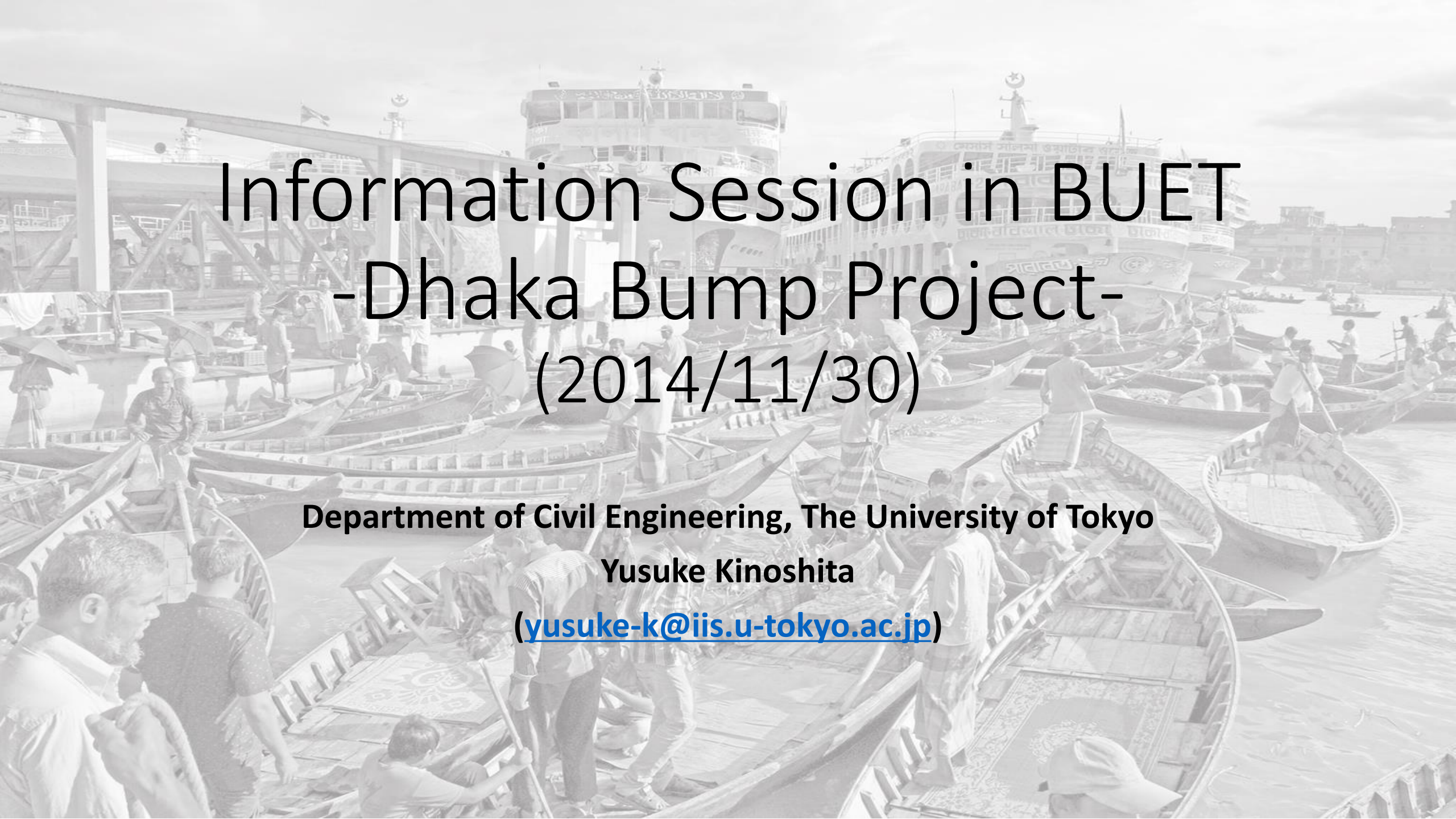

Information Session in BUET -Dhaka Bump Project-

(2014/11/30)

Department of Civil Engineering, The University of Tokyo

Yusuke Kinoshita

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- Self-introduction
- My Research (Monitoring infrastructures by crowdsourcing)
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  - Purpose
  - Method (Crowdsourcing)
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- Dhaka Bump Project
  - Result of preliminary experiment
  - Request
- Tutorial (How to install and use Bump Recorder)

