



National Spatial Data Infrastructure Research Program

Development of open source processing technology for
Application of spatial information SW

GeoCMS User Manual



GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

1.1. Business overview

Internationally, the importance of utilizing spatial information is increasing, but the spatial information infrastructure including open source software based on domestic is weak, and the level of practical application of related technology is still low, so it relies on foreign software.

Accordingly, we developed an open source based system for generating and managing new and user-space-based new media space information contents on the web and mobile, gained import substitution effect of foreign-based software, improved technology self-reliance, The goal is to do.

1.2. Business background and necessity

In recent years, services such as Instagram, Vine, and YouTube have emerged as a result of increasing demand for services for various new media space information collected through mobile terminals and for linking with external systems. However, this is a simple media management / service technology, Technology for combined service with information service is very limited.

To solve this problem, it is necessary to provide services for efficient management and service of new media space information that is diversified according to the development of mobile and computing technologies such as Google Glass and panoramic space image. In the case of developing / distributing system in open source form, It is possible to manage users' participation in new media space information in private..

1.3. Business Goals

The ultimate goal is to implement and provide open source spatial information content management system (GeoCMS), which will be utilized by public and private operators and

GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

put into practical use.

- 1) New media space information contents authoring and publishing technology development
- 2) New media space information analysis and service engine technology development
- 3) User-Participated Web / Mobile based Geospatial Content Management System (GeoCMS) technology development
- 4) Development of technology for linking and utilizing public and commercial space information systems

1.4. Benefit

1.4.1. Technical expectation effect

- Overcome the dependency of specific foreign SWs and reduce SW acquisition and maintenance costs
- Enhance technology self-reliance with development of open source software for spatial information led by domestic technology, and successfully commercialize R & D results
- Quickly develop and validate high-level SWs to quickly implement products

1.4.2. Economic / Industrial Expected Effects

- Cost substitution and cheap introduction / utilization cost of public information system in the public sector
- Strengthen domestic SW industry ecosystem based on open source SW technology for spatial information
- To foster the spatial information software industry, to nurture specialized personnel for spatial information software development and to create jobs

GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

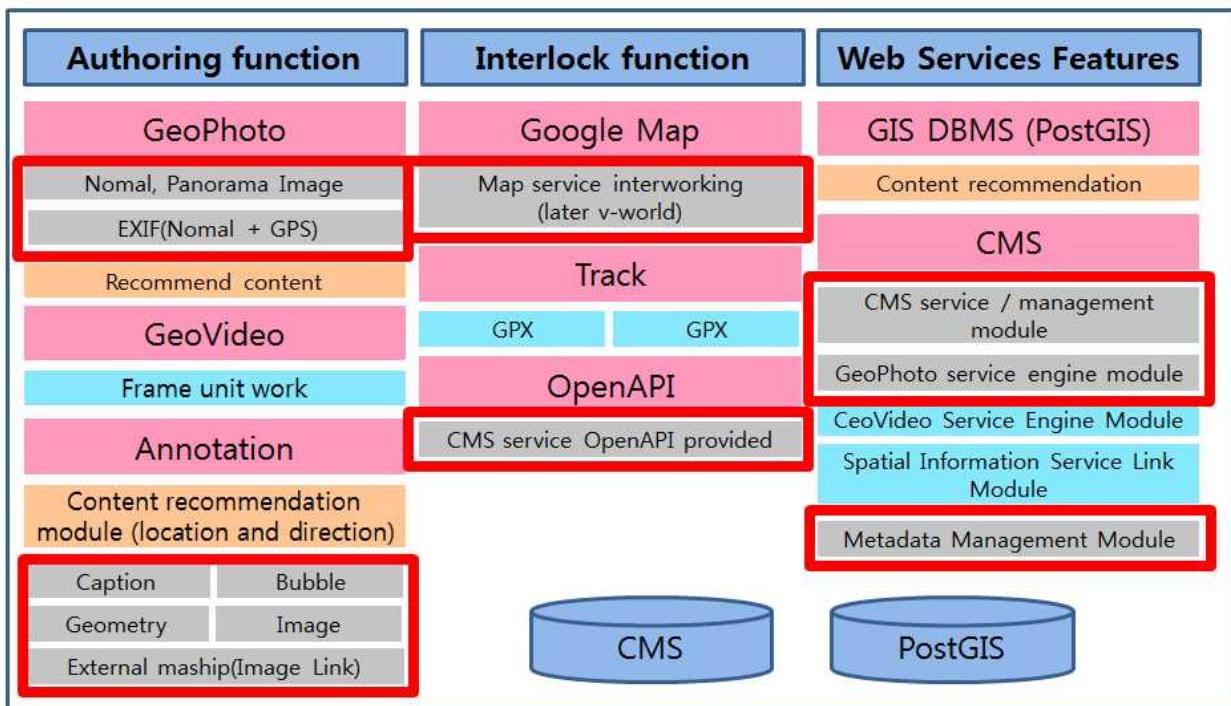
2. Development Contents

2.1. GeoCMS Operating Environment

Software Information		
operating system	server	Apache Tomcat 6.0
	Client	Chrome 44+
Uniqueness (Product activation requirements)	External map engines (such as GoogleMaps) and Open APIs (such as Google Geocoding) should be available. DB : MySQL	
Hardware Information		
Other environment	2.4GHz, 4G RAM, Windows XP Professional	

GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

2.2. System structure

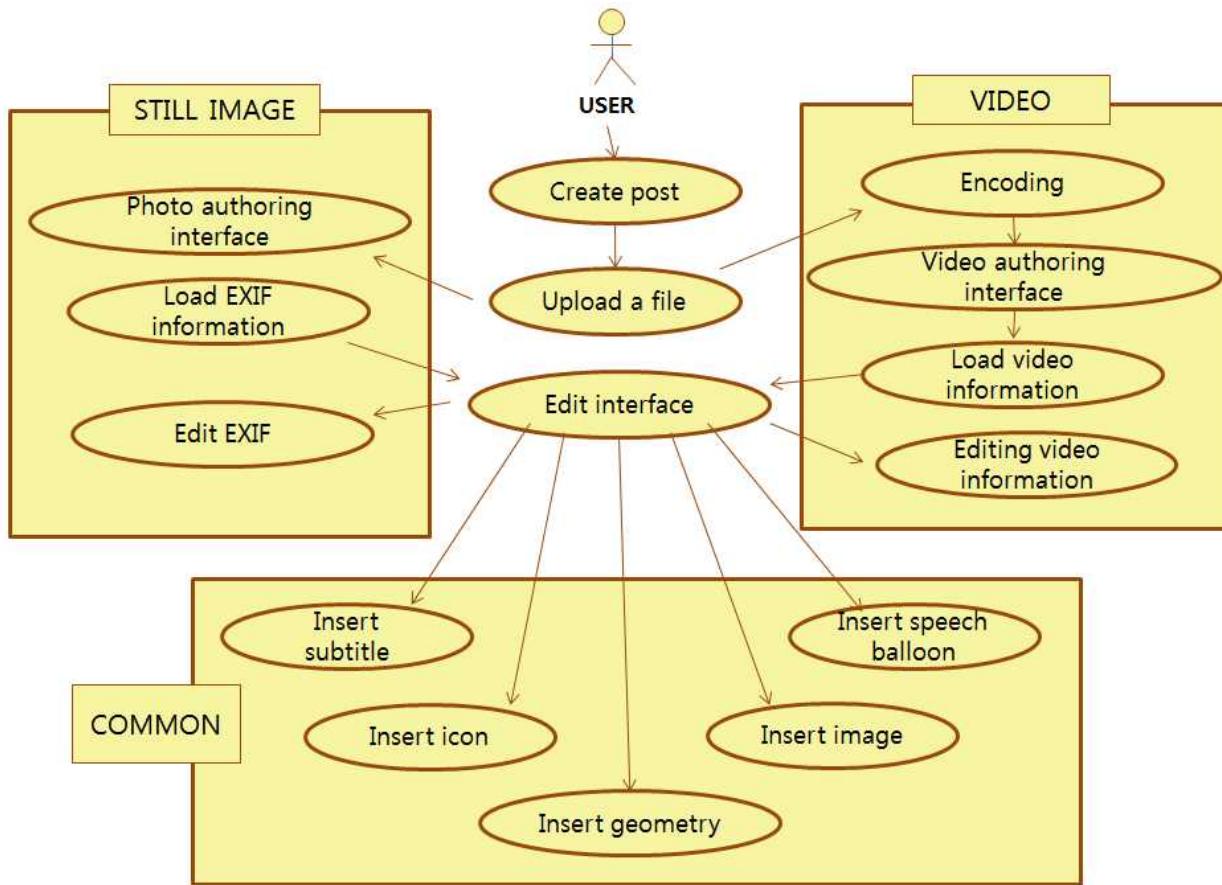


System structure diagram

The GeoCMS platform is divided into authoring function, interworking function, and web service function.

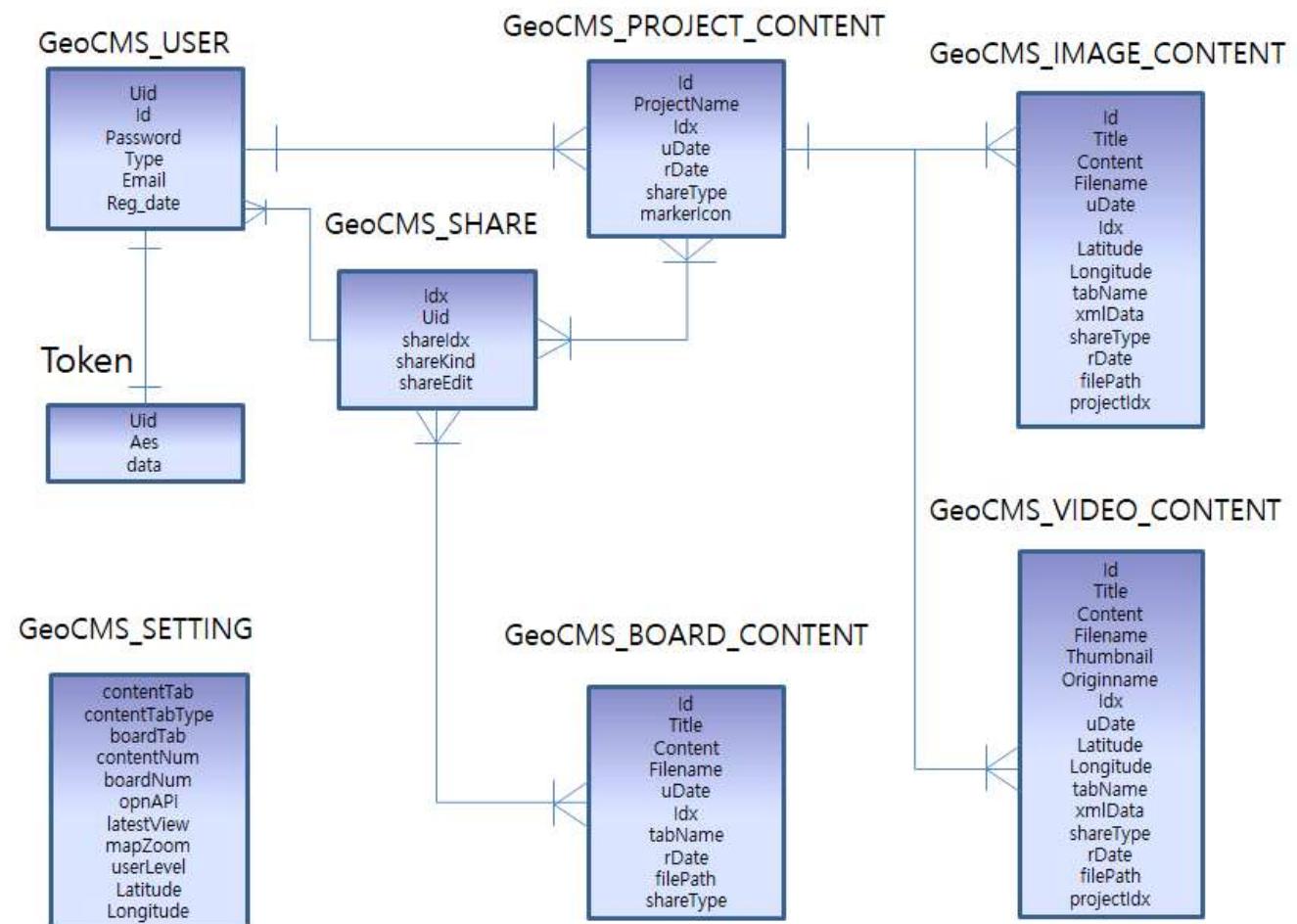
GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

2.3. Use case



GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

2.4. Database



GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

2.5. XML Schema

When the photo and video content information is stored in XML and shared, it is composed of the following schema

```

<?xml version="1.0" encoding="UTF-8"?>
<upcm_obj>
  - <obj>
    <id>g</id>
    <top>180</top>
    <left>255</left>
    <xstr>245_564</xstr>
    <ystr>176_419</ystr>
    <linecolor>#959595</linecolor>
    <backgroundcolor>#FF0000</backgroundcolor>
    <type>circle</type>
  </obj>
  - <obj>
    <id>i</id>
    <top>42.98611900390625</top>
    <left>203.9930617529297</left>
    <width>74px</width>
    <height>67px</height>
    <src>/egov/images/geoImg/icon/black/d4.png</src>
  </obj>
  - <obj>
    <id>c</id>
    <top>359.0972335058594</top>
    <left>293.10764</left>
    <href>false</href>
    <underline>false</underline>
    <italic>false</italic>
    <bold>false</bold>
    <fontsize>Normal</fontsize>
    <fontcolor>#fff100</fontcolor>
    <backgroundcolor/>
    <text>여기는 시청입니다.</text>
  </obj>
</upcm_obj>
```

XML Schema

GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

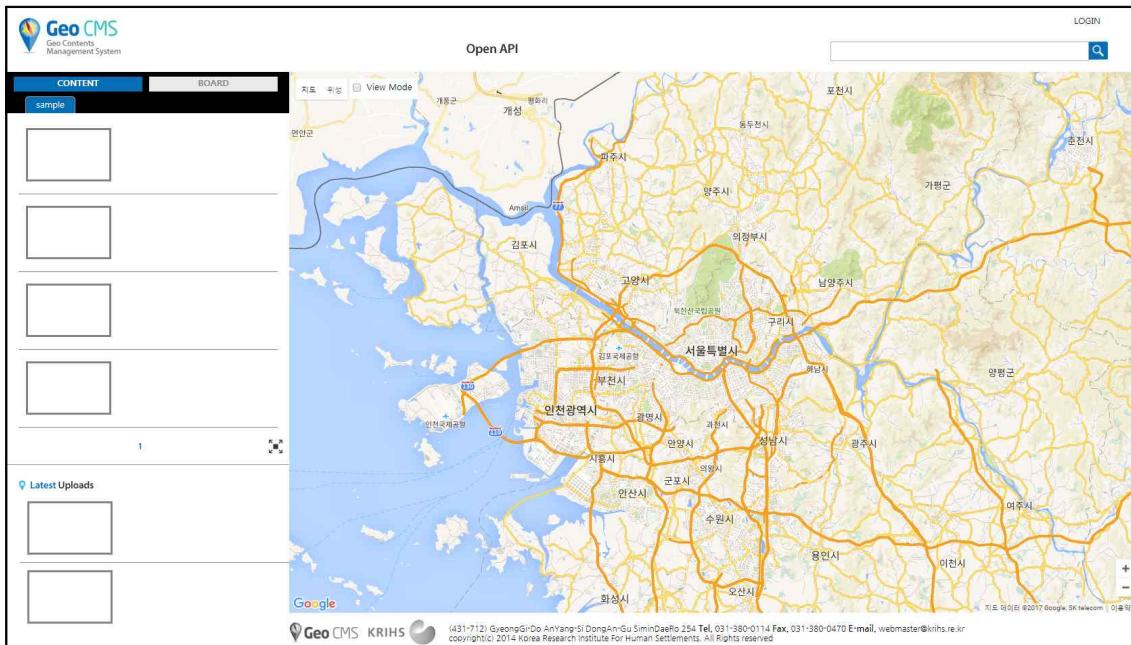
Type	Tag Name	Description
All	Upcm_obj	Top-level Tag name
All	obj	Authored Annotation Information Tag
All	id	Annotation ID Tag
All	top	Top Position coordinate value
All	left	Left position coordinate value
Icon	width	Width value of icon
Icon	height	Height value of icon
Icon	src	Src (externally accessible URL) path of the icon
Caption, Bubble	href	External reference link URL path
Caption, Bubble	underline	Underline Attribute value of Text
Caption, Bubble	italic	Italic Attribute value of Text
Caption, Bubble	bold	Bold Attribute value of Text
Caption, Bubble	fontsize	Text size attribute value of Text
Caption, Bubble	fontcolor	Color attribute value of Text
All	backgroundcolor	Annotation background color value
Caption, Bubble	text	User string value
Geometry	xstr	Geometry X Point value
Geometry	ystr	Geometry Y Point value
Geometry	linecolor	Line color attribute value of the geometry
Geometry	type	Type property value of geometry (point, circle, rect)

GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

3. Using GeoCMS

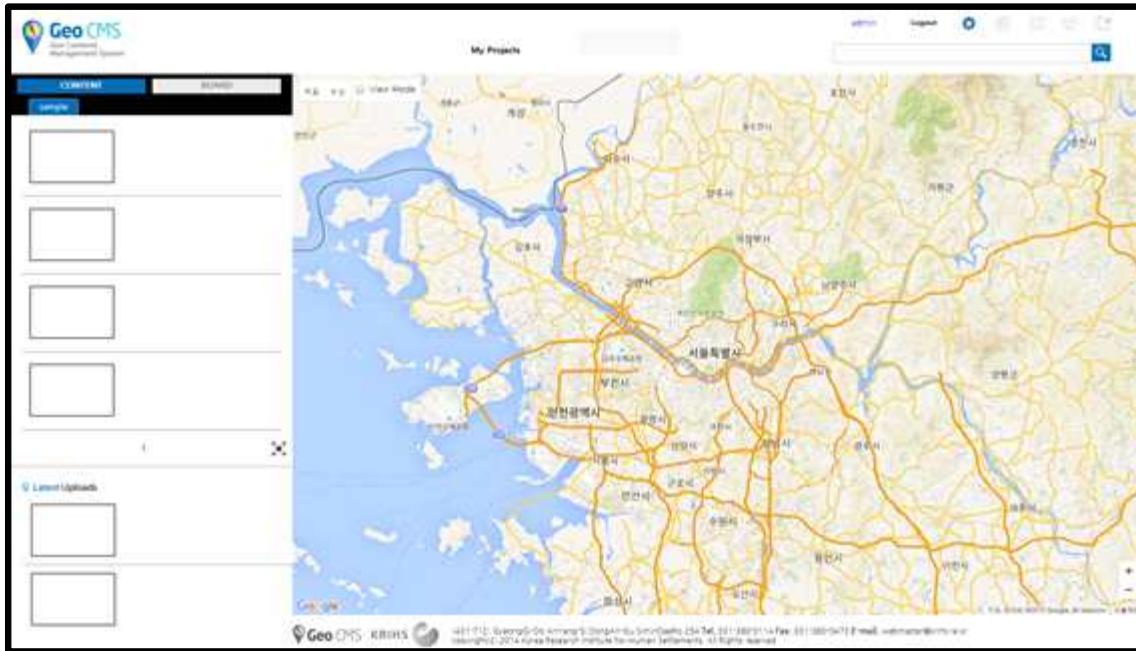
3.1. GeoCMS Manager

- When connecting main page, initial screen appears.



GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- Log in as an administrator.



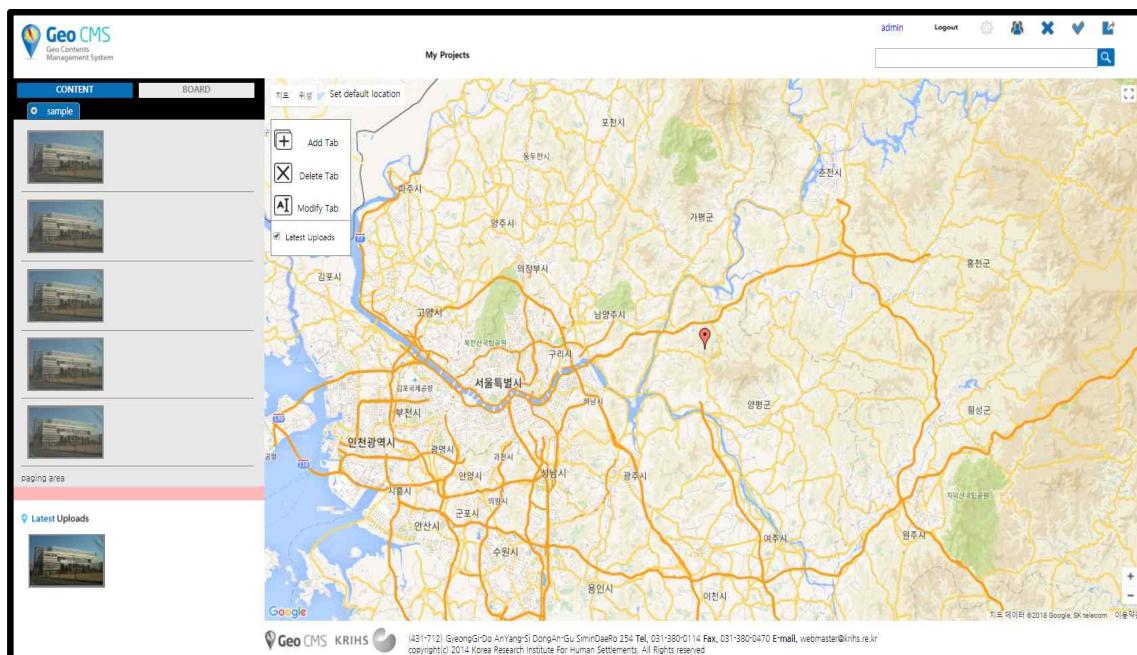
– Manager icon



- 1 Settings: The administrator can set the Membership and Category tab and the main screen UI.
- 2 Membership Management: Manage the members' rights.
- 3 Cancel: Initializes the item that the administrator is editing..
- 4 Save: saves edits made by the administrator.
- 5 Exit: The administrator clears the item that was being modified and exits the edit mode.

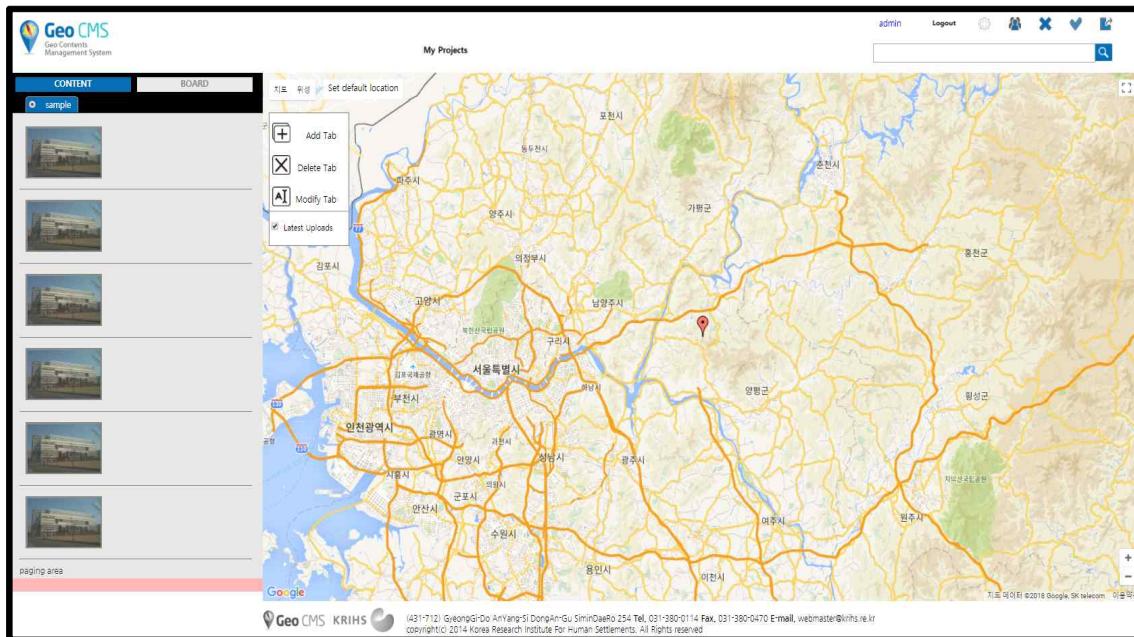
GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- After pressing the set button, the administrator edit mode screen
 - Add tab: Add category tab
 - Delete tab: Delete selected category tabs
 - modify tab: Edit selected category tabs
 - Latest Uploads: When unchecked, the Latest Uploads section on the bottom left does not appear.
 - Set default location : Set the location of the base map.

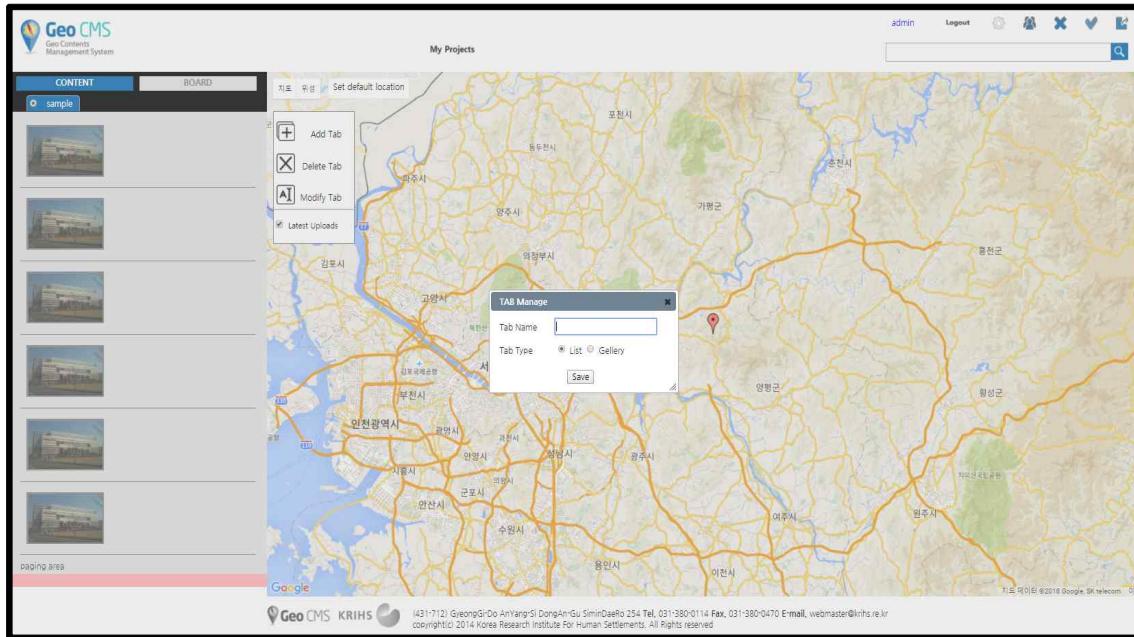


GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- You can adjust the number of contents in the list by adjusting the red line in the list on the left with the mouse.

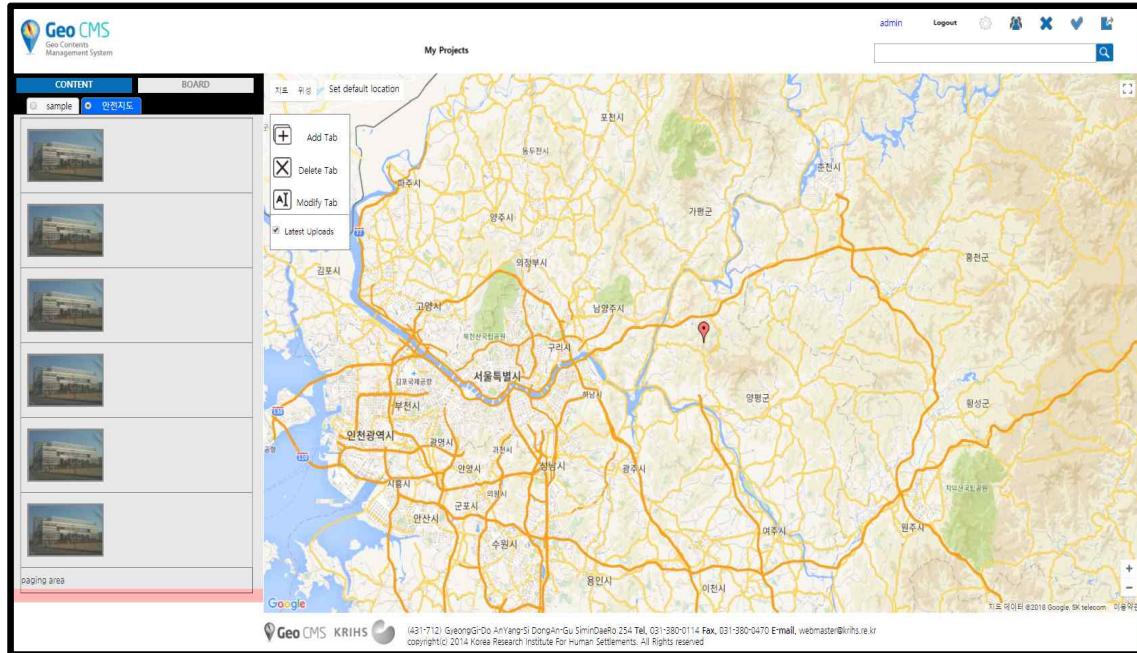


- Add Tab
 - Click the Add Tab button and save and save the tab name and type.

