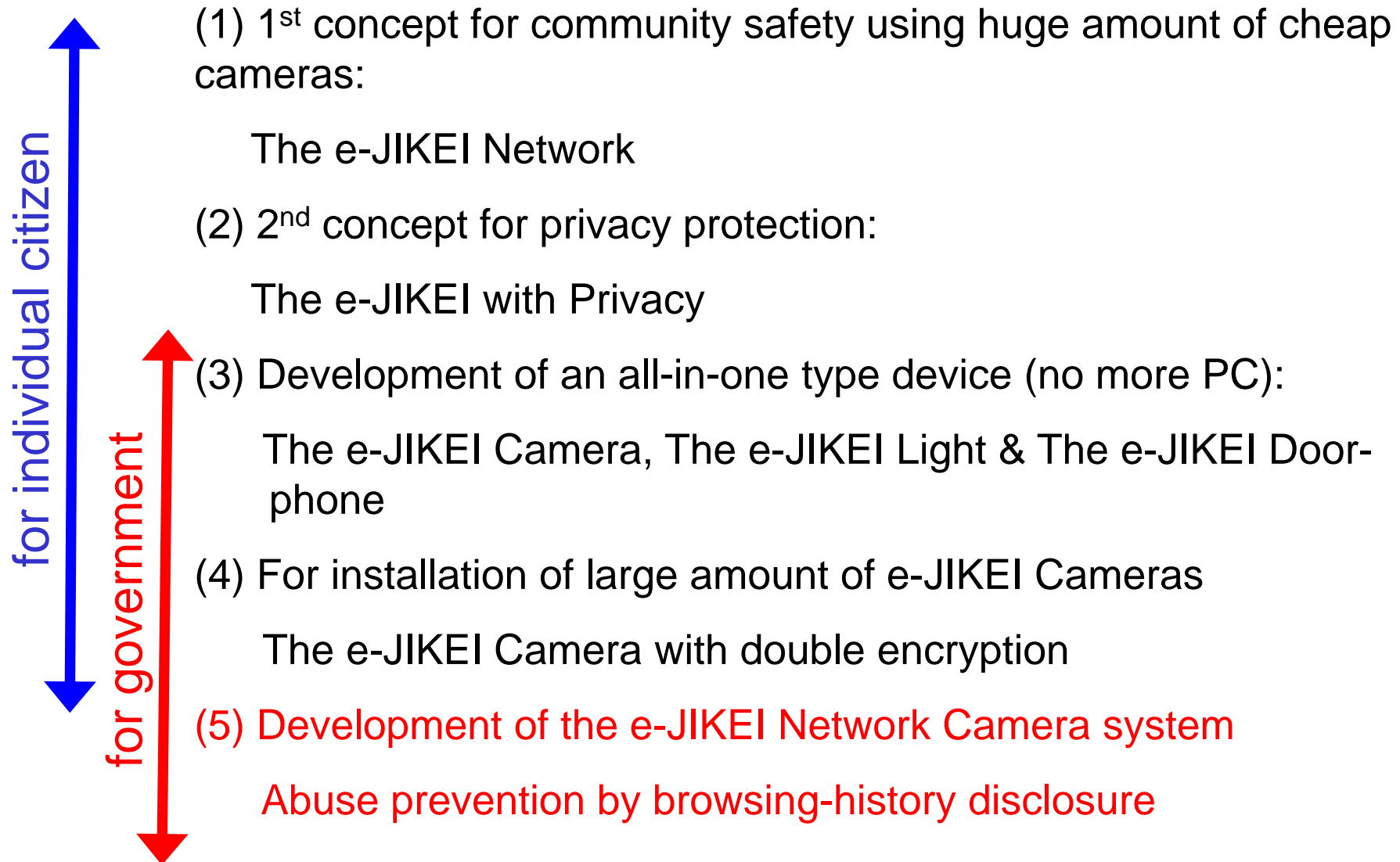


株式会社 ミツバアビリティ

Manufactured by
MITSUBA ABILITY Inc.

Contents of the Presentation

The e-JIKEI Network, a concept for realizing a safer and more comfortable community, is reviewed.



6th Problem and Solution

6th PROBLEM:

Real-time chase/rescue of kidnapped children is not easy, since it is necessary to view the recorded images that someone climb up to the camera, open the case, and take the memory card out.

6th SOLUTION:

If networked cameras are installed just like the street lights throughout the nation and the operation center is prepared, then the 6th problem will be solved.

A Positive Effect of the Network Security Camera System

With this powerful infrastructure, it might be possible that a kidnapped child is rescued.