Self-introduction

- Name: Yusuke Kinoshita
- Date of Birth: January 18, 1993
- Office: the University of Tokyo
- Grade: the 4th grade, undergraduate
- Department: civil engineering
- Hometown: Yokohama, Kanagawa
- My Research Topic:

  Monitoring the infrastructure in developing countries by crowdsourcing

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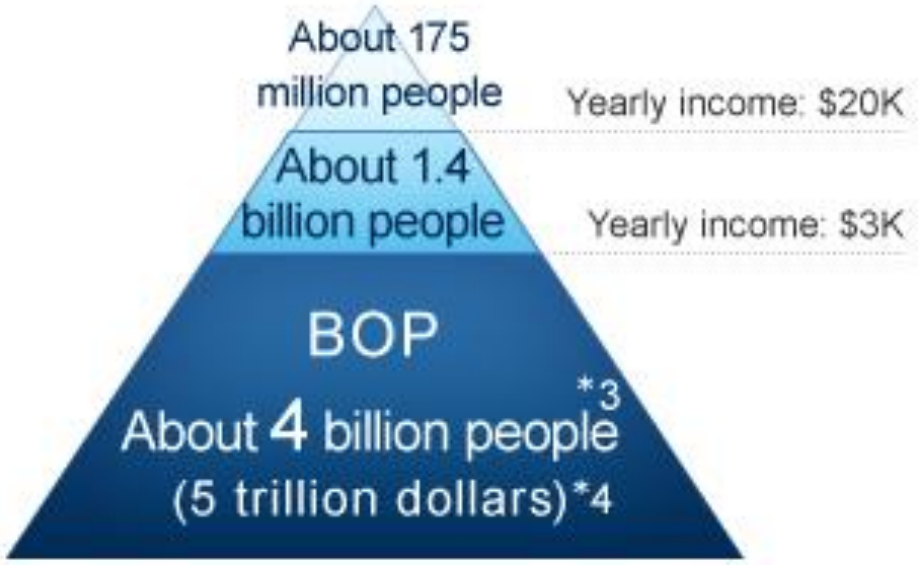
Background of my research (the necessity of monitoring infrastructures)

- ✓Monitoring the infrastructure costs much time and money.
- ✓In developing countries, the information base is unstable.

- ➢World Bank and United Nations are proceeding with managing data of infrastructures.
  - ➢Grasp building use for anti-earthquake
  - ➢Use IRI (International Roughness Index) for improvement of road condition

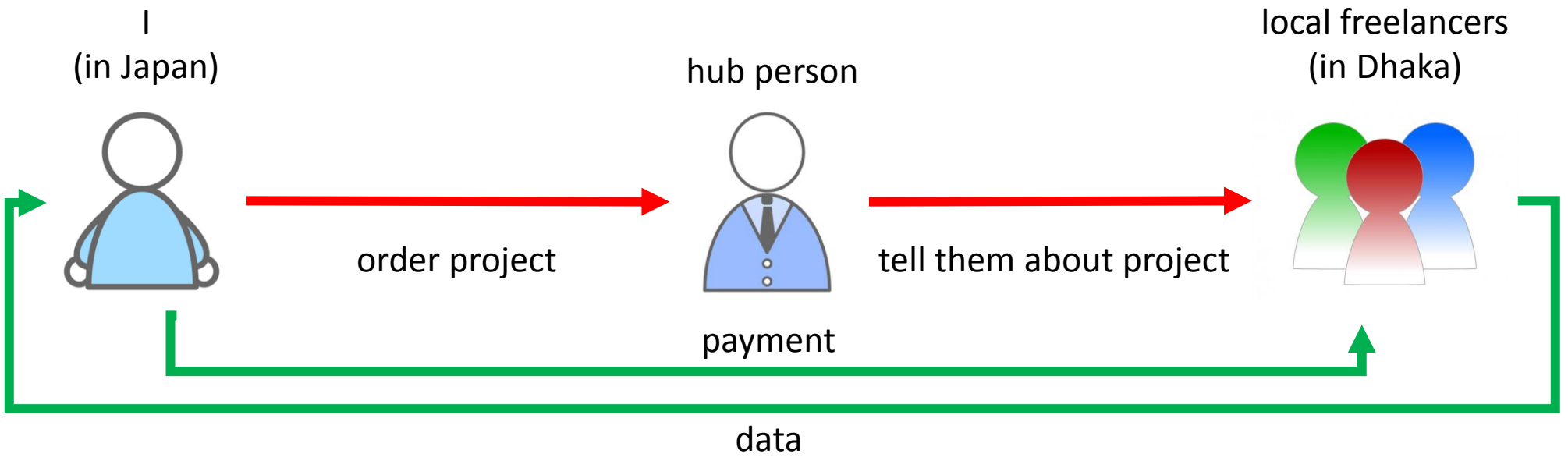
Purpose of my research

- Investigate whether monitoring infrastructures has the possibility of BOP (Base of Pyramid) business.
- Use collected data (IRI & speed) for accuracy improvement of estimating the flow of people (People Flow Project).