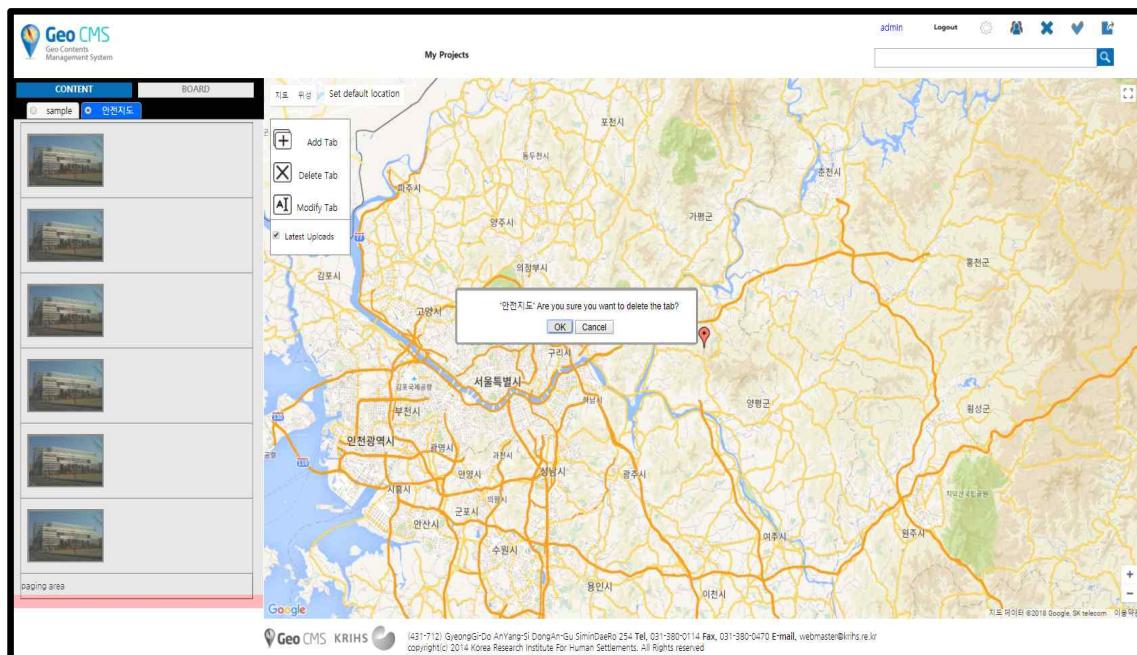


GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- Completed adding tabs

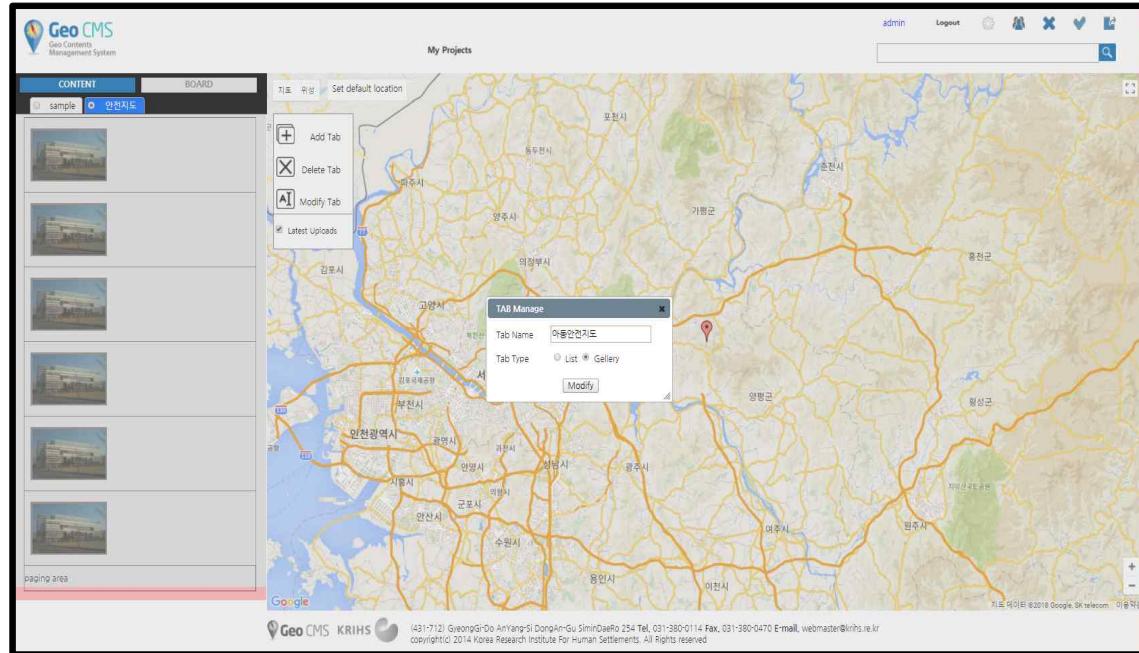


- Delete tabs

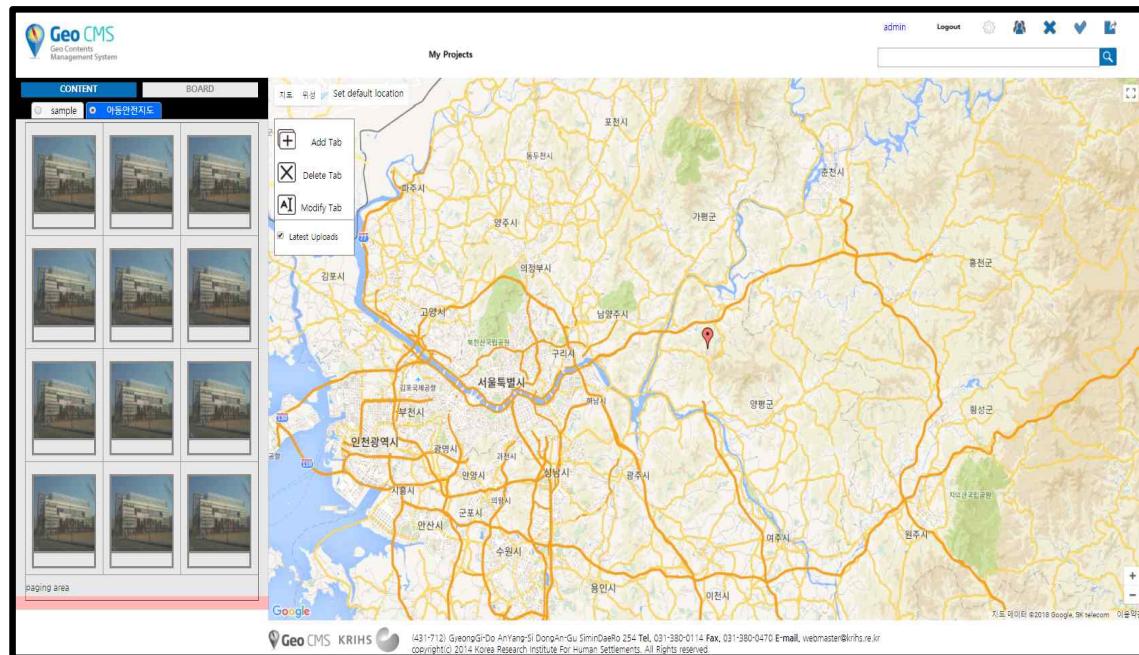


GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- Modify tab

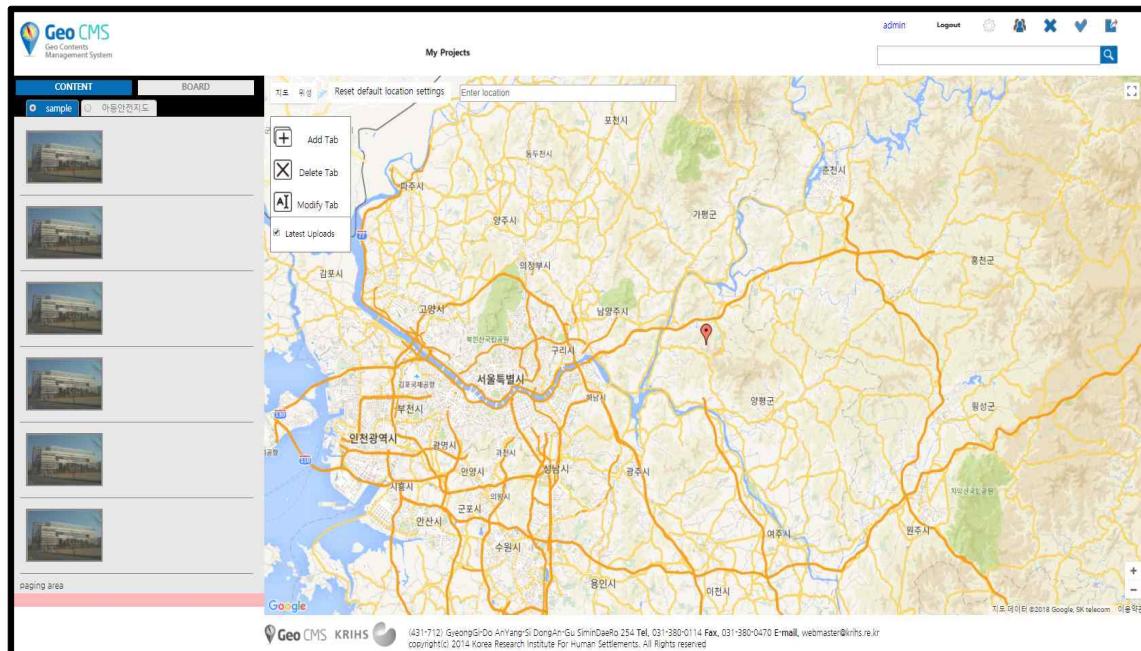


- Completed tab editing



GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- Set default location
 - Click Set default location button



- Reset default location setting : Initialize location setting and exit position setting mode
- Text box: Address search window (When the address is entered, the list is displayed at the bottom. When the list is clicked, the marker moves to the corresponding position.)
- Click the left mouse button to change the position of the marker, or use the address search window to change the position of the marker, and click the Save button () to set the position as the default position.

GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- User Management
 - Change the user's authority.

The screenshot shows a 'MANAGE' window with a table of user data. The columns are: ID, EMail, Reg_Date, and TYPE. There are five rows of data:

ID	EMail	Reg_Date	TYPE
parkgk88	parkgk88@gmail.com	2017-08-08	MODIFY
kimgk88	kimgk88@gmail.com	2017-08-08	MODIFY
turbo	turbo@gmail.com	2017-08-08	MODIFY
admin	undefined	2017-08-07	ADMIN

At the bottom, there are buttons for '10개씩', 'save', and 'cancel'.

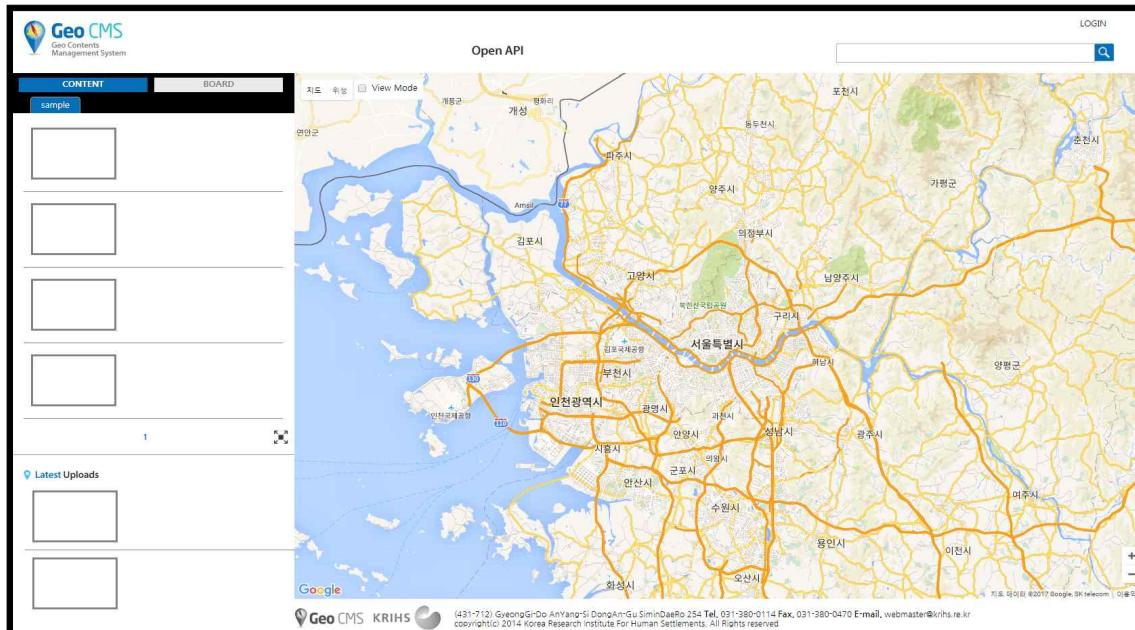
- Initial screen after UI change

The screenshot shows the main GeoCMS interface with a large map of the Seoul metropolitan area and its surroundings. The map includes labels for various cities and districts. On the left, there is a sidebar with sections for 'CONTENT' and 'BOARD'. The 'CONTENT' section has several empty boxes. The top right corner shows the user 'admin' logged in and various system icons.

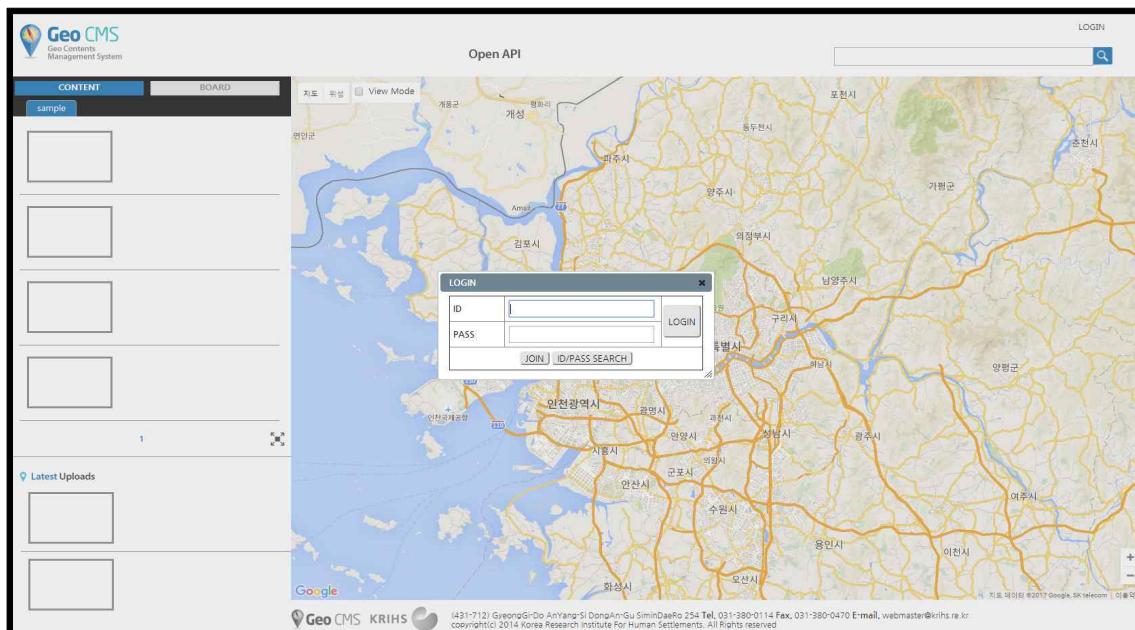
GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

1.1. GeoCMS users

- When the main page is accessed, the initial screen appears.

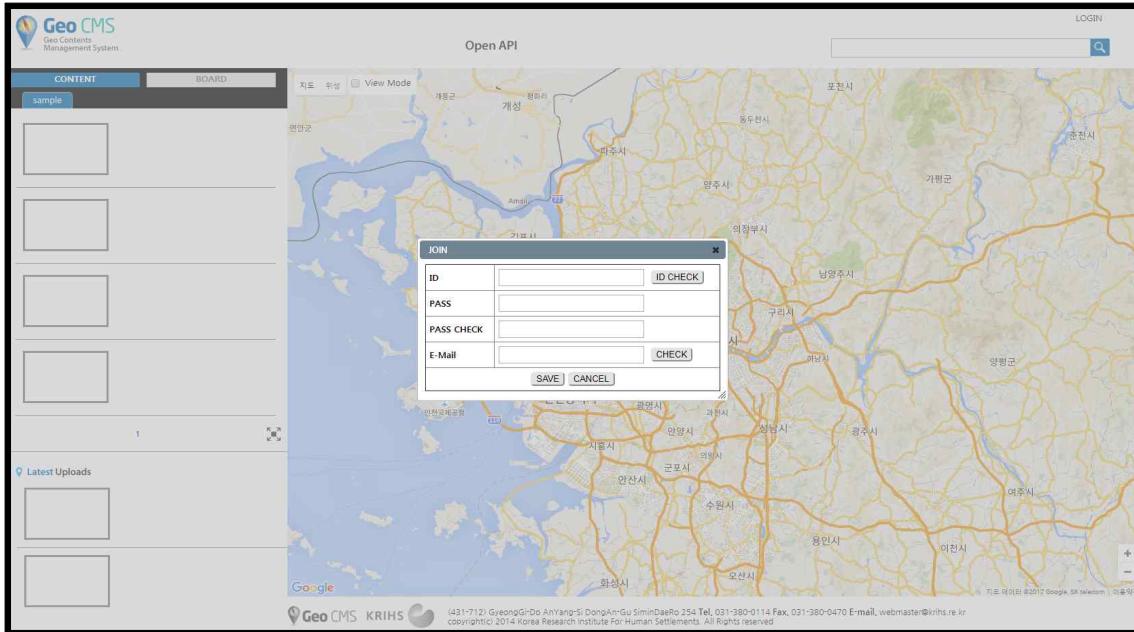


- Click the login button in the top right corner to log in

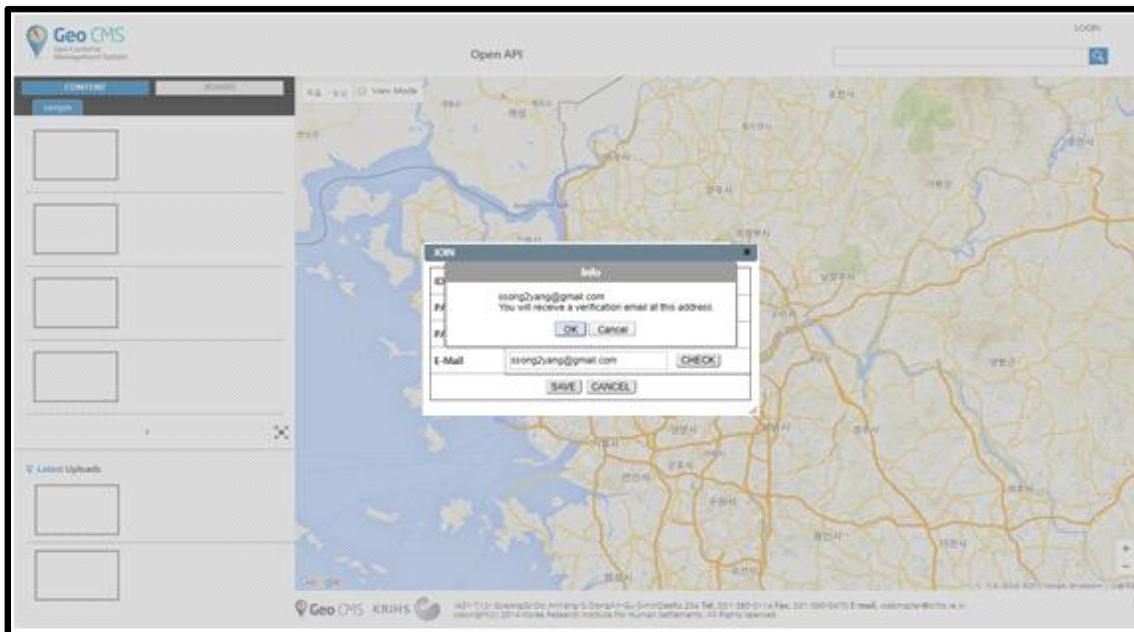


GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- Click JOIN button to register



