Campus GIS
(Tsukuba University Campus Geospatial Information)

User Manual

Draft version 3.0

20130402

Department Homepage

http://giswin.geo.tsukuba.ac.jp/sis/jp/

Contents

1. Graphical User Interface

URL: http://land.geo.tsukuba.ac.jp/campusgis/CampusGIS.aspx
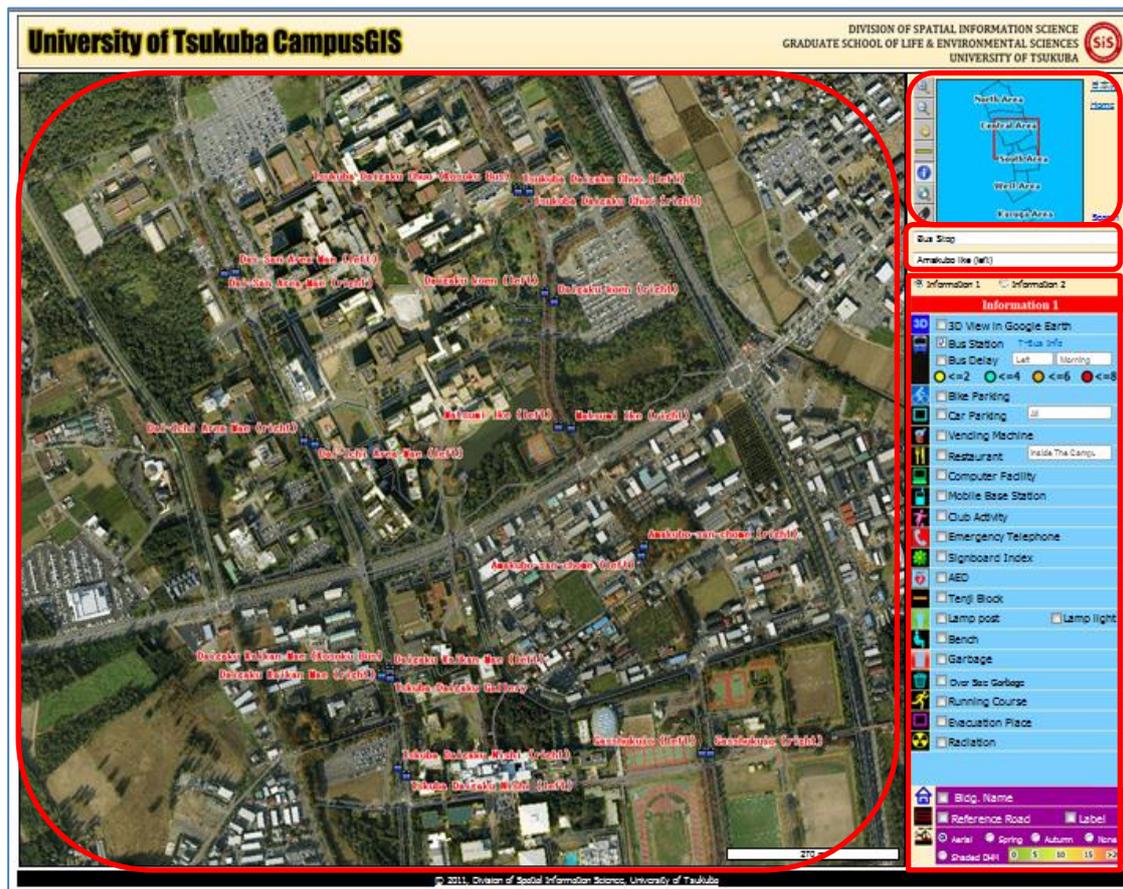
①   **Map View**

