

The e-JIKEI Network Camera (Prototype)

1. The e-JIKEI Network Camera (Prototype)

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 3rd 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.

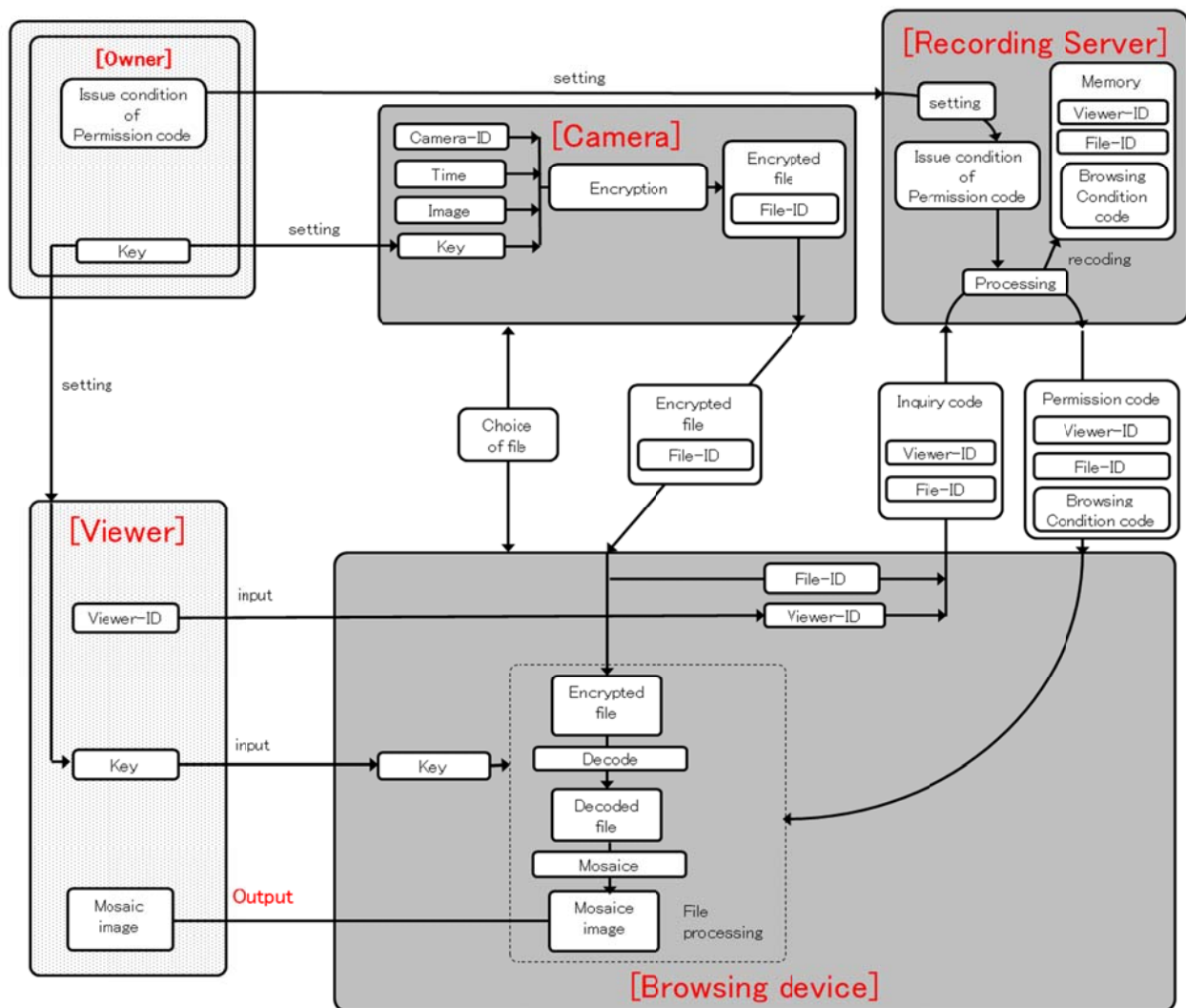


Figure 1. Concept of recording the browsing-history (an example)