- After creating the ID, click the ID CHECK button (confirm whether the same ID is confirmed), and click the CHECK button to receive the authentication number after creating PASS and E-Mail



GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

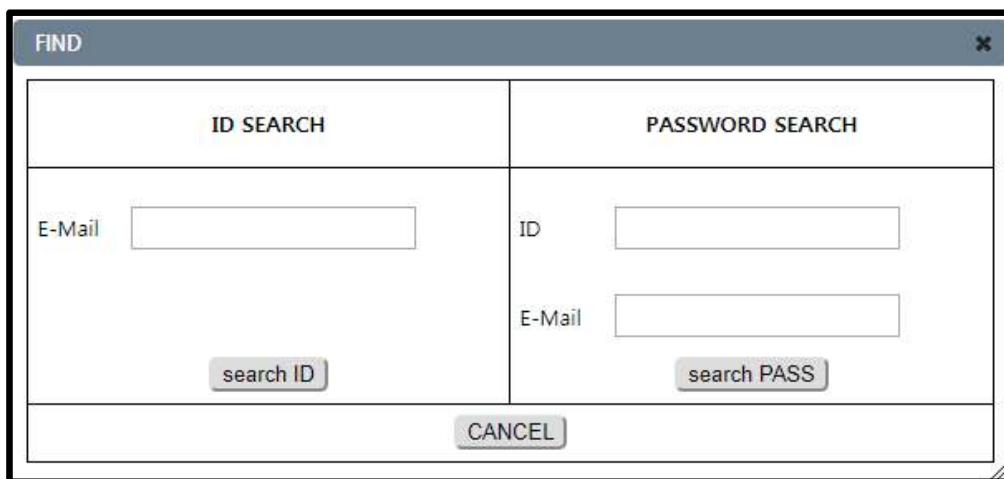
- After confirming the authentication number in the authentication e-mail, enter it at the bottom of the e-mail, click the CONFIRM button, and save it.



- Find ID Password
 - Click the ID / PASS SEARCH button on the login screen.

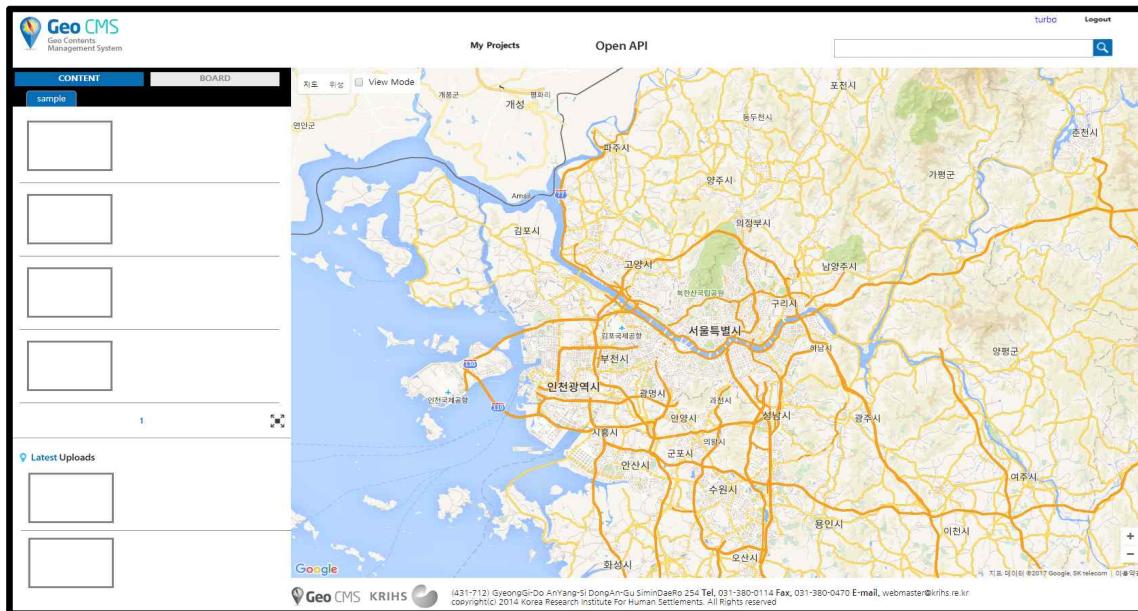


- If you press the search ID button after inputting e-mail to the ID search screen on the left side, ID is sent to the entered e-mail. On the right side, ID and e-mail are input and the search PASS button is pressed.



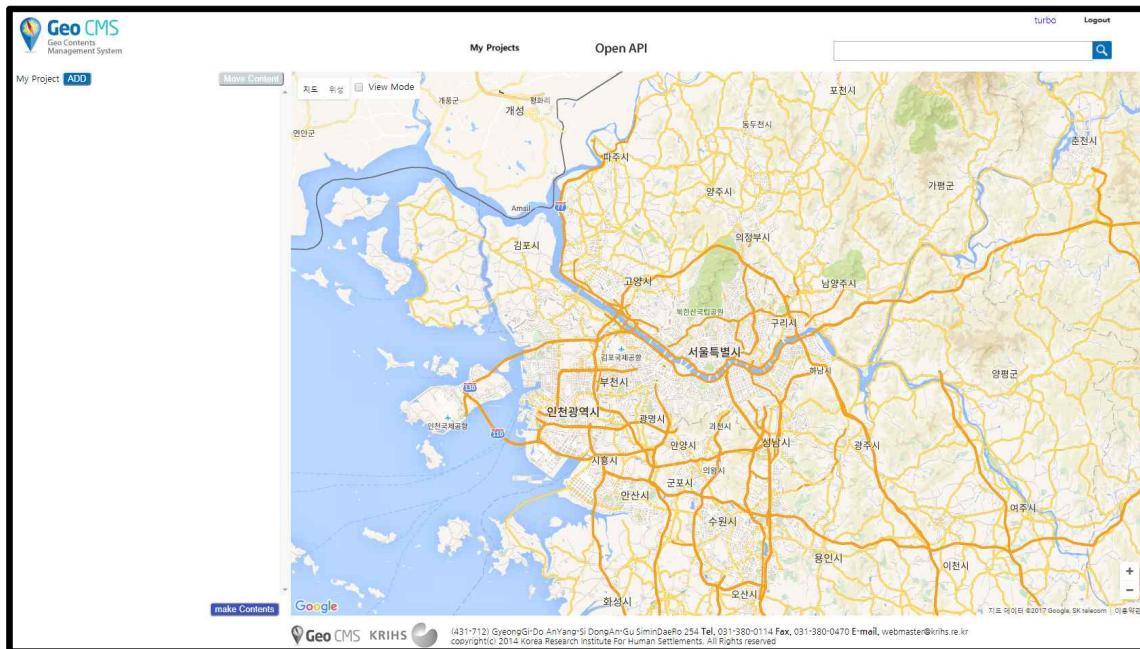
GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- After signing in, the first screen (all public contents and contents that are open to you are displayed)



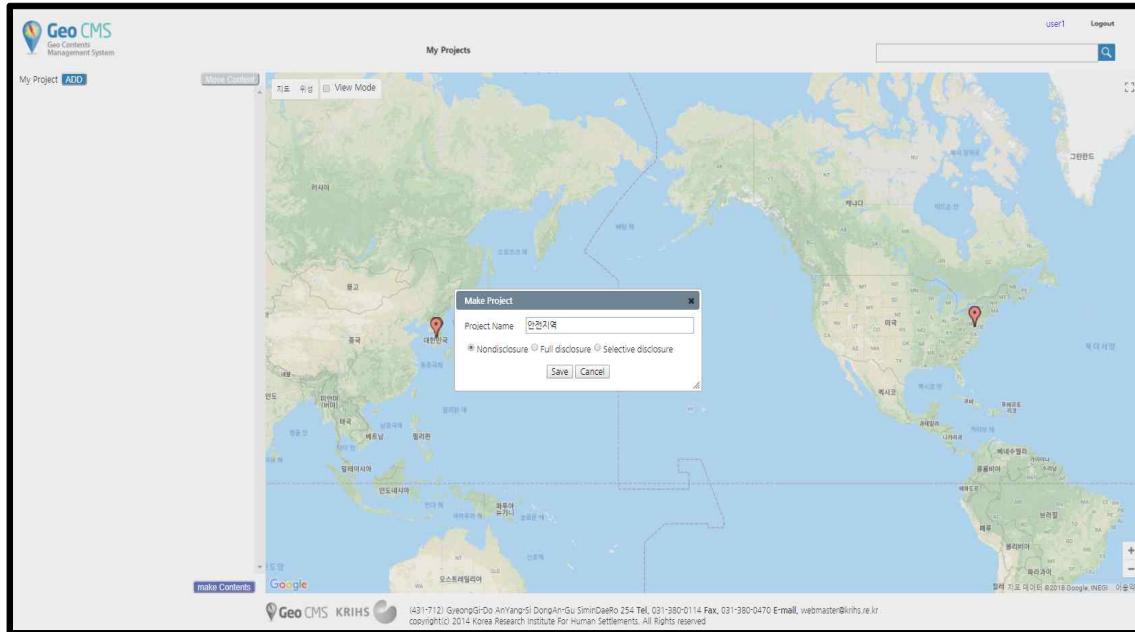
GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- My Project menu click
 - Your project list is displayed and the coordinates registered on the map on the right are drawn.
 - The list shared by other users also appears.

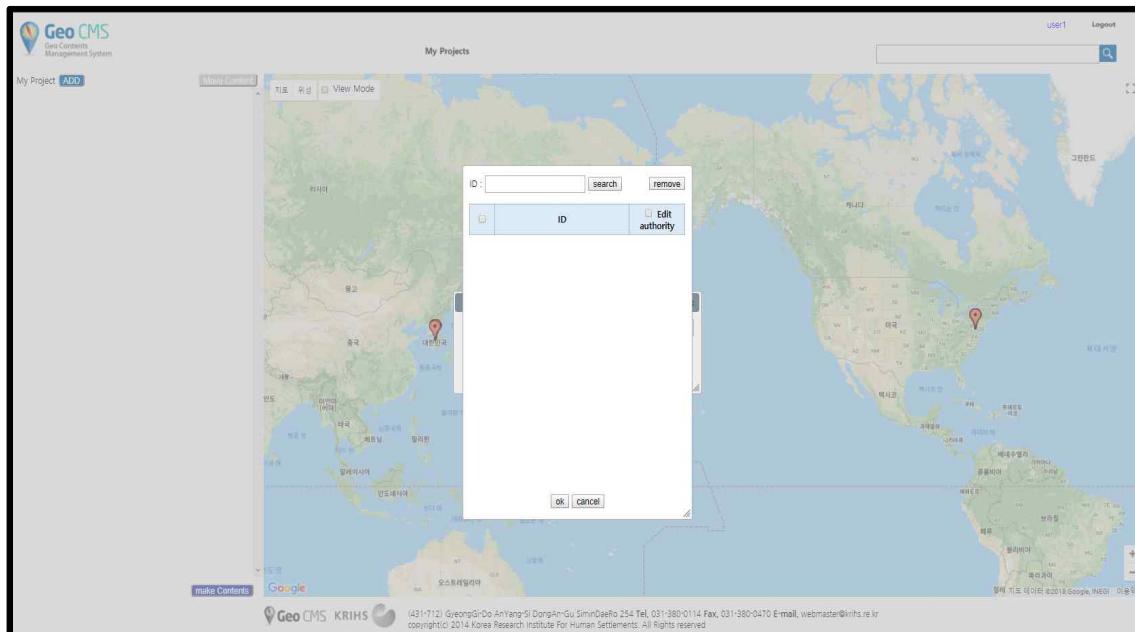


GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- New project registration
 - Project name and disclosure setting after clicking ADD button

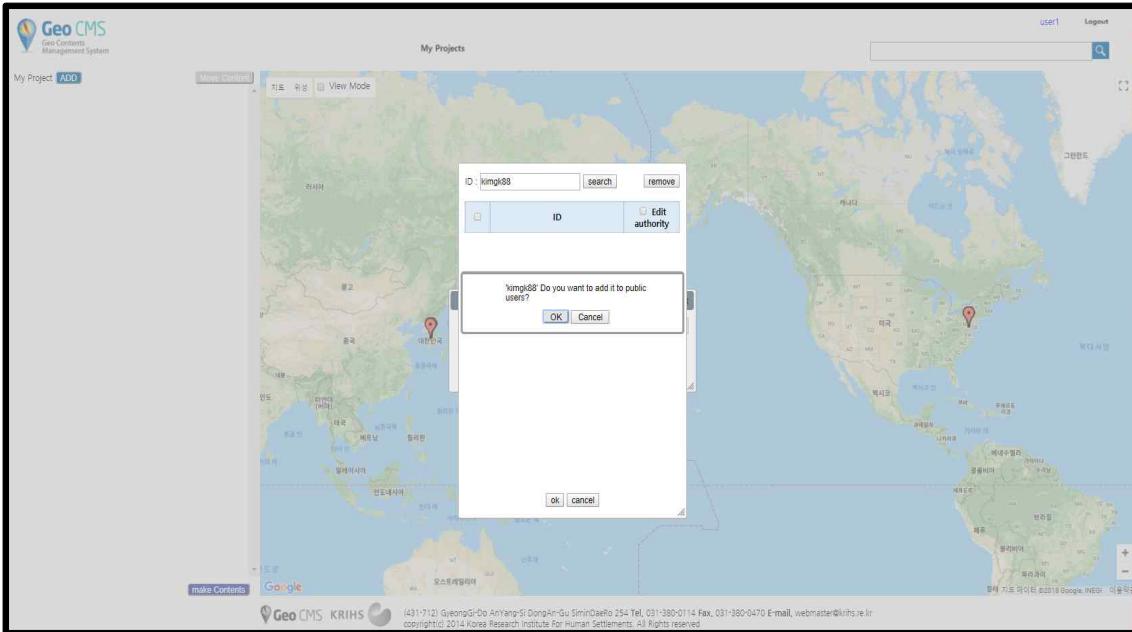


- Select Public When you select Public, a window will appear to let you decide whether you want to publish or edit.