②   **Map Controls**

③   **Query Builder**

④   **Spatial Query by Feature**

2. Map Controls
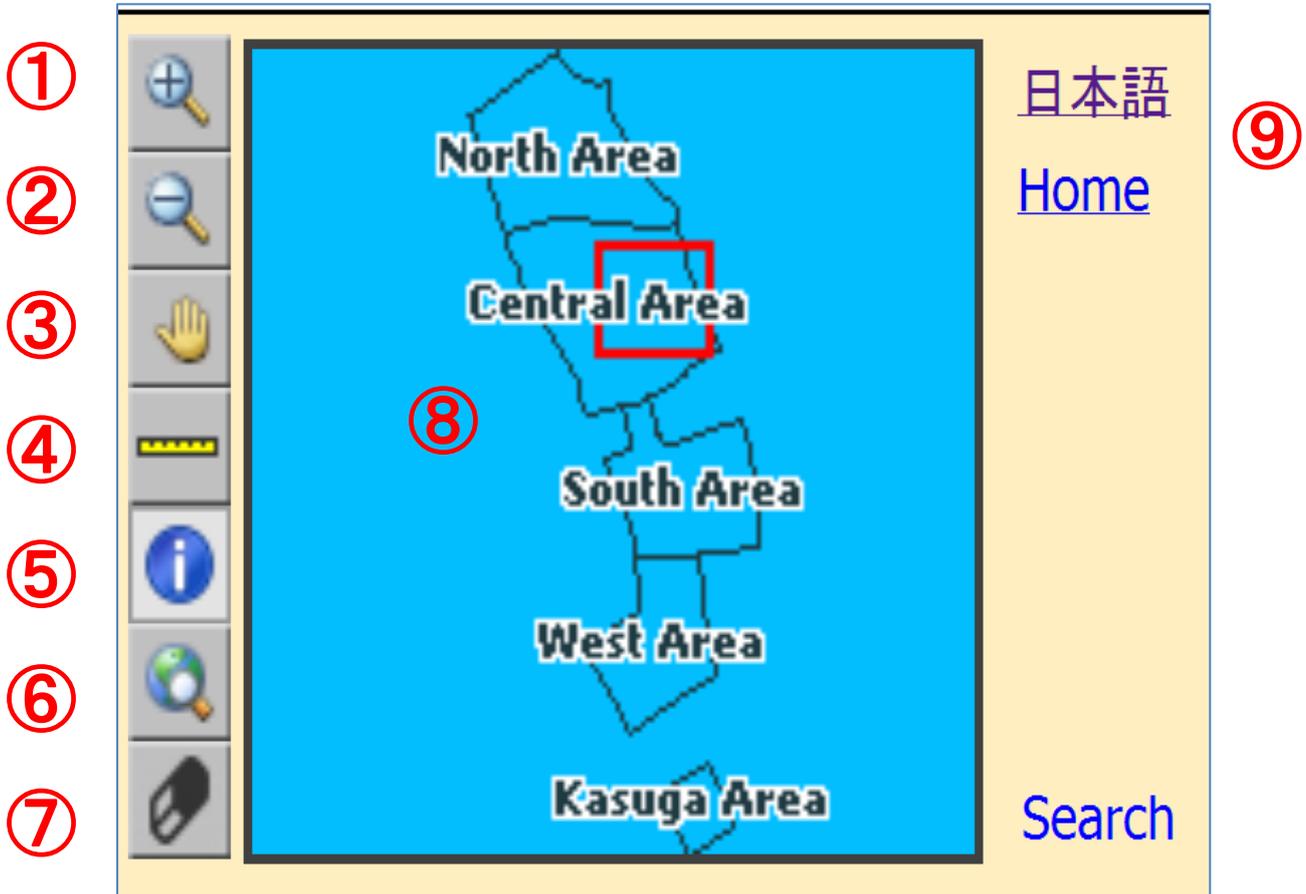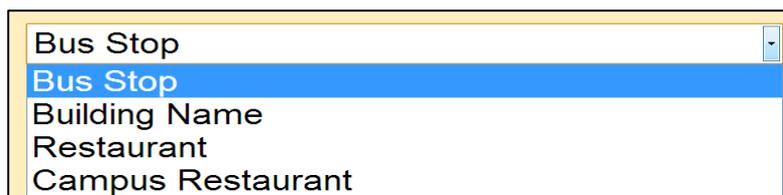
① Zoom In

② Zoom Out

③ Pan/Move

④ Measure Distance

⑤ Get Attribute Information

⑥ Zoom to Full Extent

⑦ Clear All Markers on the Map

⑧ Zoom to Entire Map

3. Query Builder

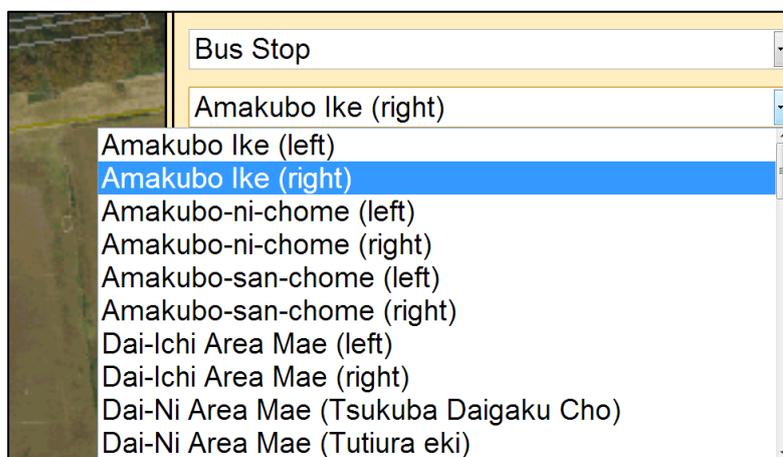## 3   Bus   Stop/Building   Name/Restaurant/   Campus Restaurant Query