[1] A child exiting a house is observed by the cameras in front of his/her house.

[2] He/she is tracked by switching the cameras according to his/her motion.

[3] His/her present location is known.

[4] Police cars are sent to that location to rescue him/her.
This can be easily carried out with this powerful infrastructure.

7th Problem and Solution

7th PROBLEM:

If this powerful networked camera system is abused by the criminals, such as bad city officials, the serious violation of privacy of the ordinary citizen will arise.

7th SOLUTION:

If the abuse is effectively prevented, then the 7th problem will be solved.

=> **The e-JIKEI Network Camera** has been developed.

Why is “abuse prevention” important ?

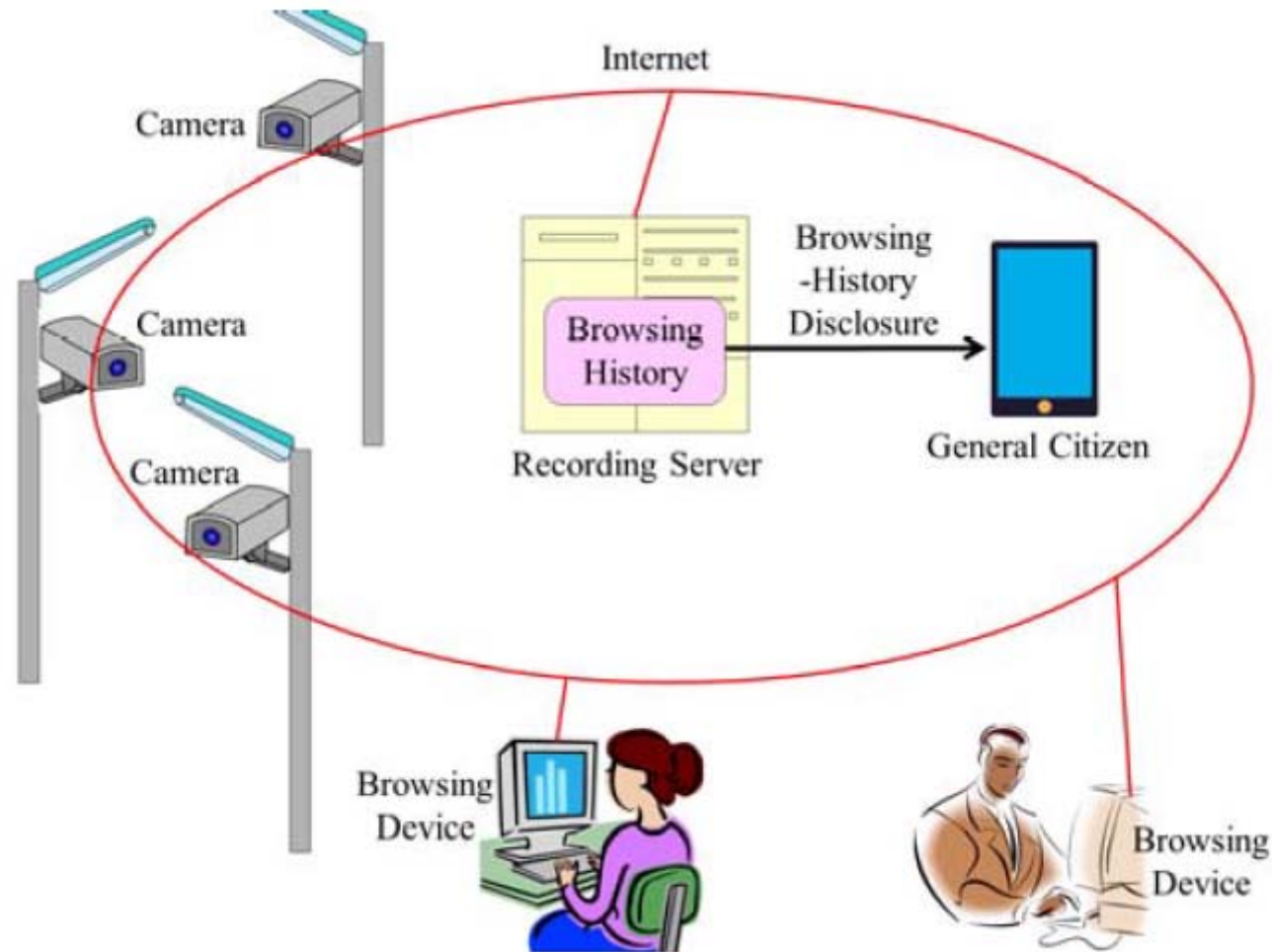
[Step-1] It is not difficult to install street lights with networked cameras throughout the nation just like the conventional street lights, if street lights with networked cameras are mass-produced.