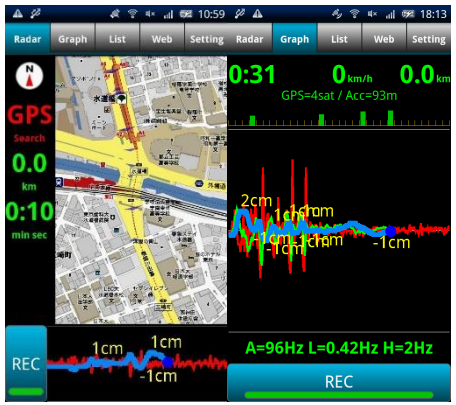
Method of my research (what is crowdsourcing…?)

- Crowdsourcing is the process of obtaining needed services, ideas, or content by soliciting contributions from a large group of people.
- There are many crowdsourcing services in the world and many users in developing countries.



My research project
-Road roughness by Bump Recorder-

- Bump Recorder is a system service to observe, display, share the irregularity state of the road surface.
(cf. http://bit.ly/1nnECRR)



upload

analyze

<Bump Recorder App>
-smartphone application (free!)
-measuring and uploading data

<Server>

<Bump Recorder Web>
-web page
-display analyzed data
(flatness, IRI, bump)

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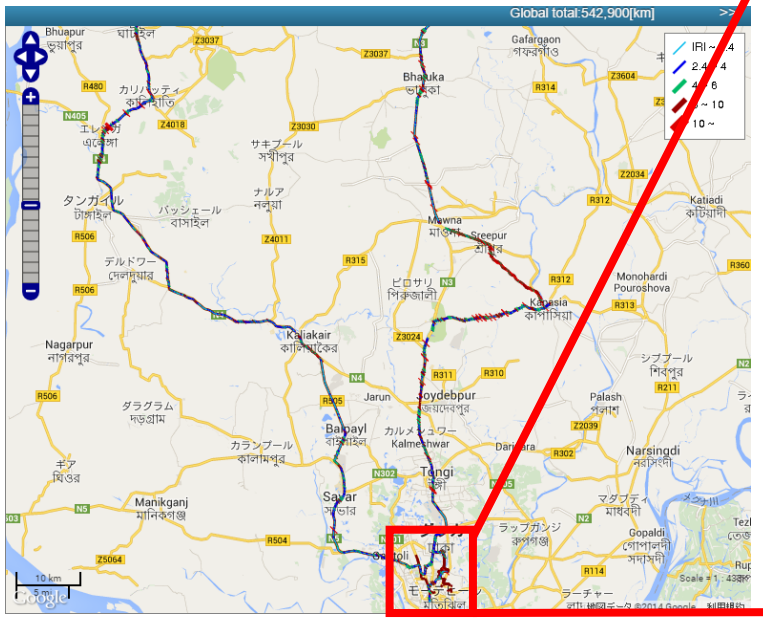
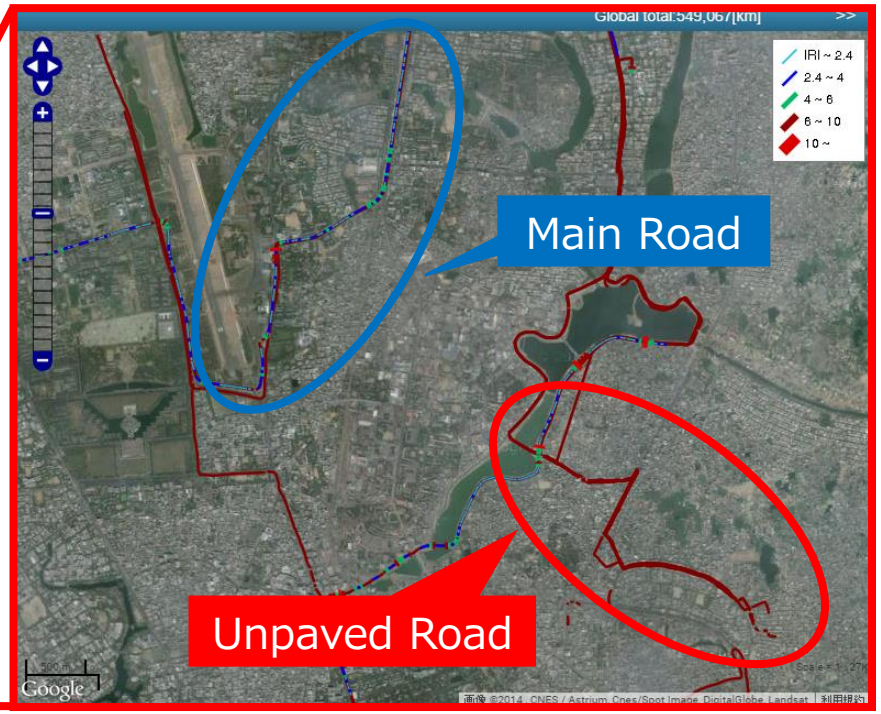
Result of preliminary experiment (Collecting data with 6 students of BUET)