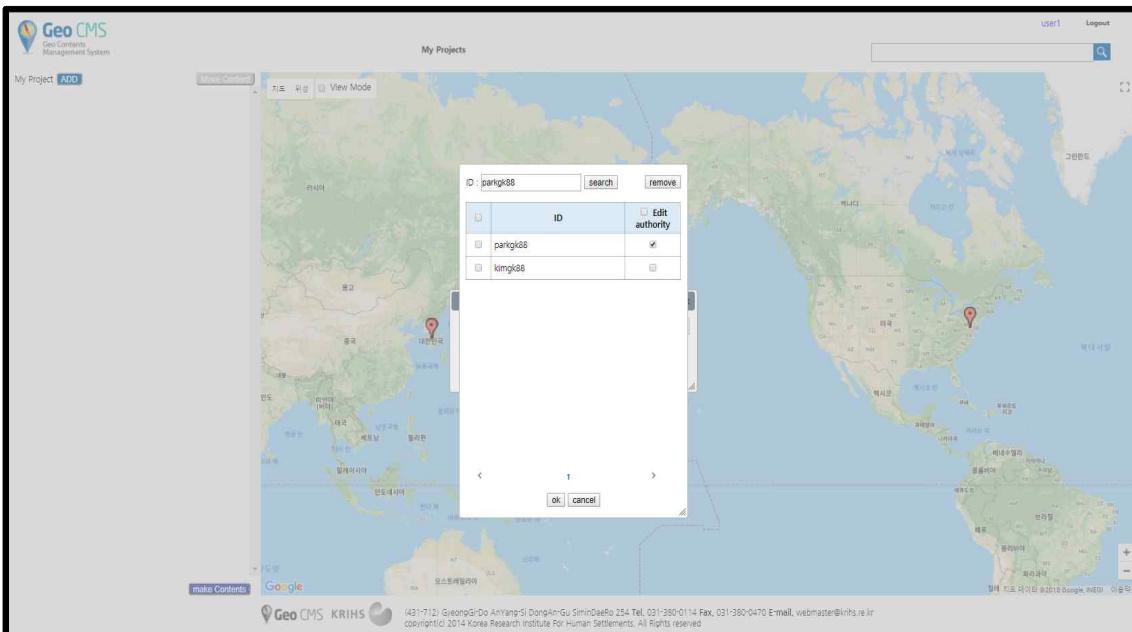


GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- After searching for the user to add, add

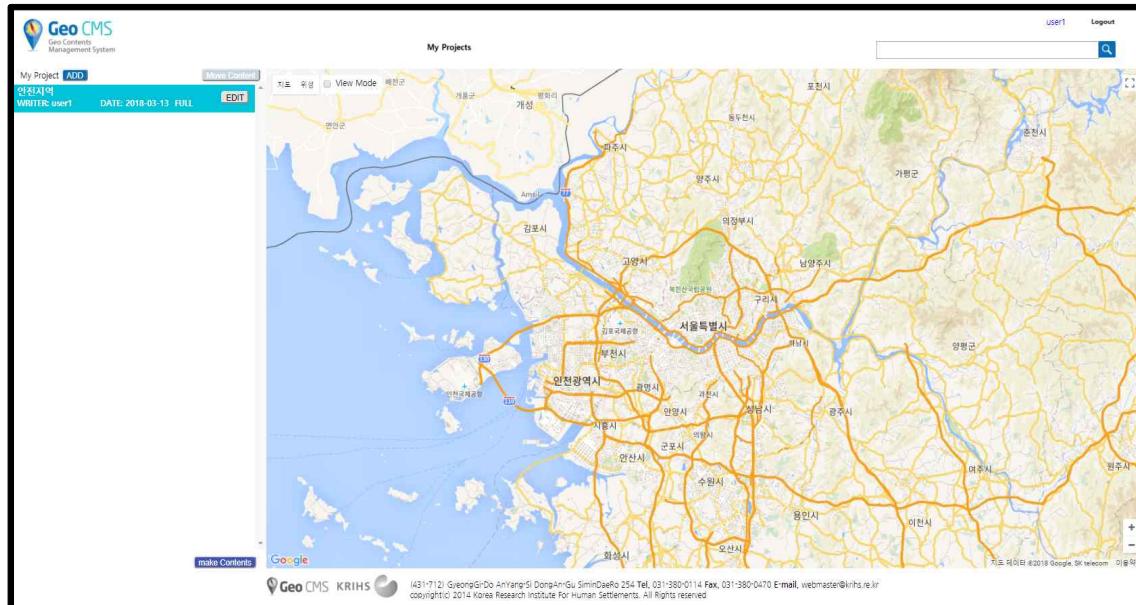


- Grant editing rights to specific users and save them. (Shared users can view the contents of the project created by the user. Shared users with editing rights can modify the contents.)

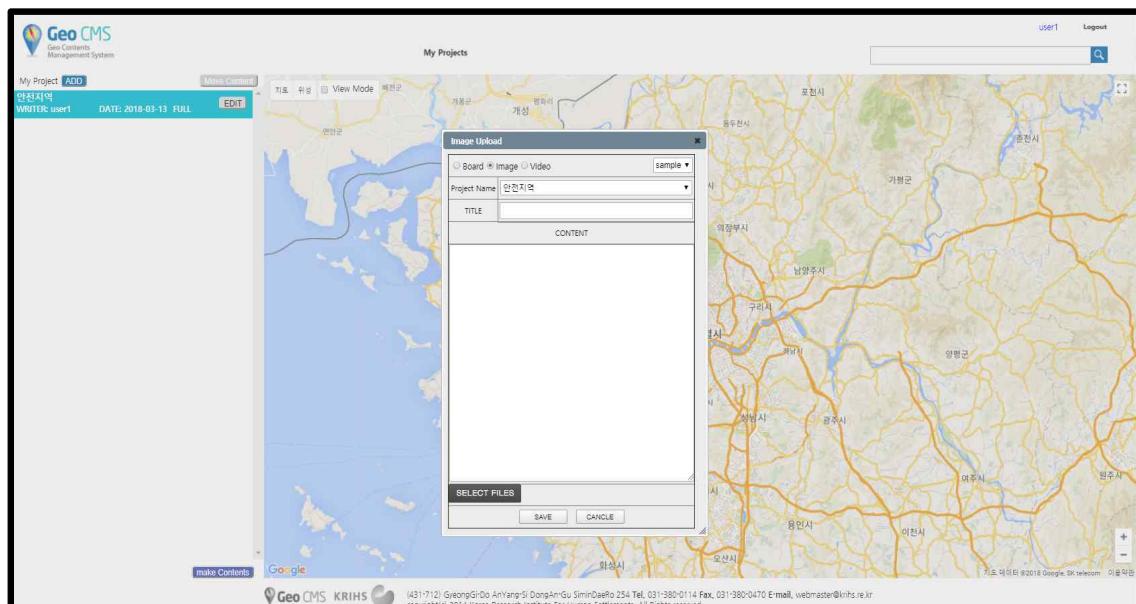


GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- Completion of project creation
 - After creating the project, the list appears on the left screen and the picture can be uploaded.



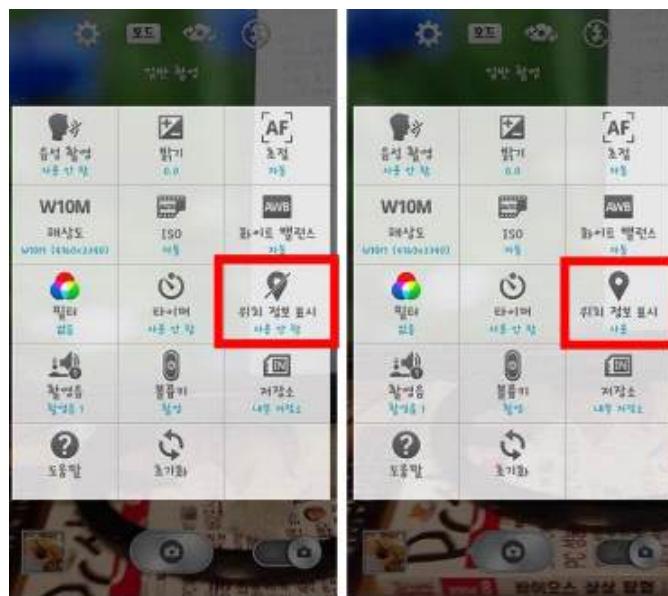
- Upload photos
 - Click the make Contents button to upload the photos.



GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

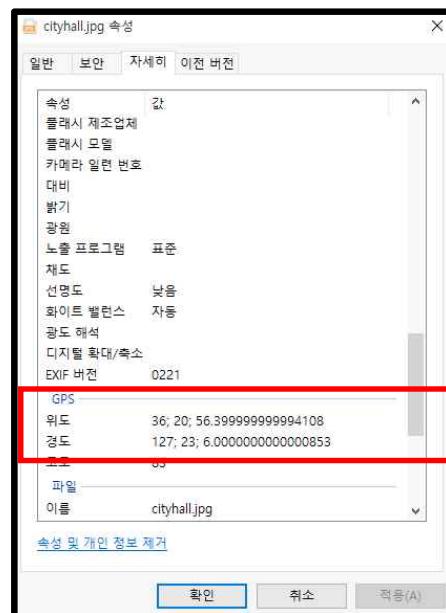
- If the photo contains gps information, the location information will be displayed.

Before you take a picture, you must set the location information in the setting of your smartphone to Enable, and the location information will be included in the photo.



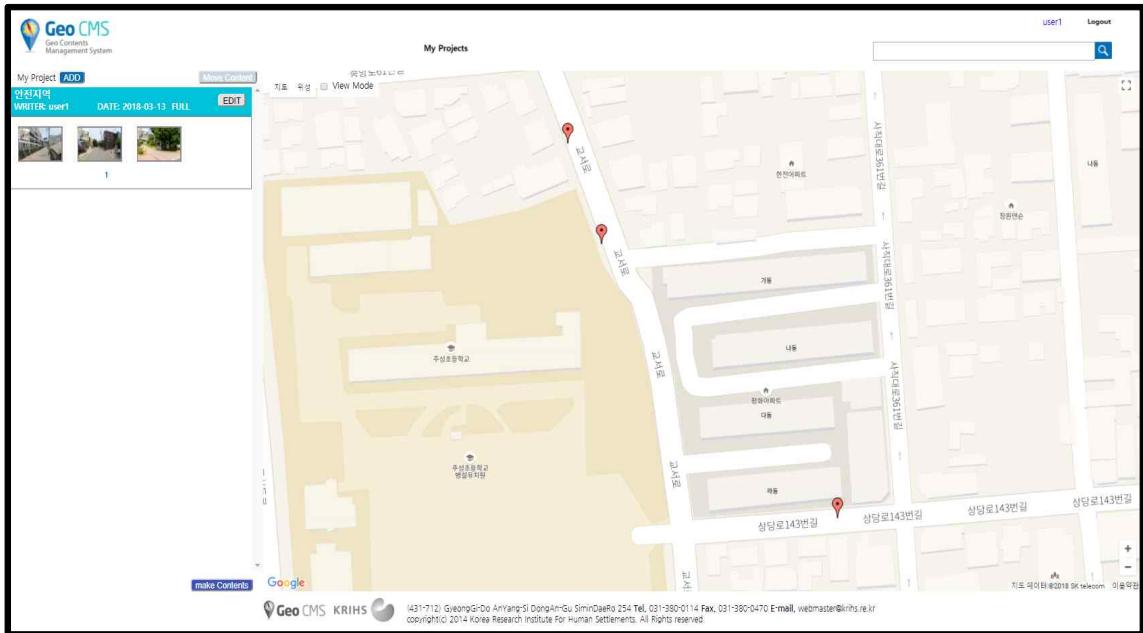
GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- When you view the information of the photos taken after setting the location information, EXIF information and gps information are included.
- Exif (EXchangable Image File format) is an image file format used in digital cameras. This data is used in JPEG, TIFF 6.0, RIFF, and WAV file formats and adds metadata that includes information about the photo. Exif is not supported for JPEG 2000, PNG or GIF files.
- Exif metadata provides information such as camera manufacturer, camera model, rotation direction, date and time, color space, focal length, flash, ISO speed, aperture, shutter speed, gps.



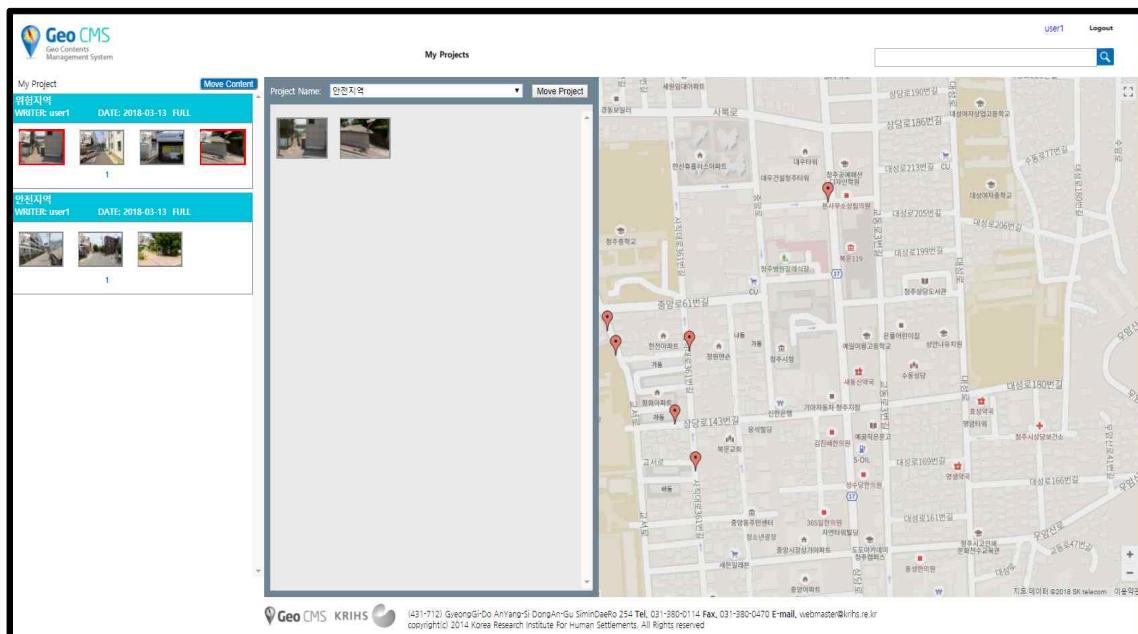
GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- After uploading the photo, the list of photos in the project list appears on the left list and the location information of the pictures of the activated project is displayed on the right map.



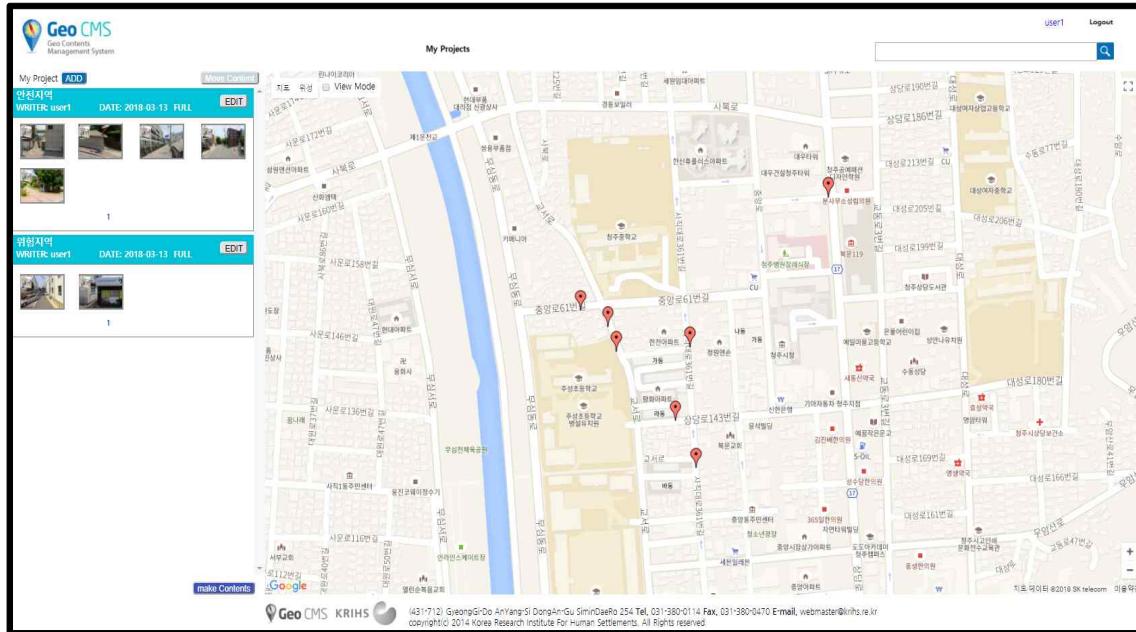
GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- After adding the project, you can move the contents in the project to another project.
 - After the move content button is clicked, the content viewer window to move to the right is displayed, and a red frame is displayed on the content to be moved when the content is clicked.