[Step-2] The positive effect is enormous. Very few criminals can be escaped and many kidnapped children can be rescued, if the networked cameras are installed just like the street lights throughout the nation.

[Step-3] The negative effect is also enormous. If this powerful networked camera system is abused by the criminals, such as bad city officials, the serious violation of privacy of the ordinary citizen will arise.

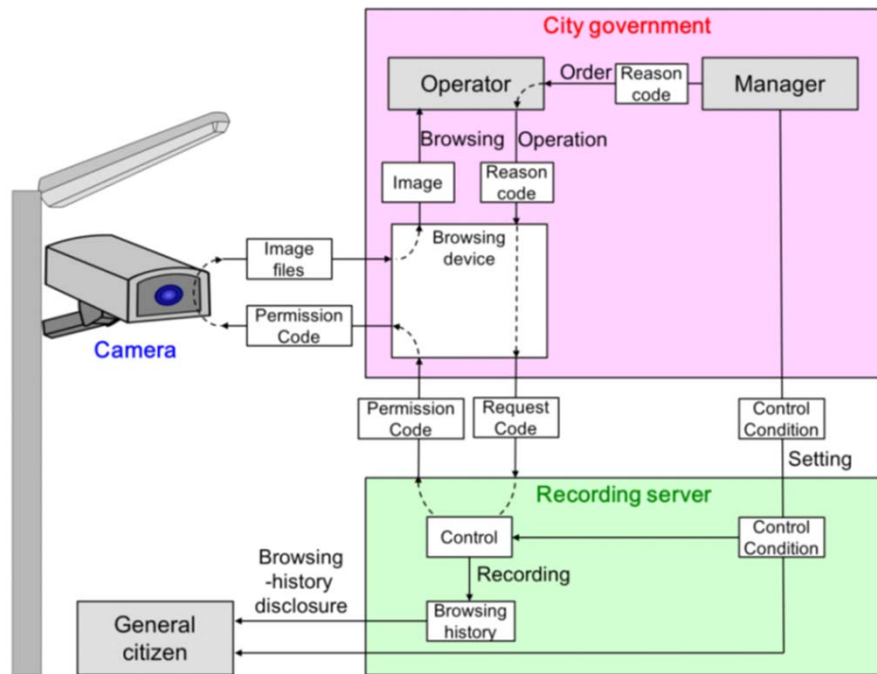
[Step-4] To make this powerful networked camera system to be accepted by the society, it is necessary that the negative effect should be perfectly prevented.

Proposed Concept: Browsing-History Disclosure



A new concept, in which the abuse of a street camera network is deterred by browsing-history disclosure, is proposed.

How does “Browsing-History Disclosure” work? (1/2)



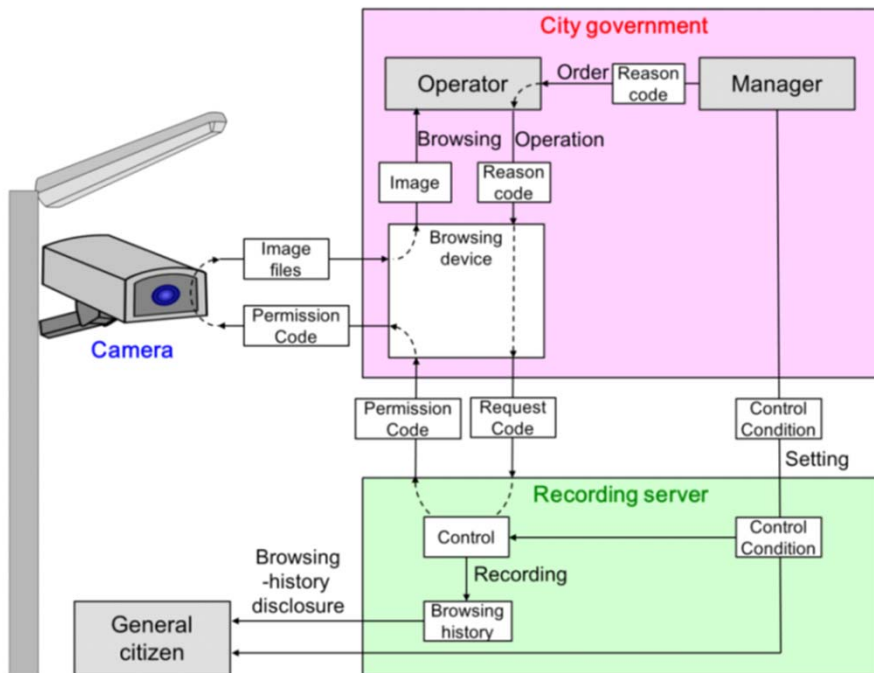
[1] The city government operates many cameras, which are installed at a high density, similar to street lights, throughout the city.