- Time period : 2014/09/01～2014/09/30
- Goal : Collecting 500km data of roads in Dhaka
- Result : Collecting 607.1km data of roads in Dhaka
- Payment : 80taka / 1km (data uploading)

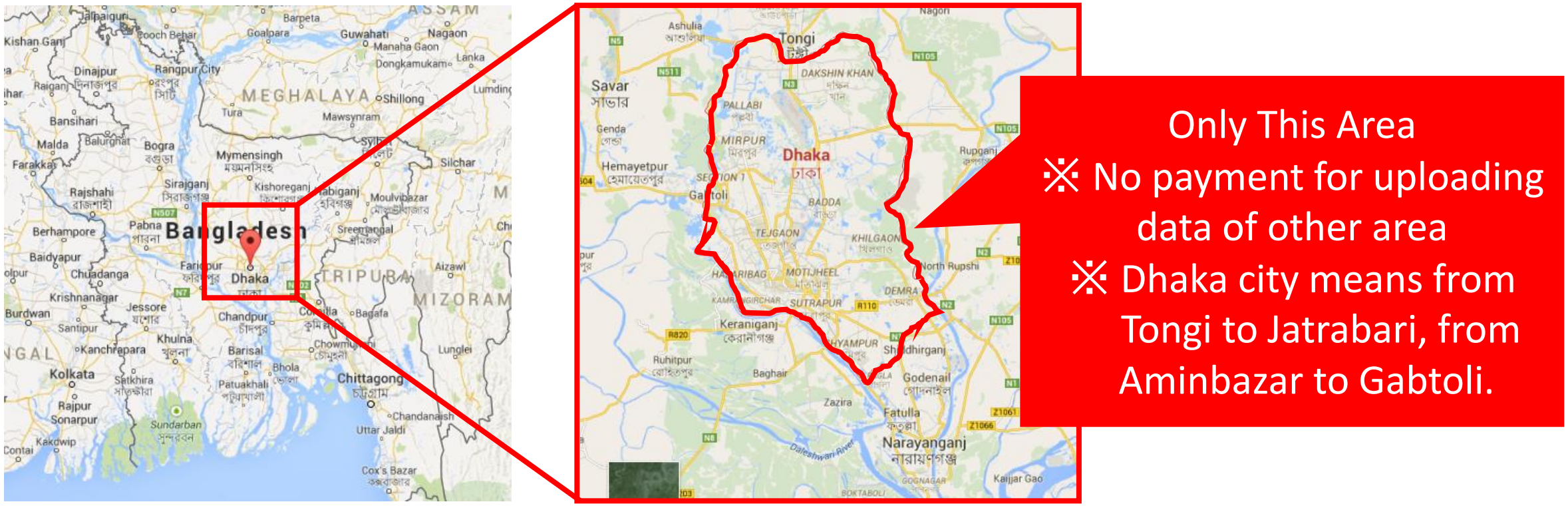
- IRI of main roads is higher than that of unpaved roads.
- Road condition can be grasped by IRI to some extent.





Dhaka Bump Project

- Time period : ～2015/01/18 (finish as soon as goal achievement)
- The number of participants : First 50 applicants
- Goal : Collecting 10000km data of roads in Dhaka Metropolitan Area (DMA)



Request of Dhaka Bump Project

- Tasks :
  1. Installing Bump Recorder App in your Android smartphone
  2. Collecting data of roads in Dhaka by driving your car using Bump Recorder App
  3. Uploading your collected data to the server of Bump Recorder
- Condition :
  1. having an Android smartphone which can collect and upload data using Bump Recorder
  2. having a car and a driver's license
- Payment : 80taka / 1km (data uploading)

※ We look for not only local freelancers but also hub persons. Hub persons will be paid according as collected data volume.