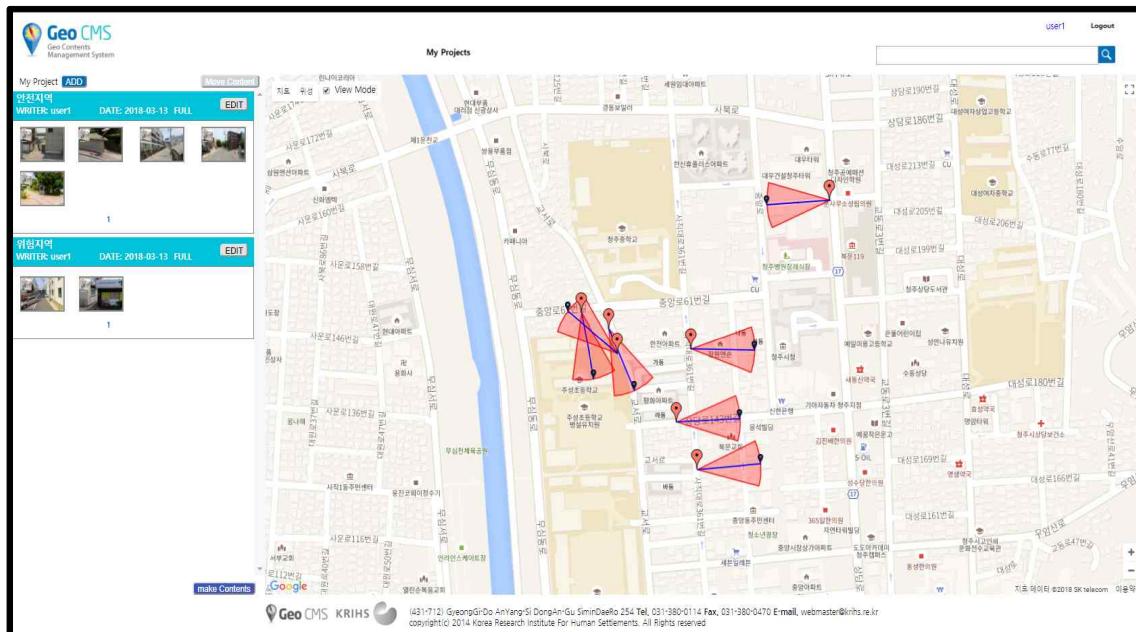


GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- Select the project name to move in the viewer window and click the move Project button to move the contents to the project.

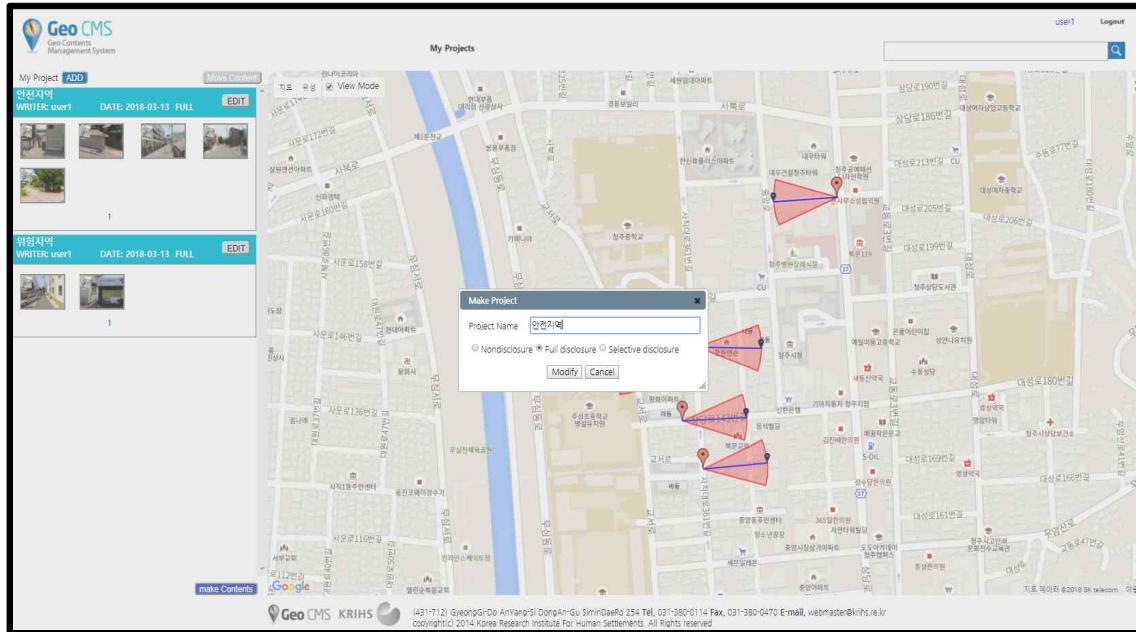


- Map information and radius are displayed together when the view mode of the right map is checked.

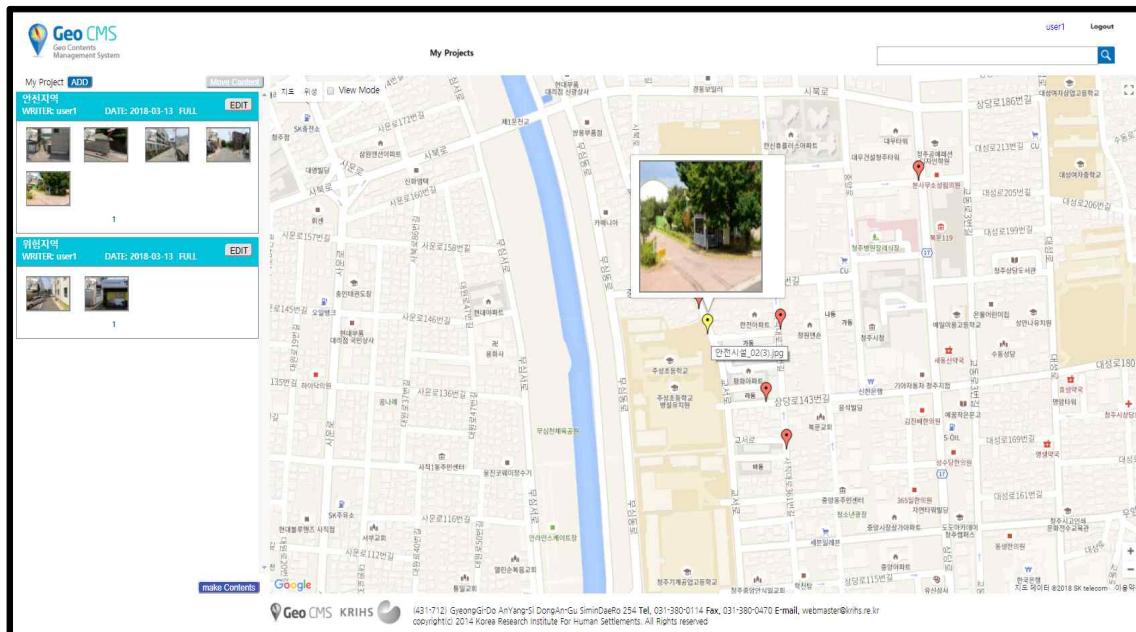


GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- Project name and disclosure setting can be modified when clicking EDIT button of project.

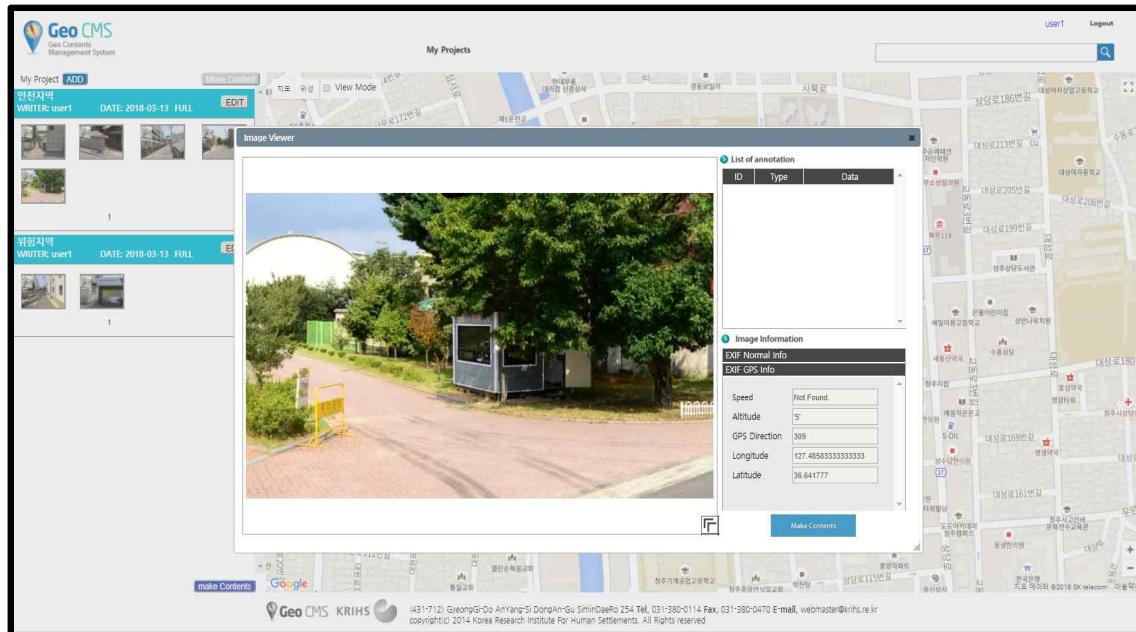


- When you click the picture, the position of the picture is displayed on the right side with a yellow marker.

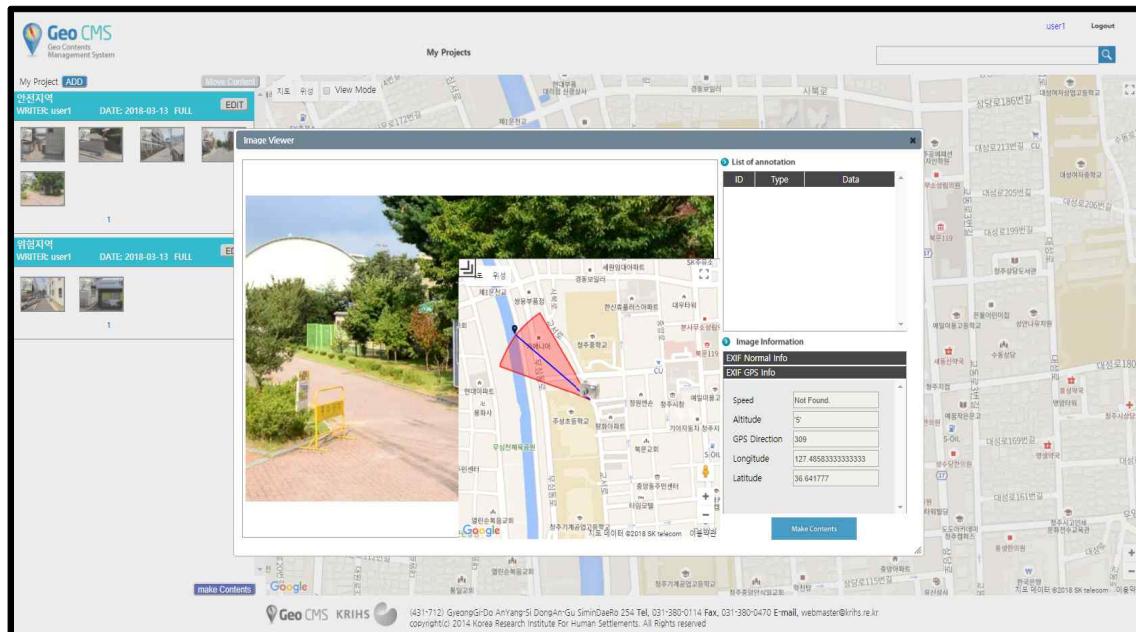


GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- When you click Marker, a window showing the picture appears.



- In the Image Viewer window, the EXIF information and the Map information of the corresponding photo are displayed together with the radius.

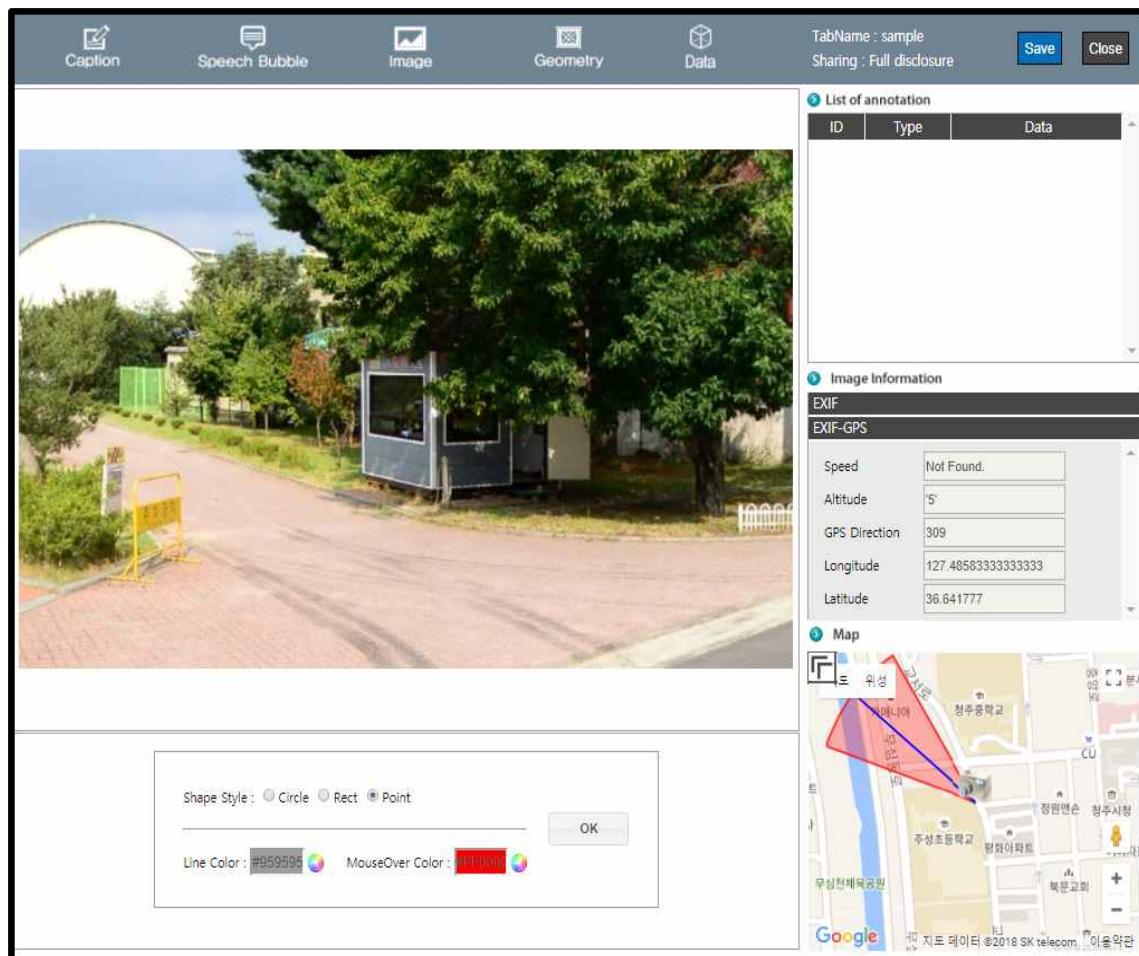


GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- When you click the Make Contents button on the bottom right, a window for editing the picture appears.