[2] The manager of the city government publicizes the method of operation of the camera system, i.e., the “control condition,” and inputs it into the “recording server” operated by a reliable third party.

[3] The operator of the city government starts operation by order with “reason code.”

[4] The operator sends a “request code,” which consists of the inputs of the “browser ID,” “reason code,” “camera ID,” and “time period,” to the “recording server” using the “browsing device.”

How does “Browsing-History Disclosure” work? (2/2)

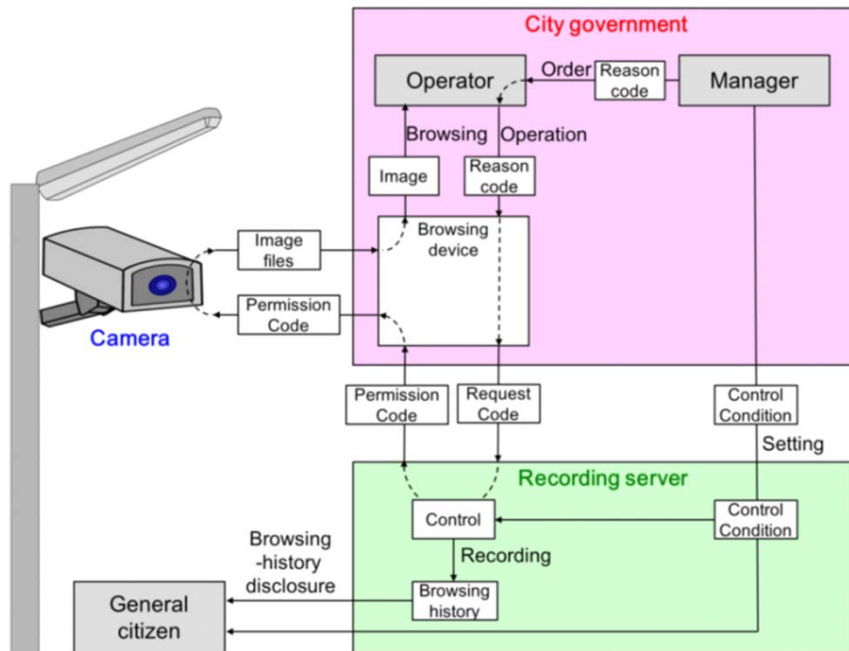


[5] The “recording server” issues a “permission code” to the “browsing device” on the basis of the “control condition” and records all processes as the “browsing history.”

[6] The operator can browse the image files within the permitted range defined by the “permission code.”

[7] The recording server discloses the entire “browsing history” to everyone throughout the Internet.

Effects of “Browsing-History Disclosure” (1/2)

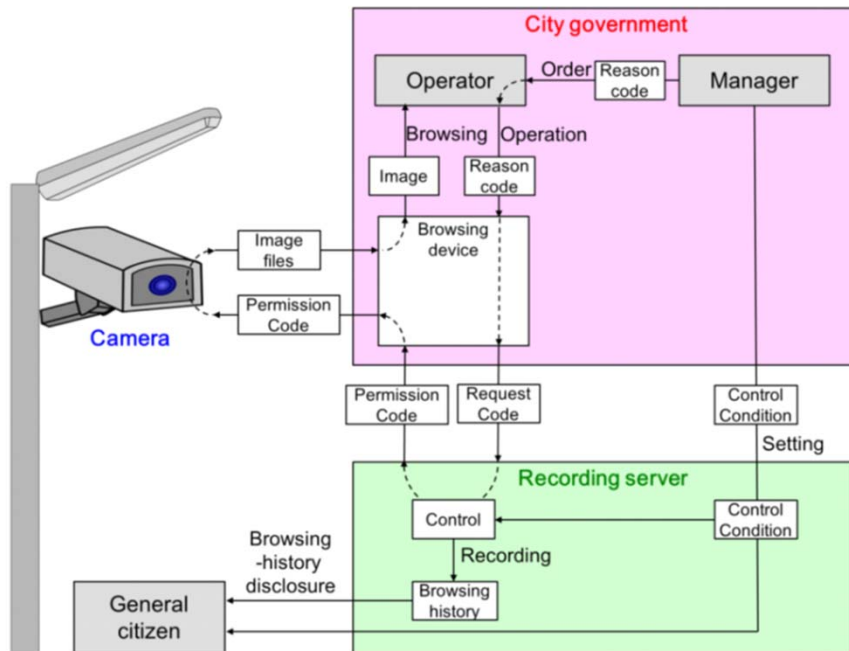


In the above system, all browsing acts are visualized and verifiable.