① Select an item

Bus Stop ▾
Bus Stop
Building Name
Restaurant
Campus Restaurant

② Select an element

| Bus Stop ▾ |
| --- |
| Amakubo Ike (right) ▾ |
| Amakubo Ike (left) |
| **Amakubo Ike (right)** |
| Amakubo-ni-chome (left) |
| Amakubo-ni-chome (right) |
| Amakubo-san-chome (left) |
| Amakubo-san-chome (right) |
| Dai-Ichi Area Mae (left) |
| Dai-Ichi Area Mae (right) |
| Dai-Ni Area Mae (Tsukuba Daigaku Cho) |
| Dai-Ni Area Mae (Tutiura eki) |

③ Define search category in query

Bus Stop ▾

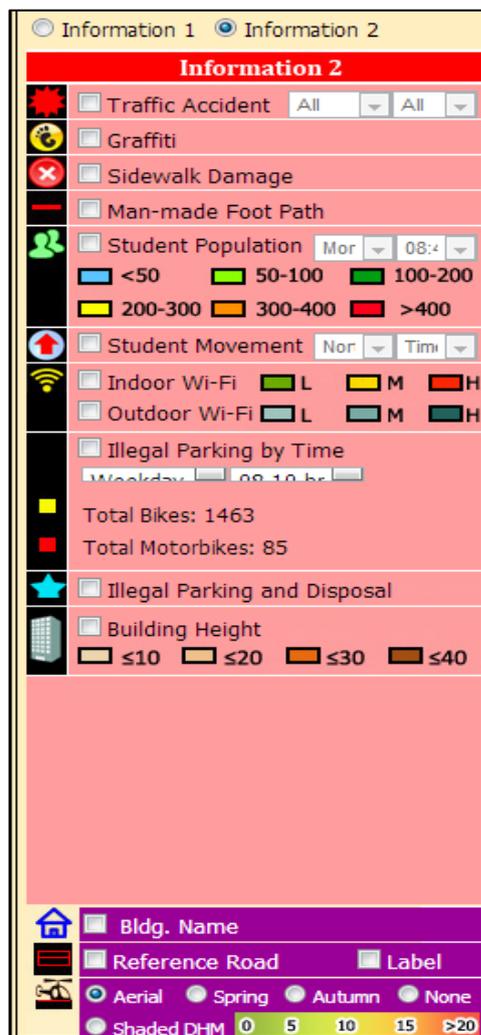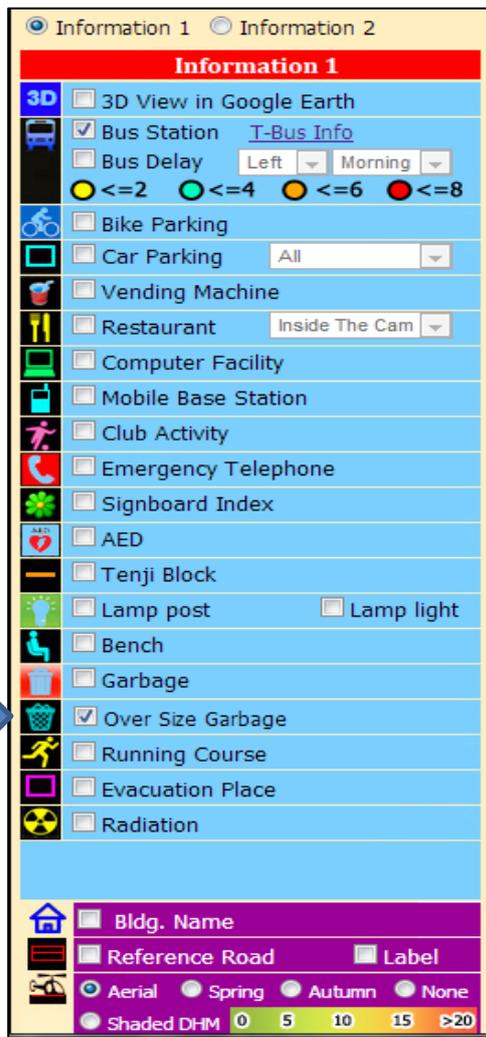Amakubo Ike (left) ▾