2. Camera unit

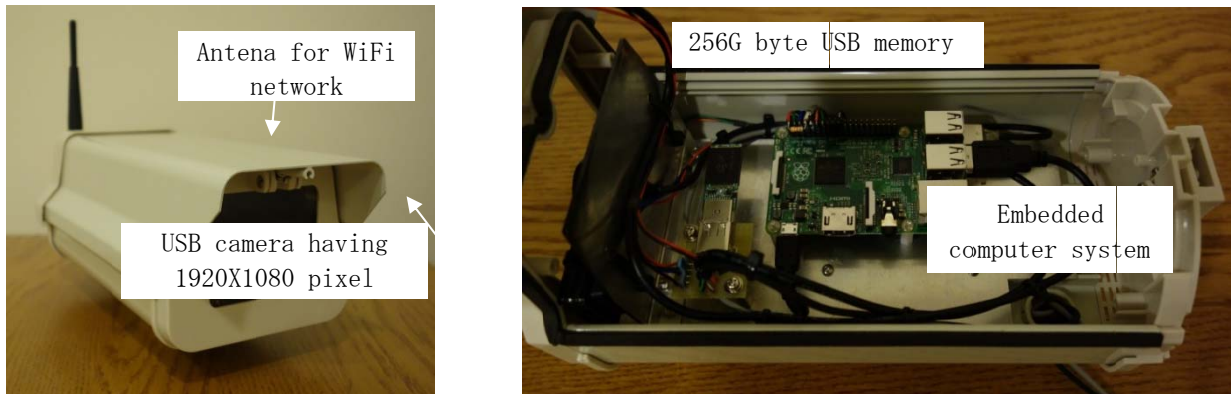


Figure 2. Camera unit

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.

3. 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.

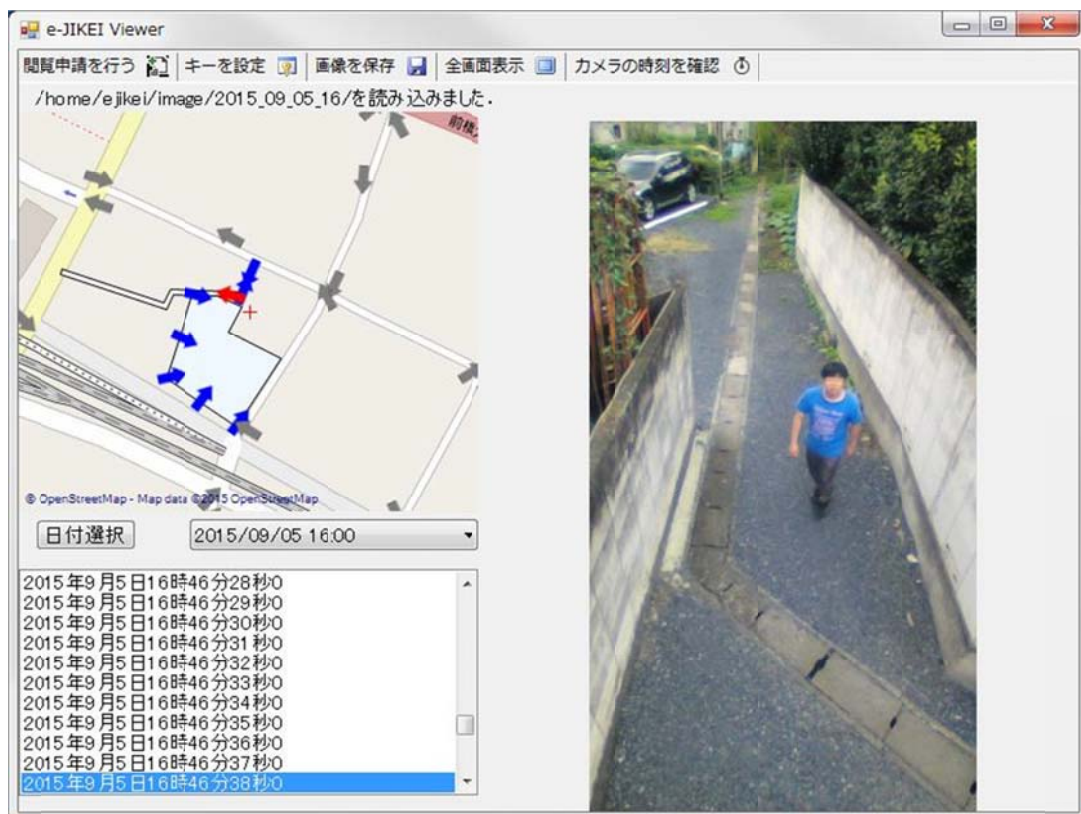


Figure 3. Screen shot of the browsing device

4. 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)	NeJKC1000AA0002 NeJKC1000AA0005 NeJKC1000AA0008 NeJKC1000AA0007 NeJKC1000AA0004 NeJKC1000AA0006 NeJKC1000AA0003 NeJKC1000AA0009	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)	NeJKC1000AA0002 NeJKC1000AA0005 NeJKC1000AA0008 NeJKC1000AA0007 NeJKC1000AA0004 NeJKC1000AA0006 NeJKC1000AA0003	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)	NeJKC1000AA0002 NeJKC1000AA0005 NeJKC1000AA0008 NeJKC1000AA0007	2015年9月1日	2015年9月5日	動作テスト	デモ画像の確認

Figure 4. The website of disclosing the browsing-history

The website of disclosing the browsing-history (in Japanese):
<http://www.fmx.ics.saitama-u.ac.jp/e-jikei/print.cgi>