Abuse of the system is strongly deterred.

An ordinary citizen is free from the mental stress by believing that it is very difficult to abuse the system, and their privacy is protected at a sufficient level.

Effects of “Browsing-History Disclosure” (2/2)

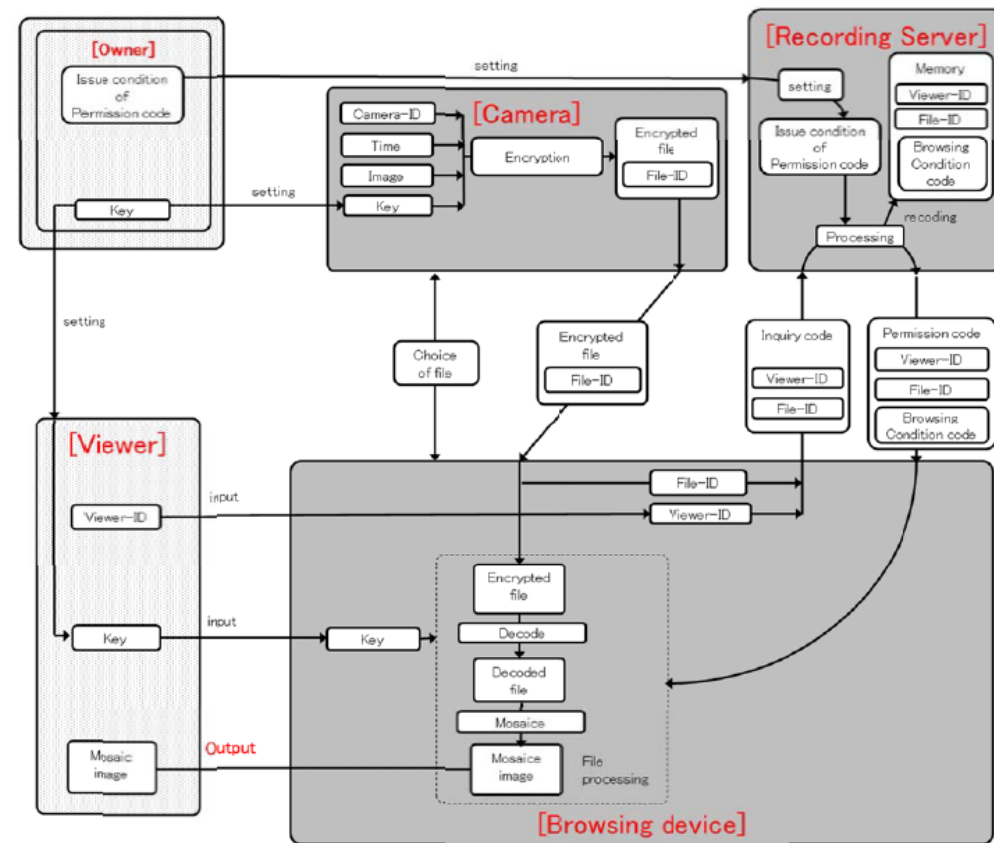


With this concept, people can believe that abuse should be surely revealed.

Then, people who do not want to be revealed will be deterred from abuse.

Although this belief might not deter a person who does not care about being revealed from abuse, he/she cannot commit another abuse again because he/she will be resigned owing to the first one.

Prototype of e-JIKEI Network Camera (System)



The features of the prototype of the e-JIKEI Network Camera based on the proposed concept are as follows,
[1] Each network camera records the images continuously in the memory card inside.