④ Display the result in the display interface
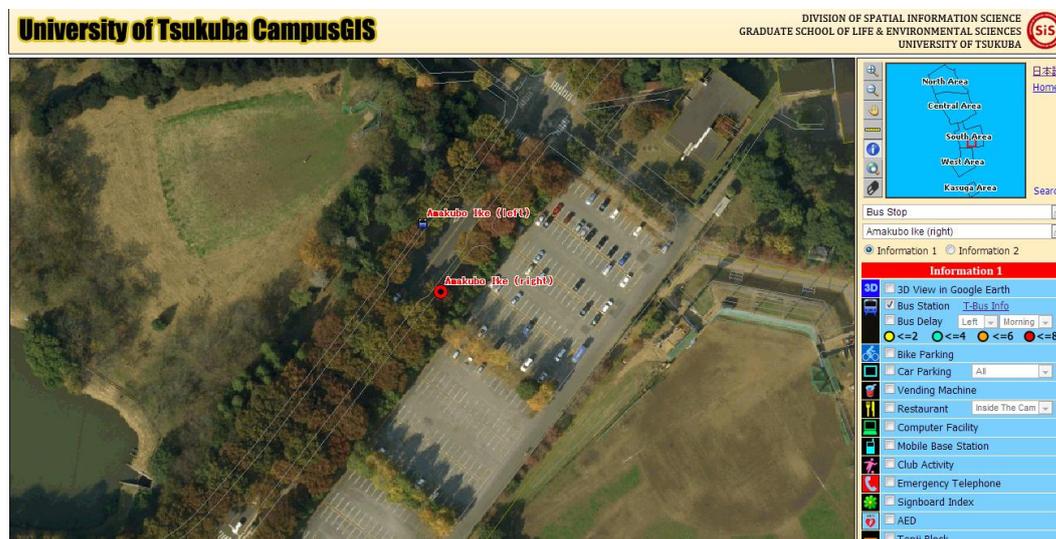
4. Spatial Query by Layer

4.1 Query by Feature

This query helps you to choose an item which you are interested in, locate the place and obtain more details.
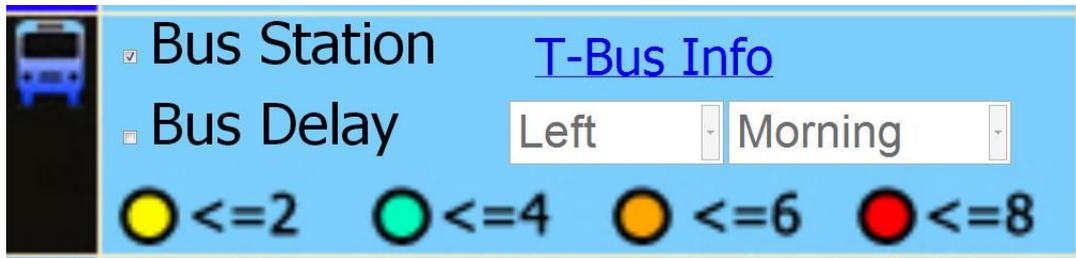
① Display all map layers

② Select a layer of interest

③ Display the result on the map, click one of the results to display more details

Bus Delay Layer

This item shows the delay time from the bus timetable on the day of survey, and the calculated average delay deviation. Based on the time and the place you are close to, you can choose an item in the bus delay layer and the result will show display in the map view immediately.
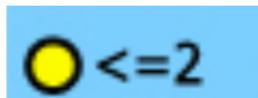
 shows a delay time of less or equal to 2 minutes

 shows a delay time of less or equal to 4 minutes

 shows a delay time of less or equal to 6 minutes

 shows a delay time of less or equal to 8 minutes

Student Population Layer

Student population layer shows the distribution of student population at a specific time.

 shows less 50 people in this building

 shows 50 to 100 people in this building

 shows 100 to 200 people in this building

 shows 200 to 300 people in this building

 shows 300 to 400 people in this building

 shows over 400 people in this building

You can choose the item student population layer based on the date and time, and the result will display in the map view immediately.

Person flow layer

Person flow layer shows the number of people passing through from south to north or from north to south at specific times at the set location on Tsukuba campus.

 shows the person flow from south to north on the set location

 shows the person flow from south to north on the set location

You can choose the item in person flow layer based on the time and the place you are interested in and the result will display in the map view immediately.

Wi-Fi Layer

The Wi-Fi layer shows the strength of the wireless network on Tsukuba Campus indoors and outdoors.