※ There is the possibility that a bonus will be paid for uploading data of the area where and the time period when the amount of data is small.

Tutorial of **Bump Recorder**

(How to install and use Bump Recorder)

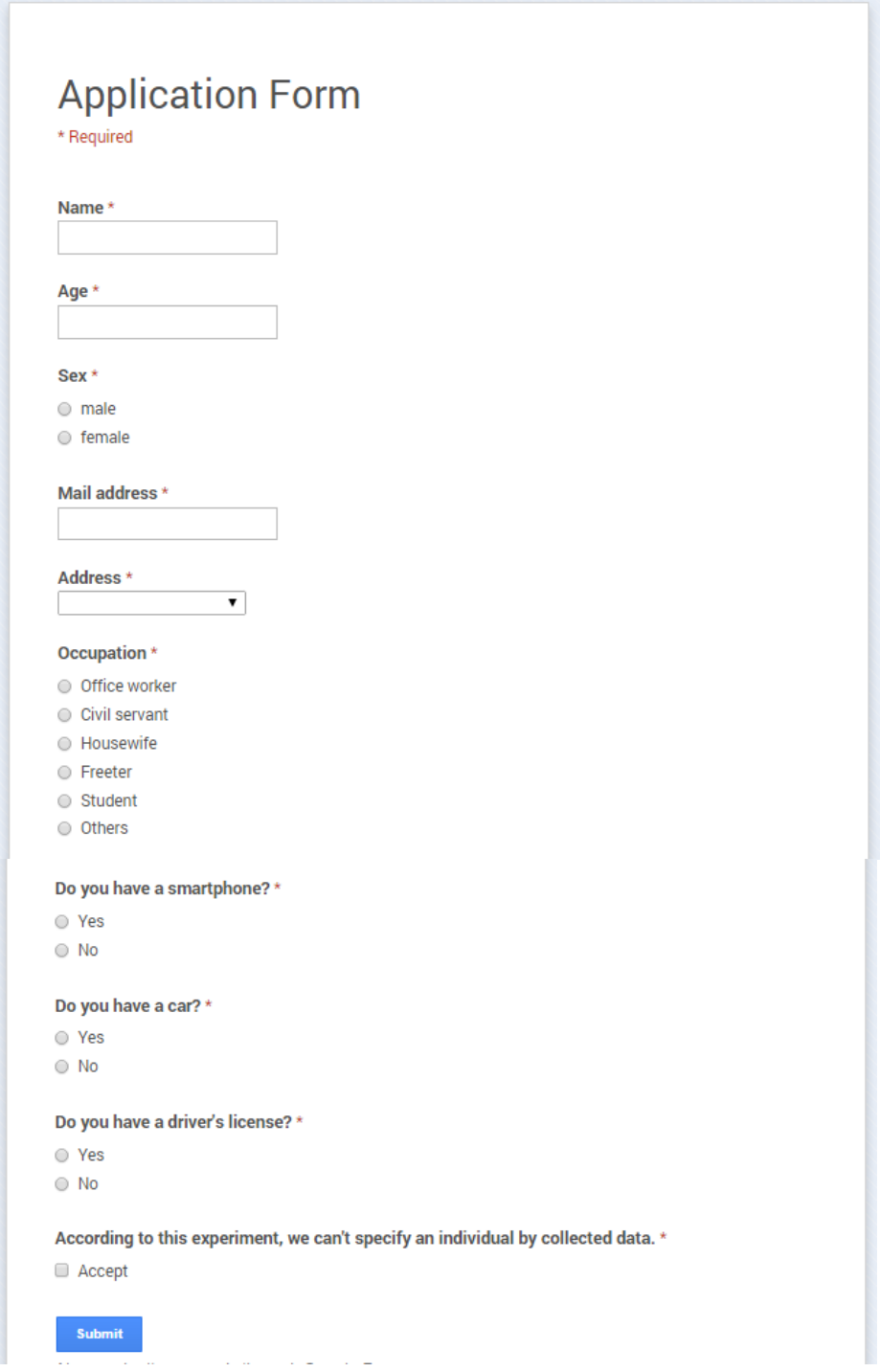
Application

I. Access to the URL of application form (http://goo.gl/forms/aoqDFHAcVu)

II. Fill in the application form like the figure on the right

III. Press Submit button

※ According to this experiment, we cannot specify an individual by collected data.