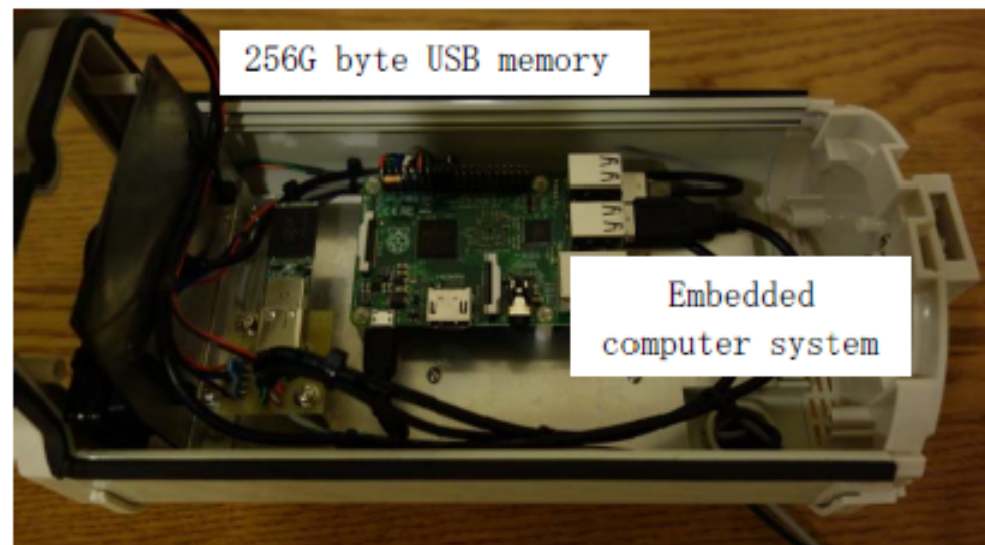
=> The number of the cameras is comparable to that of the street lights operated by a city government.

[2] To obtain/view the images recorded in the cameras, each browsing-device needs to get the permission from the recording server operated by a reliable 3third party.

=> If an officer of the city government abuses the system, the act should be exposed and he/she will be dismissed soon.

[3] The recording server, operated by the third party, discloses all the browsing-history of the images to the public on the Internet.

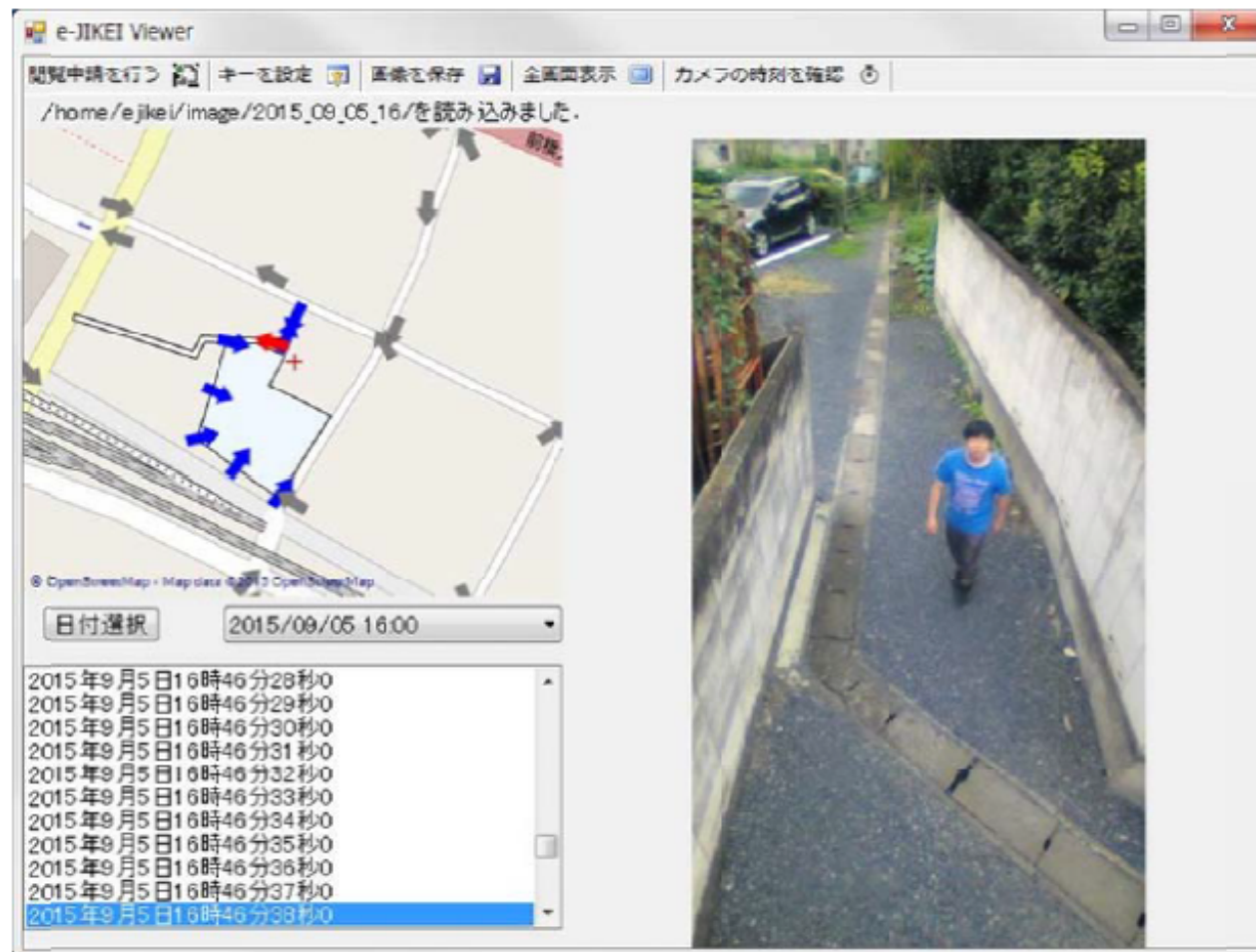
Prototype of e-JIKEI Network Camera (Camera)