Our testers tested the network connection speed by using smart phones with Checkmytubes and identified the locations where the connection speed is the fastest. After collecting individual results, we compared speeds with aggregated data on smart phones in different locations, and plotted them on campus GIS.

 shows the network connection speed indoors. Clicking indoor, it will display the network connection speed in the map view immediately.

 shows the network connection speed outdoors. Clicking outdoor, it will display the network connection speed map in the map view immediately.
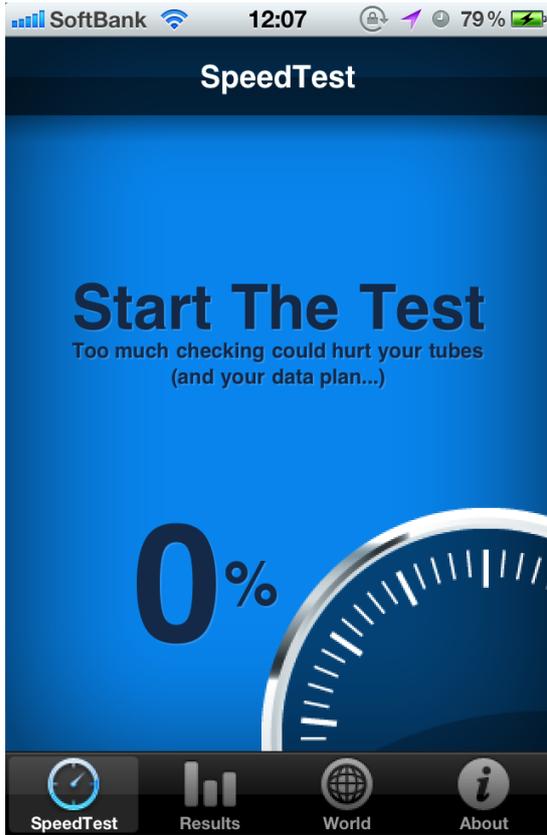
Our testers tested the network connection speed by using smart phones with Checkmytube. After collecting individual results, we compared the speeds with aggregated data on smart phones in different locations, and plotted them on campus GIS.
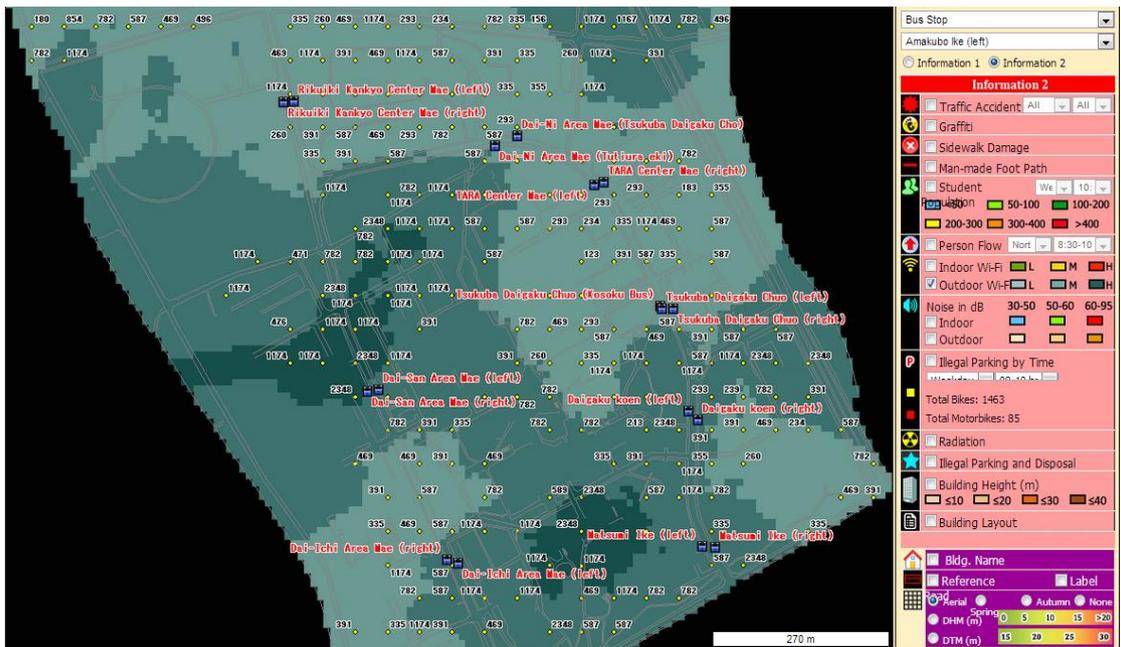
Also, the ranking of network connection speeds in the world can be obtained. Japan is 37th worldwide.