Application Form

* Required

Name *

Age *

Sex *

male

female

Mail address *

Address *

Occupation *

Office worker

Civil servant

Housewife

Freeter

Student

Others

Do you have a smartphone? *

Yes

No

Do you have a car? *

Yes

No

Do you have a driver's license? *

Yes

No

According to this experiment, we can't specify an individual by collected data. *

Accept

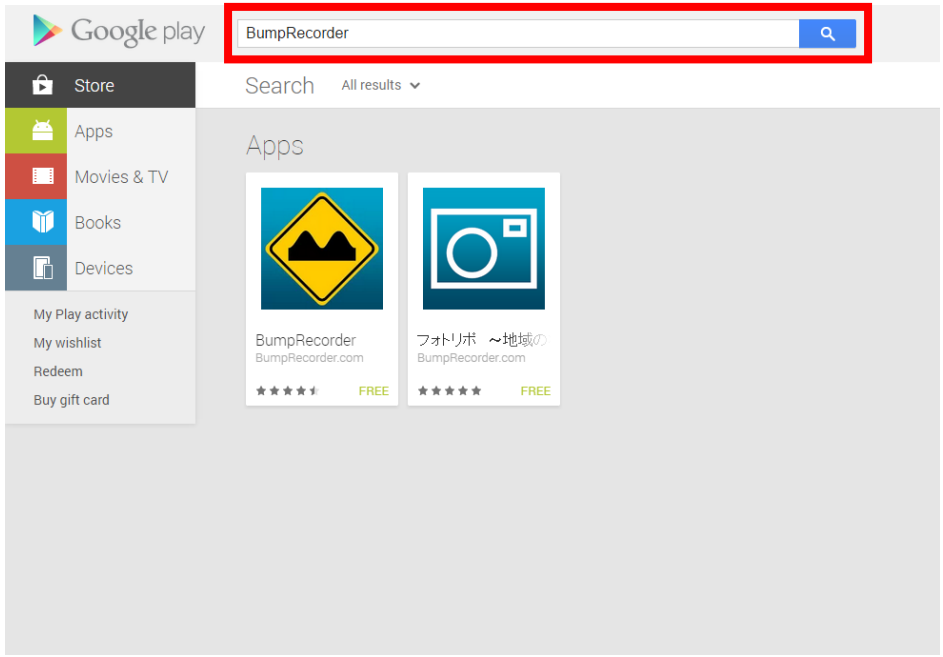
Submit

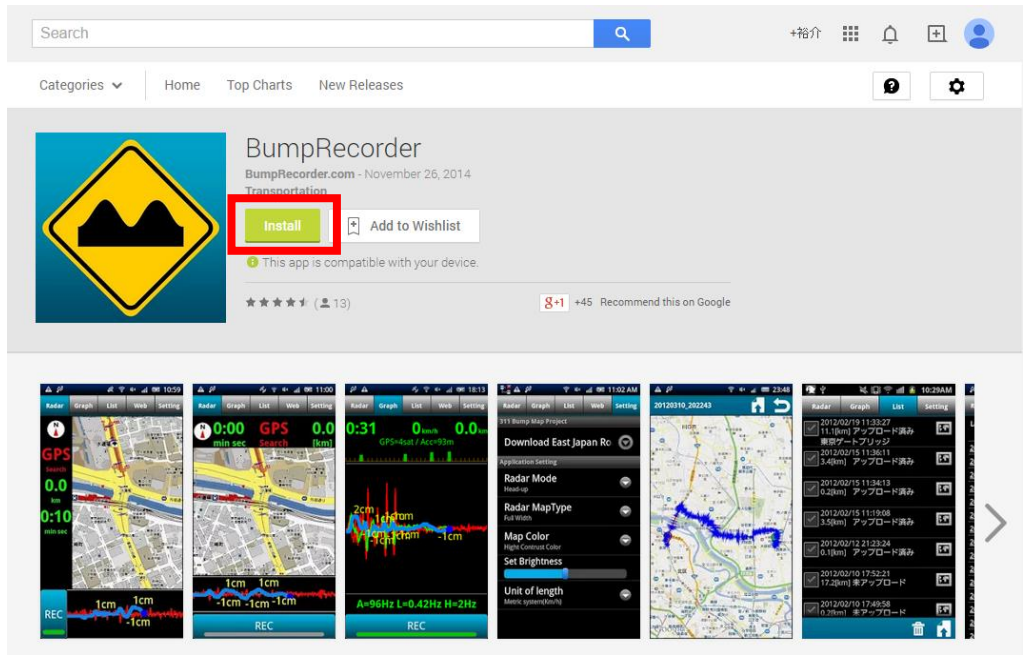
How to install Bump Recorder

I. Access to Google play

II. Look for “BumpRecorder” on a search engine

III. Install Bump Recorder to your smartphone



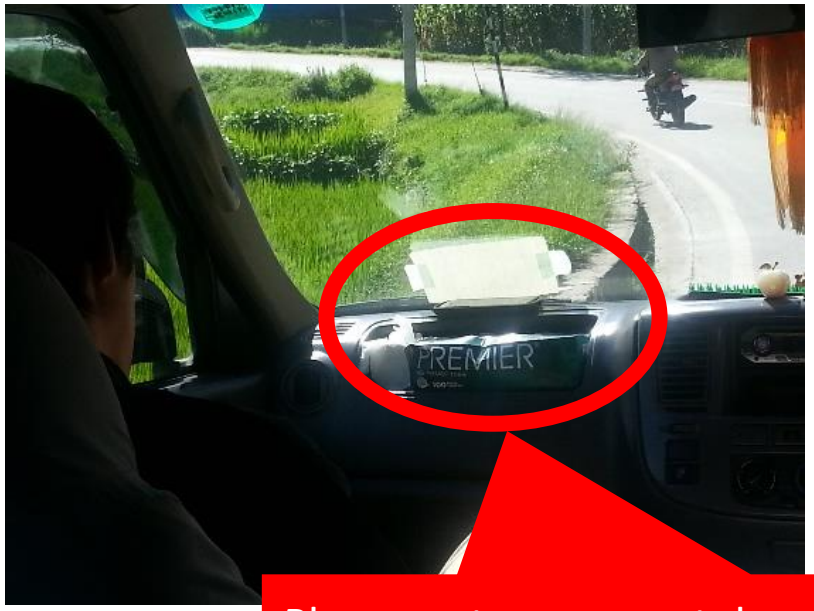


The procedure of collecting data

I. Fix your smartphone to the dashboard of your car
II. Activate Bump Recorder
III. Measuring data by driving your car using Bump Recorder