The prototyped camera consists of a USB camera module with 1920X1080 pixel resolution, an embedded computer system (Raspberry Pi 2), a 256G byte USB memory for storing recorded images, and a WiFi interface for wireless network connection, as main components. Images are captured at every second, and stored in the USB memory after the double encryption is applied on them. The stored images are read through the wireless network only when the reading requests are justified as proper one given by the recording server.


Prototype of e-JIKEI Network Camera (Browsing Software)

The browsing software has the following window. The viewer inputs the viewer ID, the camera and time of which images the viewer wants to view, and the reason to view. Then, the viewer communicates with the server and obtains permission. When the permission is given, the browsing software communicates with the camera and obtains the images. There are two encryption keys, Key A and Key B, and if the viewer know only Key A, mosaic images are shown. If the viewer knows both of Key A and Key B, images with full resolution are shown.



Prototype of e-JIKEI Network Camera (Recording Server)

The recording server is located in Saitama University. When receiving an image viewing request from the viewing software, the server checks whether the request is proper, and when it is proven so, sends an permission to the viewing software and at the same time, records the event. The viewing records can be checked by ordinary citizens through the Internet, as the following web page.



閲覧記録一覧

- [ユーザの検索](#)
- [カメラの検索](#)

閲覧申請日時 新しい順 古い順	ユーザID	カメラID	閲覧開始 時期 新しい順 古い順	閲覧終了 時期 新しい順 古い順	閲覧理 由	詳細理由
2015年09月 05日 21時06分14 秒	CGov_100A04_Takita 田北(織姫市役所 計算機 係)	NeJIC1000AA0002 NeJIC1000AA0005 NeJIC1000AA0008 NeJIC1000AA0007 NeJIC1000AA0004 NeJIC1000AA0006 NeJIC1000AA0003 NeJIC1000AA0009	2015年9 月1日 00:00	2015年9 月5日 23:59	動作テス ト	デモ画像確認
2015年09月 05日 19時19分50 秒	CGov_100A04_Takita 田北(織姫市役所 計算機 係)	NeJIC1000AA0002 NeJIC1000AA0005 NeJIC1000AA0008 NeJIC1000AA0007 NeJIC1000AA0004 NeJIC1000AA0006 NeJIC1000AA0003	2015年9 月1日 00:00	2015年9 月5日 23:59	動作テス ト	デモ画像の確認
2015年09月 05日 ..	CGov_100A04_Takita 田北(織姫市役所 計算機 係)	NeJIC1000AA0002 NeJIC1000AA0005 NeJIC1000AA0008 NeJIC1000AA0007	2015年9 月1日	2015年9 月5日	動作テス	デモ画像の確認