Noise in dB Layer

Decibel (dB) is a unit used to measure sound levels. Our testers used an application called MULTI MEASURES to precisely measure the sound pressure level around all measuring points on the Tsukuba Campus.

The Noise in dB layer is showing the dB distribution on the whole campus, which could help understand which area will be areas of noise pollution. It could give some advice for policy makers to improve the campus environment.
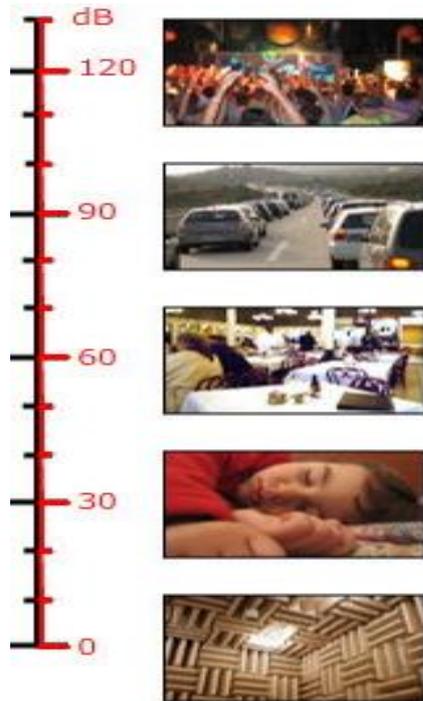
This figure helps us understand the volume levels of various sources and how they can affect our hearing.

Environmental Noise	
Weakest sound heard	0dB
Whisper Quiet Library at 6'	30dB
Normal conversation at 3'	60-65dB
Telephone dial tone	80dB
City Traffic (inside car)	85dB
Train whistle at 500', Truck Traffic	90dB
Jackhammer at 50'	95dB
Subway train at 200'	95dB
Level at which sustained exposure may result in hearing loss	*90 - 95dB*

Application MULTI MEASURES

Measure sound level with max, average, and peak values.

History graph with email exporting feature.
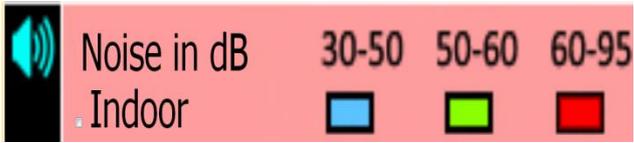
 shows the sound pressure level indoors. Clicking indoor will display the sound pressure level map in the map view immediately.

 shows the sound pressure level outdoors. Clicking outdoor will display the sound pressure level map in the map view immediately.
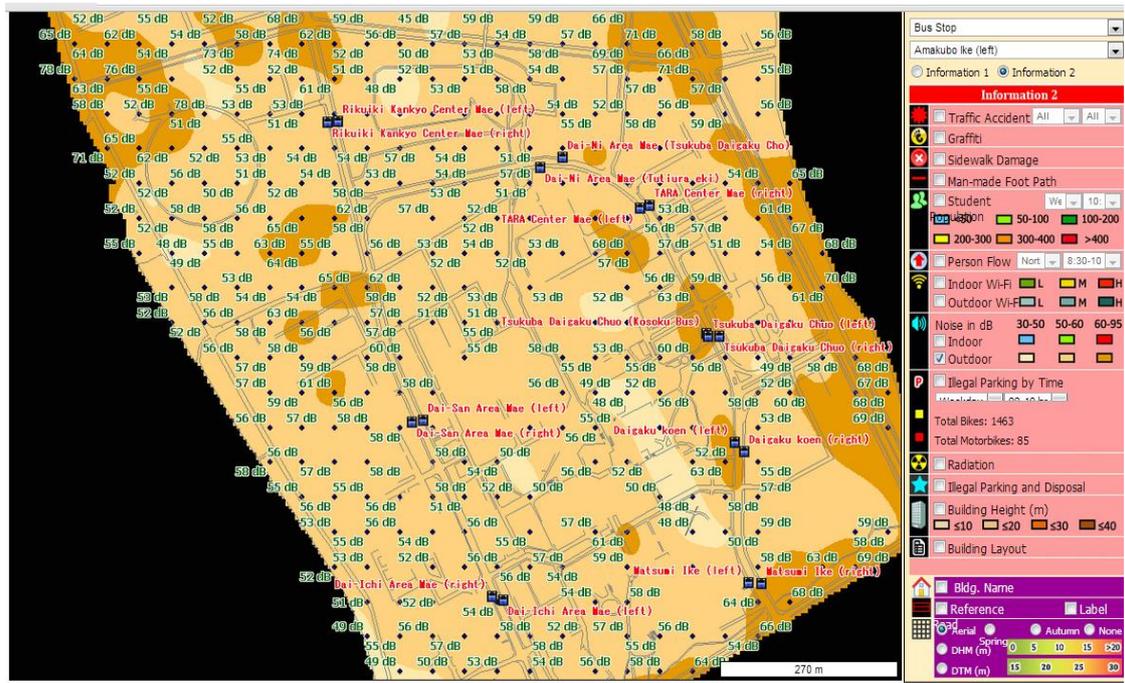
Building Layout Layer

In this layer we provide all buildings' information on Tsukuba Campus, including all building floor maps.