IV. Uploading your collected data to the server of Bump Recorder

How to collect data using Bump Recorder

Put your smartphone on the dashboard of your car and fix your smartphone vertically or horizontally to the road surface using a smartphone holder or a gel mat (anti-earthquake) commercially available.



Please put your smartphone on the dashboard of your car

< smartphone holder >

< gel mat >
(anti-earthquake)

The method of fixing your smartphone

There are two recommended method of fixing your smartphone.

Please fix your smartphone vertically or horizontally to the road surface.

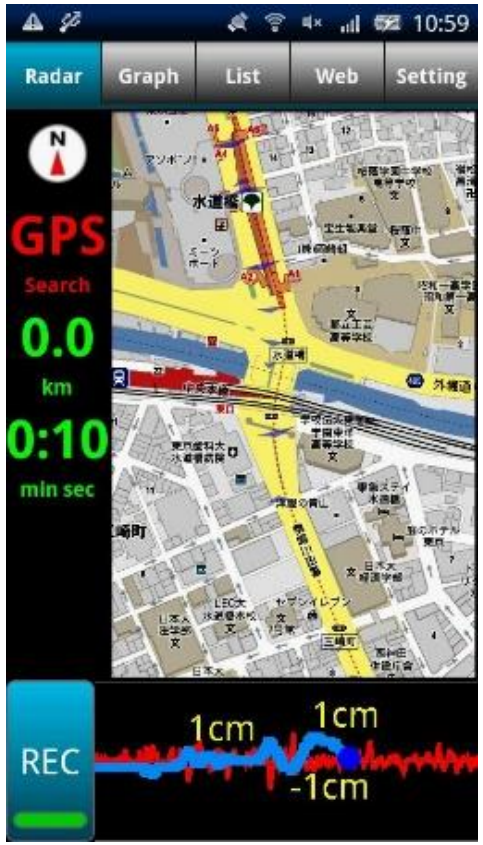
1. Using a smartphone holder commercially available

2. Using a gel mat (anti-earthquake) commercially available

The method of measuring data

There are two methods of measuring data.