Website of disclosing the browsing-history

Experiments on the e-JIKEI Network Camera

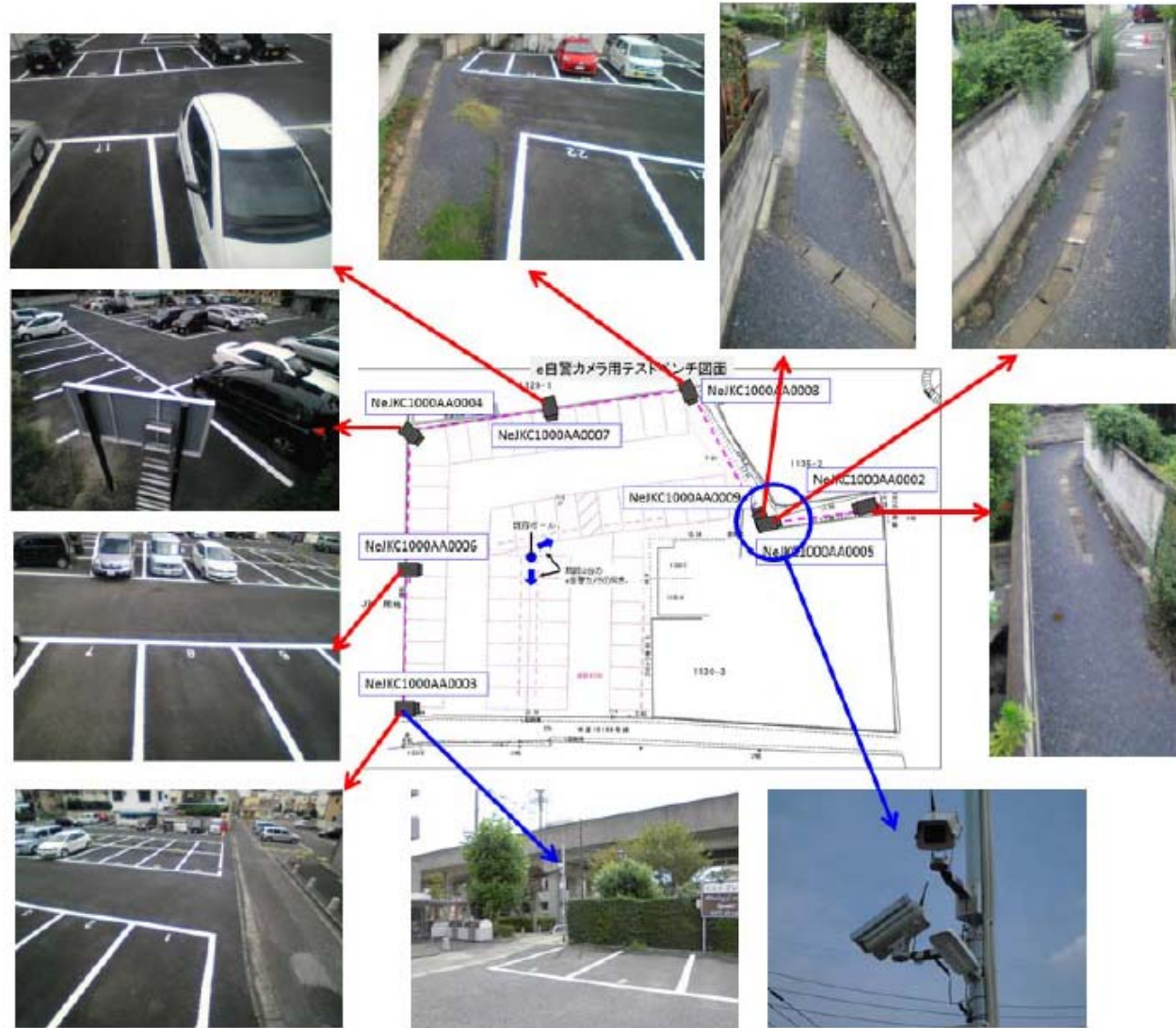


防犯カメラ作動中

● ネットワーク対応型自動車カメラシステムの実証実験を実施中
● 一般の方のプライバシーが侵害されることが絶対に無いよう運用中
● 車上荒らし、空き巣、不審者等の事件・事故が発生した場合は、警察からの要請に応じ、画像を提供し、警察の捜査に協力



支援実験サイトの詳細については、
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群馬大学教授 藤井健作
電話：0277(30)1736
電子メール：
fujiki@gunma-u.ac.jp



Demos from the experiments

Demonstration (2 good-use and 1 abuse) :

[1] Good use: Chasing a kidnapped child

[2] Good use: Chasing a aged wonderer

[3] Abuse: Stalking a lady by a city government staff

Press Release

<http://www.e-jikei.org/site/press.htm>

Conclusions

We are asking the citizens how they compare the responsibility on watching what happens around their houses with the risk of the violation of privacy and with the cost for the e-JIKEI Cameras.

In the meanwhile, we are trying to increase the positive aspects of the security camera, such as crime prevention and identification of suspects, and to decrease the negative aspects of them, such as violation of privacy.

We are now commencing tests on the true value of our concept for a safer and more comfortable community.

End of presentation

*Thank you
for your kind attention!*

Fujii's website

<http://www.e-jikei.org/fujii/fujii.htm>