First choose the building layout layer. Then all building names are displayed on the map view immediately.

Click one building which you are interested in, to open an

information box. It shows the name of the building and floor information.

To view the floor map of this building you can click the Floor item in the frame, which will link to another page where you can find the place you want to visit.

Appendix

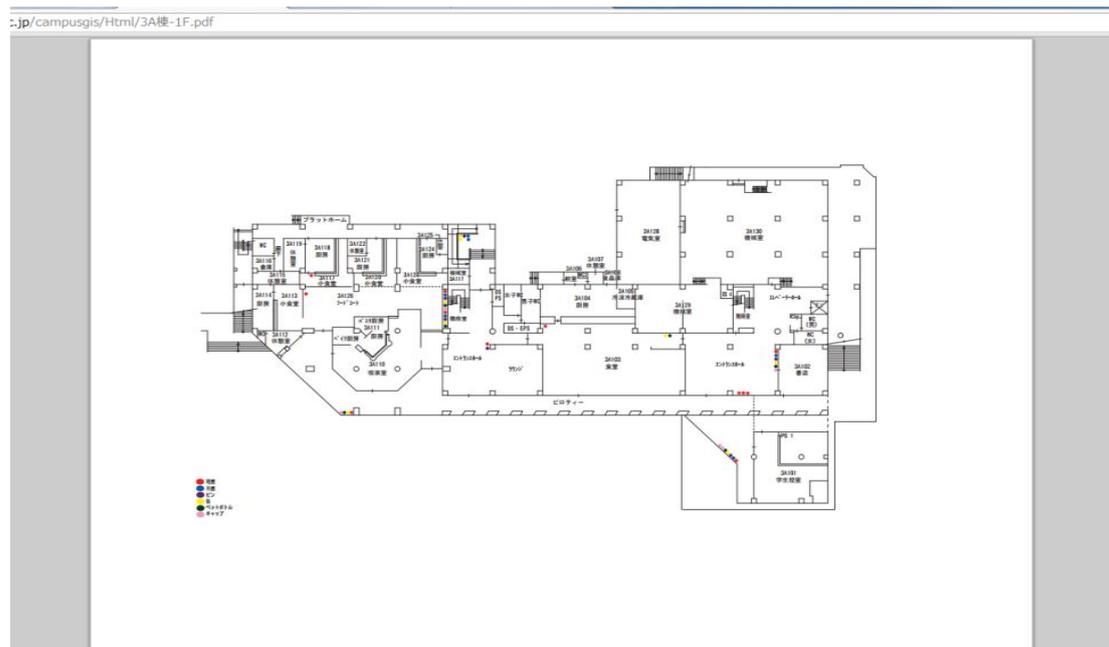| Information1			
Data	Collection Methods	Attributes	Collection Periods
3D View in Google Earth	Collect pictures of buildings, using Photoshop and Google SketchUp to build a 3D view	—	Dec, 2010～Feb, 2011, Jul, 2011～Feb, 2012
Bus Station	Collect pictures and location data using cameras with GPS function	Name of bus station, name of route, image of timetable	Jan, 2011～Feb, 2011, Jul, 2011～Oct, 2011
Bus Info (Bus Information)	Based on data from University of Tsukuba; set up a system to search each station's timetable on Tsukuba campus, which can also be used on smart phones	Name of each station, timetable	Oct, 2011～Feb, 2012
Bus Delay Time Reference	Record delay time according to bus timetable; record number of persons getting on and off bus; calculate average deviation	Name of station, average delay time, average number of on and off passengers	Oct, 2012～Dec, 2012
Bike Parking Area	Based on data from University of Tsukuba; collect location data in fieldwork using GPS	Parking capacity	Oct, 2010
Car Parking Area	Based on data from University of Tsukuba; output into spatial data	Name of parking area, parking capacity, parking type	Nov, 2010, Nov, 2011
Vending Machine	Based on data from University of Tsukuba; collect location data in fieldwork using GPS	Number and type of vending machines	Sep, 2011～Oct, 2011
Restaurant/ Convenience Stores	Based on data from University of Tsukuba; collect location data in fieldwork using GPS	Name, business hours	Sep, 2011～Nov, 2011