1. Measurement of Radar screen



Running speed

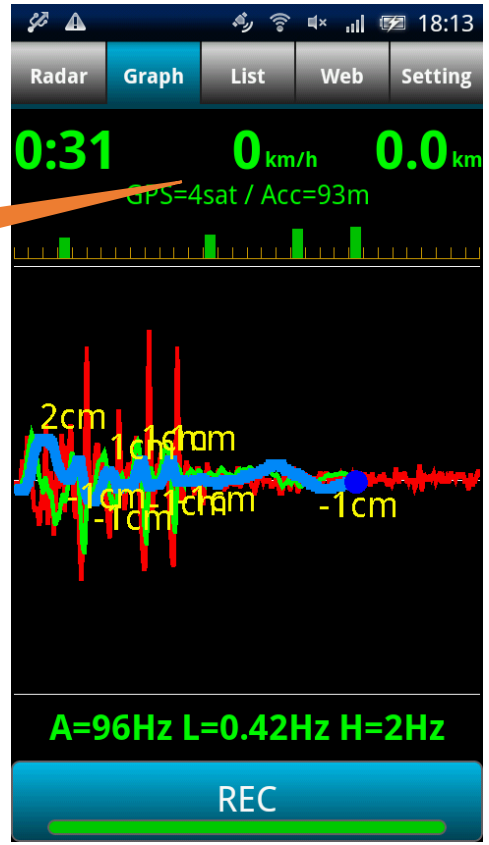
Measured distance

Measuring time

Start/Finish button

Graph

2. Measurement of Graph screen



Measuring time

Running speed

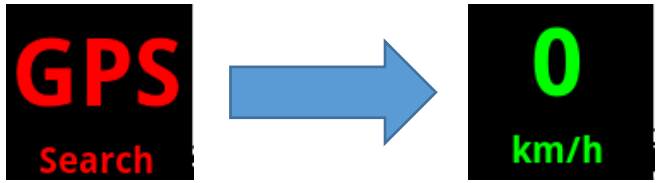
Graph

Measured distance

Start/Finish button

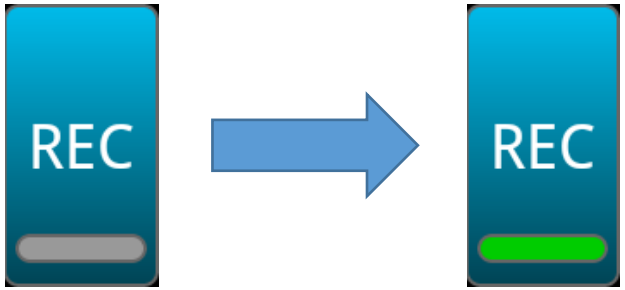
The start of measuring

1. Activate this application and fix your smartphone
2. Wait for a while until the display speed changes from red to green



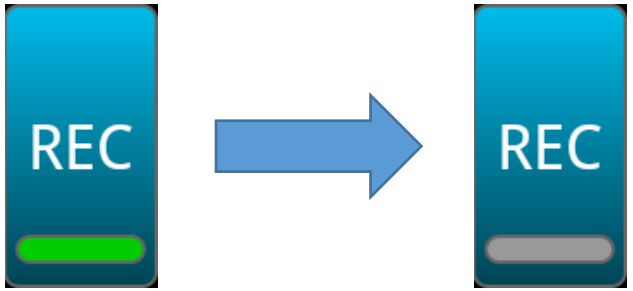
GPS Search: This application is searching for GPS. In this case, this application cannot measure correctly because the location information is not decided.

3. Tap the “REC” button (This application starts measuring.)



The finish of measuring

1. Tap the “REC” button (This application stops measuring.)



※ If you display the screen of List, Web, Setting while measuring, this application stops measuring.

The method of uploading just after measuring

1. Display the map after measuring
2. Tap the button and push the “Yes” button

The method of uploading plural data altogether

1. Tap the “List” tab

2. Tap the ✔ button of uploading data
3. Tap the button and push the “Yes” button

※ The upload of plural data together may take long time.

What to do in order to measure correctly

I. Fix your smartphone

If you don't fix your smartphone, you can't measure data correctly.

II. Drive outside the measuring area in order to measure data correctly

While you are driving about 1km after starting the measurement, this application is doing the calibration to measure the characteristics of your smartphone. Meanwhile, this application is correcting data, but please drive outside the measuring area in order to measure data more correctly.

III. Don't look the screen of your smartphone while driving

It is very dangerous to operate your smartphone and look the screen of it.

Thank you for listening!