	Based on internet website to collect restaurant/ convenience store data; collect location data in fieldwork using GPS	Name, business hours, telephone number, address, regular holiday	22
Computer Facility	Based on data from University of Tsukuba; output into spatial data	Name of classroom, types of printers & scanners, business hours	Oct, 2011～Nov, 2011
Mobile Base Station	Based on data from University of Tsukuba; output into spatial data	Mobile provider, location on map	Oct, 2011～Nov, 2011
Club Activity	According to data from University of Tsukuba; sorted out and output into spatial data	Name of club, number of members, timetable, address	Oct, 2012～Nov, 2012
Emergency Telephone	Based on data from University of Tsukuba; output into spatial data	ID	Oct, 2010～Nov, 2010
Signboard Index	Based on data from University of Tsukuba; collect location data in fieldwork using GPS	ID, photos	Nov, 2011～Dec, 2011
AED	Based on data from University of Tsukuba; output into spatial data	ID, name of building, location of AED	Nov, 2010～Dec, 2010
Tenji Block	Collect location data in fieldwork using GPS	—	2010
Lamp Post	Based on data from University of Tsukuba; collect location data in fieldwork using GPS	—	Sep, 2010～Nov, 2010
Lamp Light	Based on the lamp post data in ArcGIS, buffered 30m around each site	—	Jan, 2011
Bench	Collect location data in fieldwork using GPS	Number of persons	Aug, 2010～Oct, 2010
Garbage	Collect location data in fieldwork using GPS	—	Nov, 2010～Jan, 2012

Data	Collection Methods	Attributes	Collection Periods
Oversize Garbage	Collect pictures and location data using cameras with GPS function	—	Oct, 2012～Dec, 2012
Running Course	Collect pictures and location data using cameras with GPS function; calculate average of calorie consumption	Course name, calorie consumption	Nov, 2011～Dec, 2011
Evacuation Place	Based on data from University of Tsukuba; do field survey and output into spatial data	Name of indoor evacuation place, name of outdoor evacuation place	2011
Radiation	Measure radiation dose in campus by using Radex RD1503+ portable geiger counter and GPS	Radiation dose	Aug, 2011
Information2			
Data	Collection Methods	Attributes	Collection Periods
Traffic Accident	Based on data from University of Tsukuba; do field survey and output into spatial data	Types of accidents, dates of traffic accidents	Oct, 2012～Nov, 2012
Graffiti	Collect pictures and location data using cameras with GPS function	Pictures	Dec, 2011
Sidewalk Damage	Collect pictures and location data using cameras with GPS function	Type of damage, pictures	Aug, 2011～Oct, 2011
Man-made Foot Path	Collect location data using Arcpad	—	Nov, 2010
Student Population	According to the registered course data and building data in 2012; sort out and output into spatial data	Date, time, number of students	Oct, 2012～Dec, 2012
Person Flow	Choose one place to measure person flow per hour in campus. The times are scheduled as follows: 8:30～10:00, 10:00～11:30, 11:30～13:30, 13:30～15:00, 15:00～16:30, 16:30～18:30	Measuring hour, person flow (south to north/north to south)	Nov, 2012～Dec, 2012

Indoor Wi-Fi	Measure Softbank indoor speed by using CheckMyTubes application	Speed	Nov, 2011～Feb, 2012
Outdoor Wi-Fi	Measure Softbank outdoor speed each 50m by using CheckMyTubes application	Speed	Nov, 2011～Feb, 2012
Illegal Parking by Time	Based on data from University of Tsukuba; collect pictures and location data using cameras with GPS function	—	Jan, 2010～Feb, 2010
Illegal Parking and Disposal	Collect pictures and location data using cameras with GPS function	Pictures	Aug, 2012～Oct, 2012
Base Maps			
Data	Collection Methods	Attributes	Collection Periods
Base Image	Digital Aerial Images	Raster data	2006
Spring of Aerial	ALOS Data	NDVI	May, 2006
Autumn of Aerial	ALOS Data	NDVI	Sep, 2006
Digital Height Model （DHM）	LIDAR Data	Height from the ground surface	2006
Digital Terrain Model （DTM）	LIDAR Data	Height from the sea level	2006
Layout	Collect CAD Data from University of Tsukuba; convert to PDF files	—	2011
Building Data	ZmaptownⅡ.	Shapes of buildings	2008