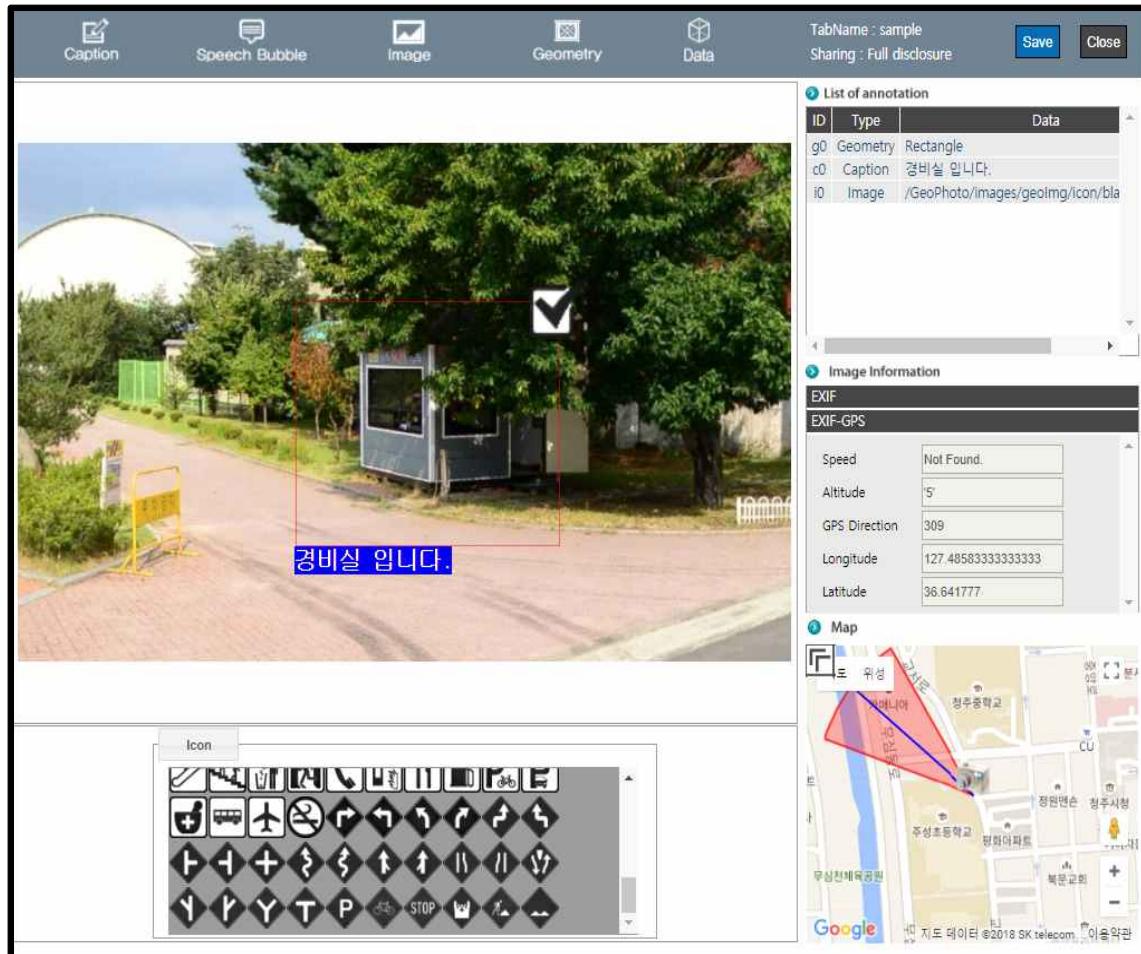
Representing authoring information with zoning and captions

- Top menu: Caption / speech bubble / icon / area setting / data information
- Free area representation using area setting options
- Expressed in caption
- Check the list of objects added to the right



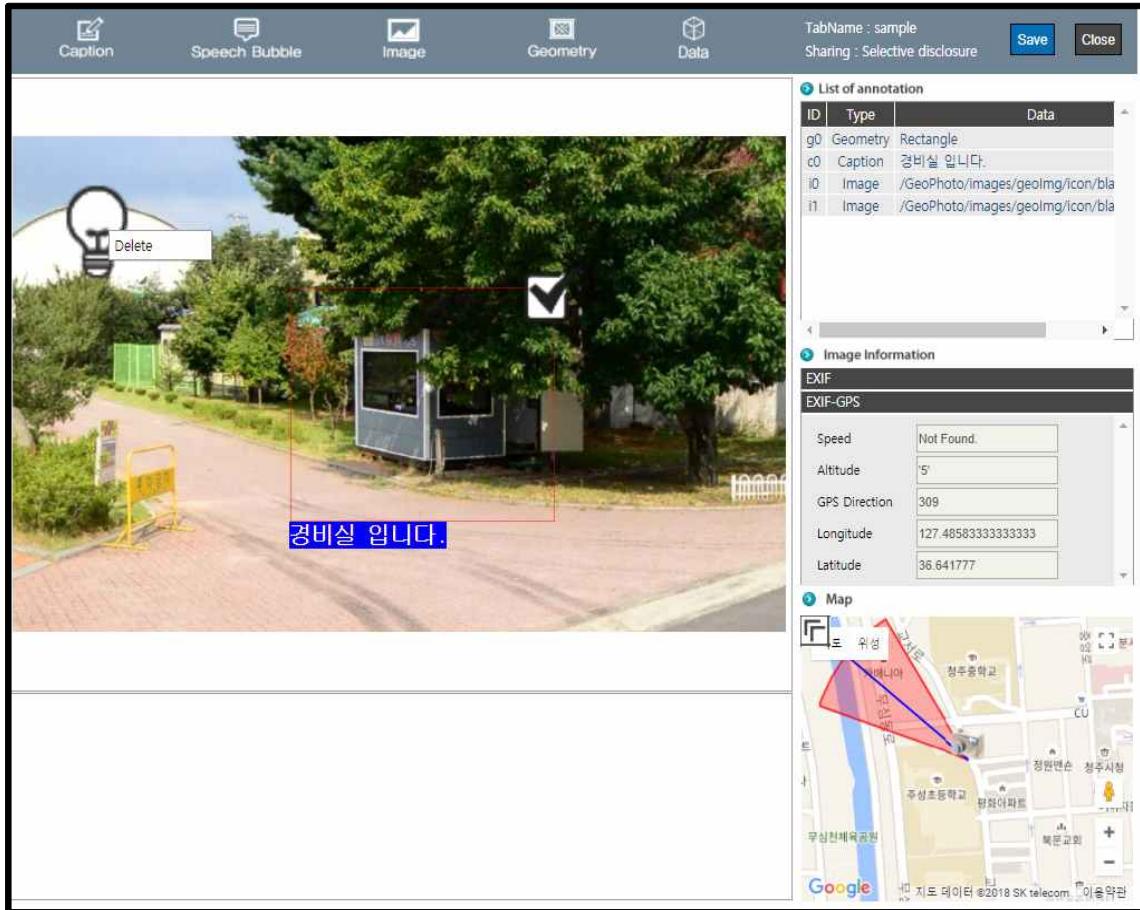
GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- Additional expressions by applying various icons



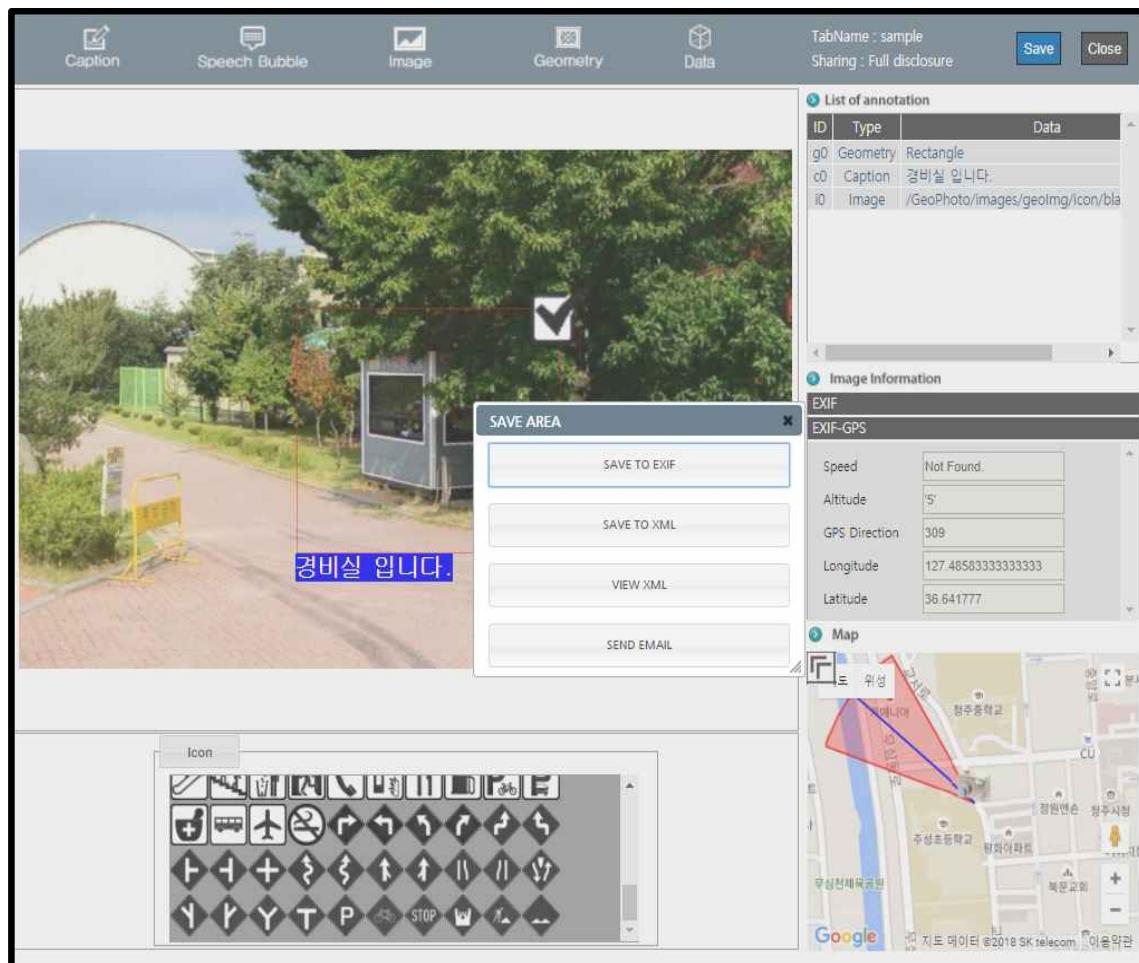
GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- Delete Objects
 - Right click on each object to delete it.



GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- Select the save method after authoring
 - Save to EXIF
 - Save to XML
 - Content sharing via e-mail



GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- Verifying the XML file

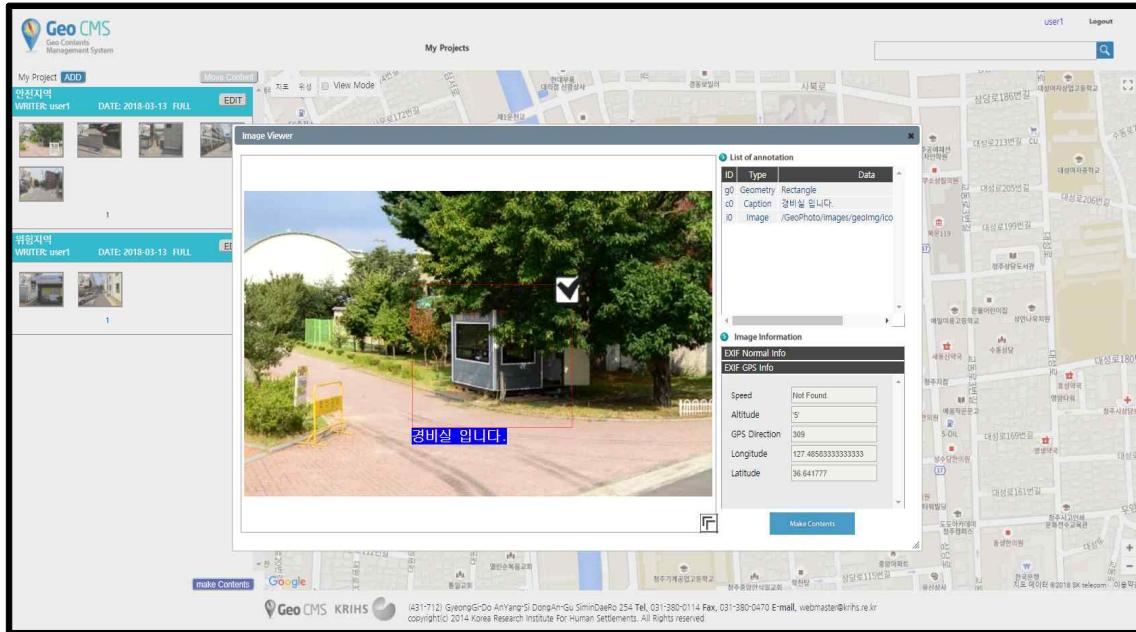
```

<?xml version="1.0" encoding="utf-8"?>
<upcm_obj>
<obj>
<id>g</id>
<top>198</top>
<left>281</left>
<xstr>276_540</xstr>
<ystr>144_366</ystr>
<linecolor>#f00</linecolor>
<backgroundcolor>#ffff100</backgroundcolor>
<type>rect</type>
</obj>
<obj>
<id>c</id>
<top>397.9861250078125</top>
<left>279.98264600390627</left>
<href>false</href>
<underline>false</underline>
<italic>false</italic>
<bold>true</bold>
<fontsize>H1</fontsize>
<fontcolor>#ffffff</fontcolor>
<backgroundcolor>#0000ff</backgroundcolor>
<text>경비실 입니다.</text>
</obj>
<obj>
<id>i</id>
<top>167.98612500781252</top>
<left>506.979167</left>
<width>71px</width>
<height>72px</height>
<src>/GeoPhoto/Images/geolmg/icon/black/d25.png</src>
</obj>
</upcm_obj>

```

GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- Confirmation of authoring items through Viewer

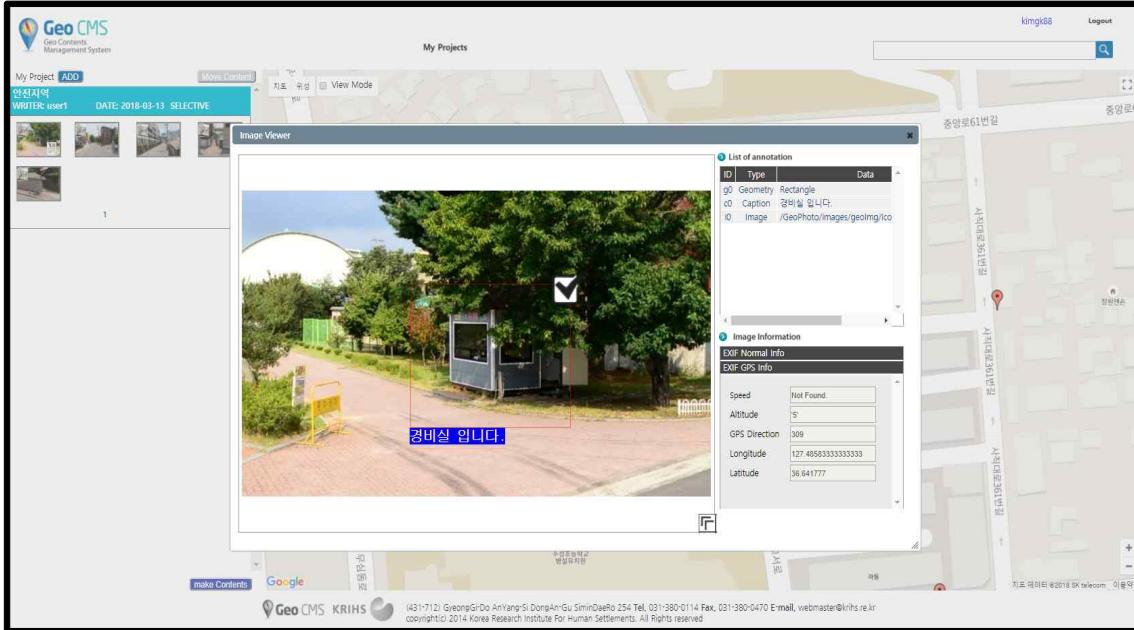


- Project list (Shared O, Edit X)
 - A list of shared projects appears in the My Project list.



GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- Since there is no editing authority, it is only possible to view authored content.

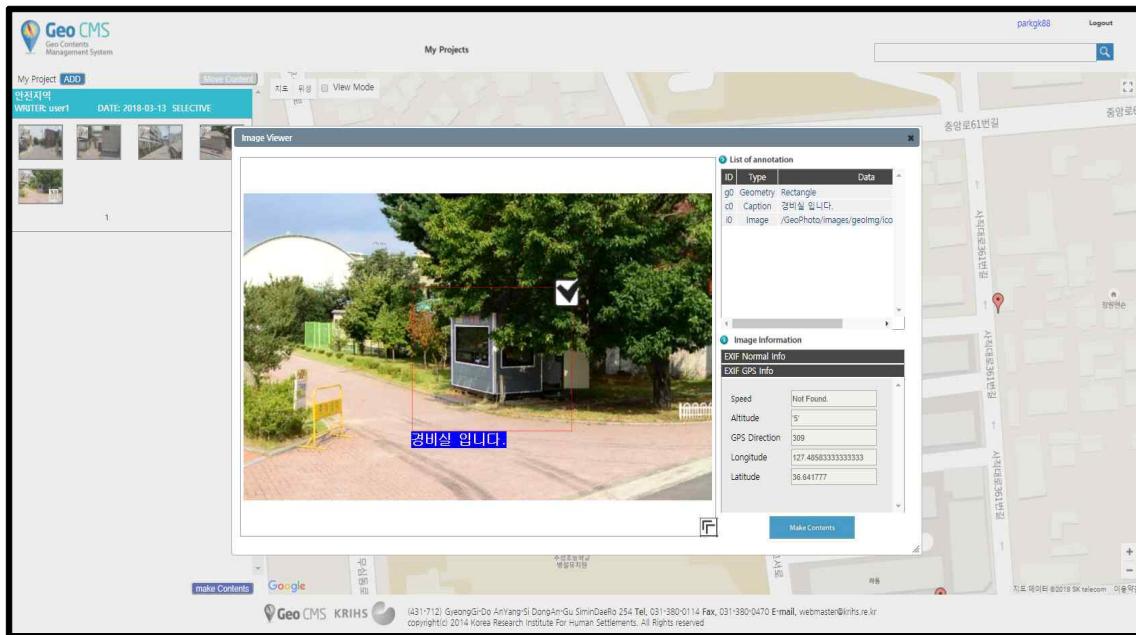


- Project list (Shared O, Edit O) when login as user who shared project
 - Shared project list is additionally displayed in My Project list.



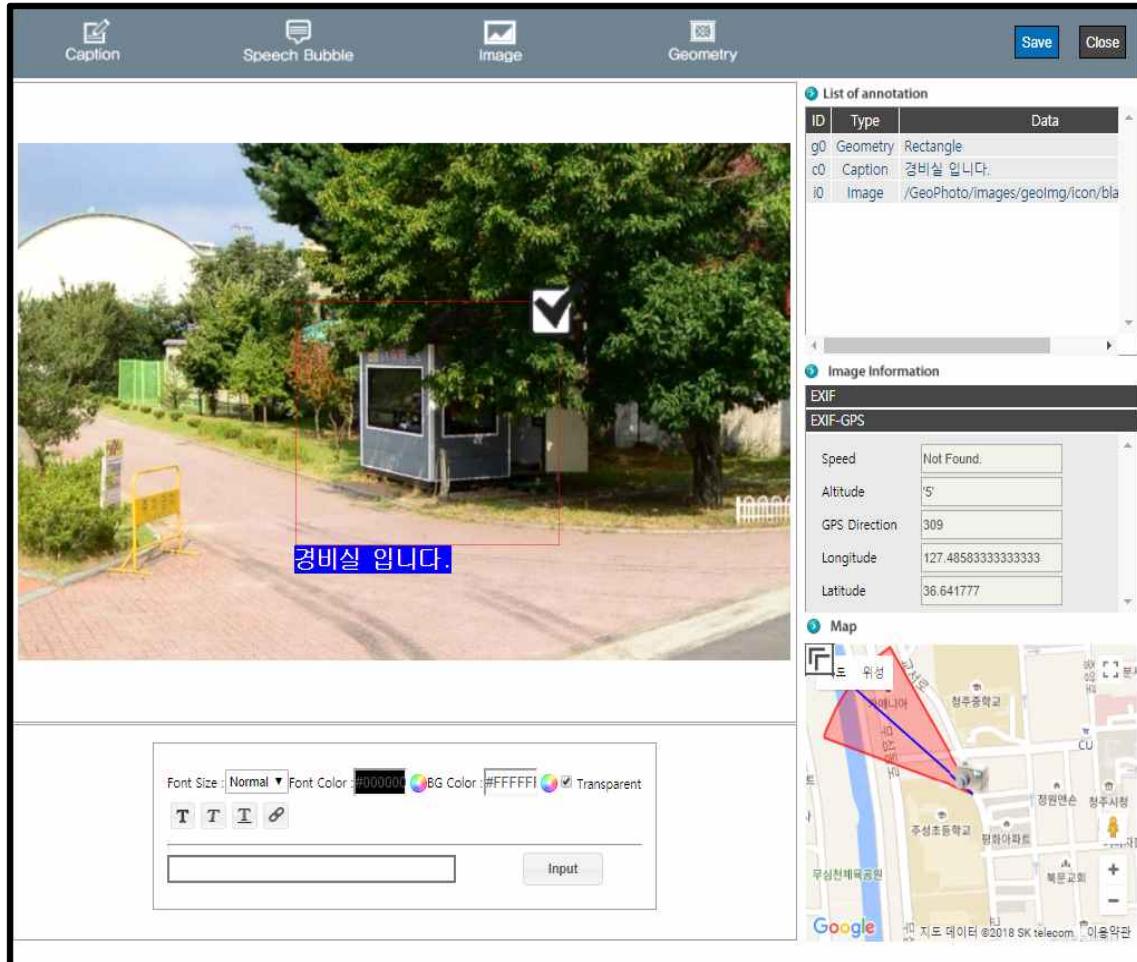
GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- The Make Contents button appears on the lower right corner because it has edit permission.



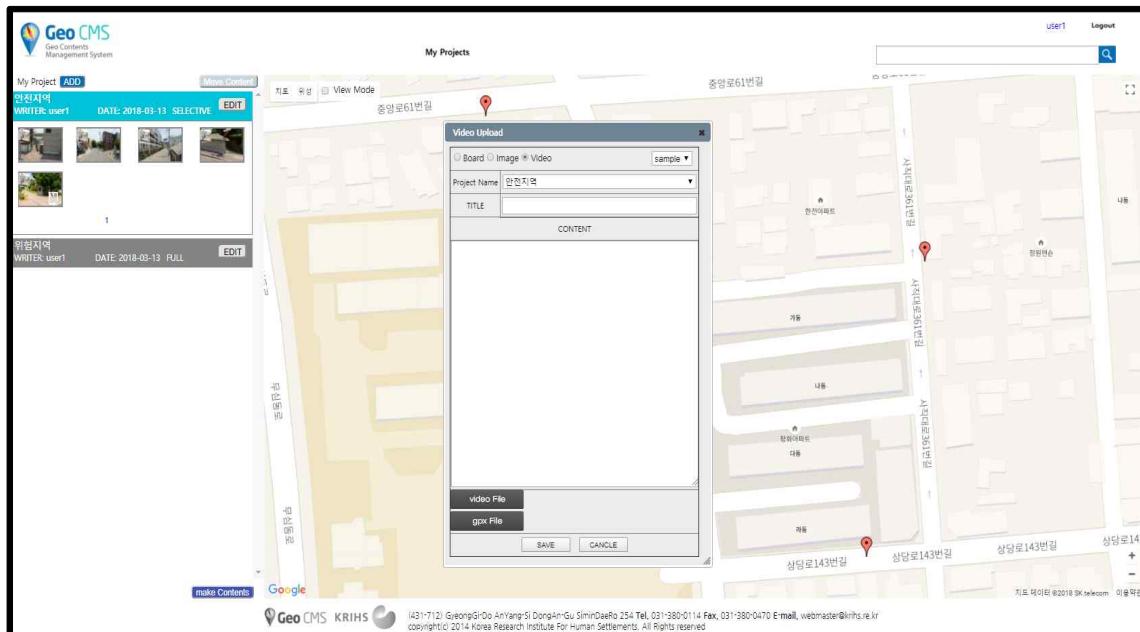
GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- Because you have editing authority, when you click the Make Contents button, the authoring window appears and you can author without data.



GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- Upload video
 - Click the make Contents button to create the content and select the video to upload the video.
 - When uploading the video, upload the video file and the gpx file containing the location information together.



GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

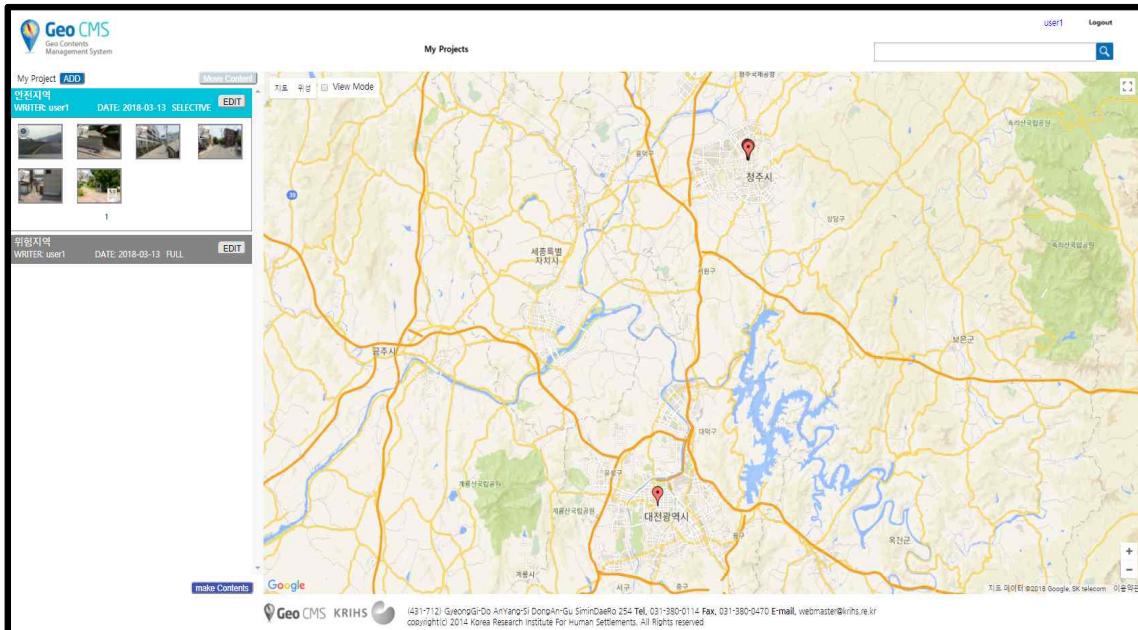
- GPX eXchange format file is created to share between GPS mapping software such as VP, MapSource, OziExplorer, MapSend Lite and GTM, and it contains GPS data information such as waypoints, tracks and routes.

```

<?xml version="1.0" encoding="UTF-8"?>
<gpx xmlns="http://www.topografix.com/GPX/1/1" creator="GPS
<metadata>
<link href="http://www.gpstml.com">
<text>Geo Studio Technology Ltd</text>
</link>
<time>2010-03-07T03:17:44Z</time>
</metadata>
<trk>
<name>25-video_20100305_112506 on GPSies.com</name>
<trkseg>
<trkpt lat="36.349095424" lon="127.38477134698378"></trkpt>
<trkpt lat="36.349095424" lon="127.38456749909865"></trkpt>
<trkpt lat="36.349095424" lon="127.3843421935414"></trkpt>
<trkpt lat="36.349095424" lon="127.38417053216445"></trkpt>
<trkpt lat="36.349095424" lon="127.38398814195143"></trkpt>
<trkpt lat="36.349095424" lon="127.38379502290236"></trkpt>
<trkpt lat="36.349095424" lon="127.38352680200087"></trkpt>
<trkpt lat="36.349095424" lon="127.38330149644362"></trkpt>
<trkpt lat="36.349173195" lon="127.38320493691909"></trkpt>
<trkpt lat="36.349268249" lon="127.38319420808303"></trkpt>
<trkpt lat="36.349389225" lon="127.383162021574"></trkpt>
<trkpt lat="36.349458355" lon="127.383162021574"></trkpt>
<trkpt lat="36.349579331" lon="127.383151292738"></trkpt>
<trkpt lat="36.349683025" lon="127.383151292738"></trkpt>
</trkseg>
</trk>
</gpx>
```

GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- After uploading the video, the thumbnail image of the video is displayed in the left list in the project and the location information corresponding to the first position of the gpx file is displayed on the right map.



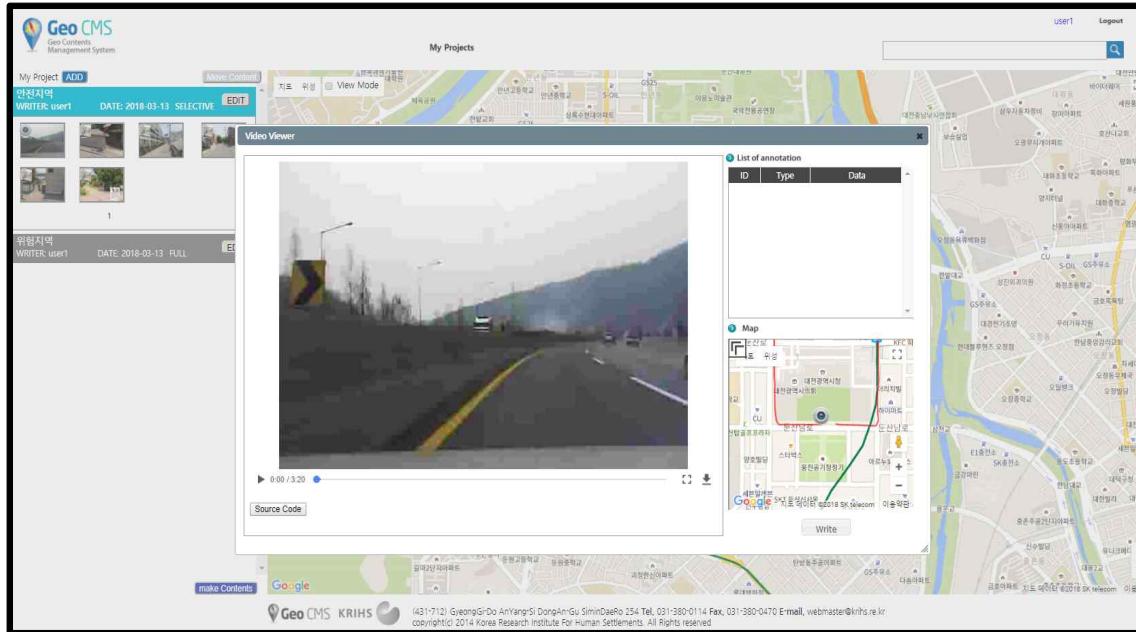
GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- If you click the image of the video on the left side, it will be displayed as a yellow marker at the start position, and the path corresponding to the gpx file will be displayed as a red line, and the corresponding thumbnail and thumbnail name will be displayed when the mouse over.



GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

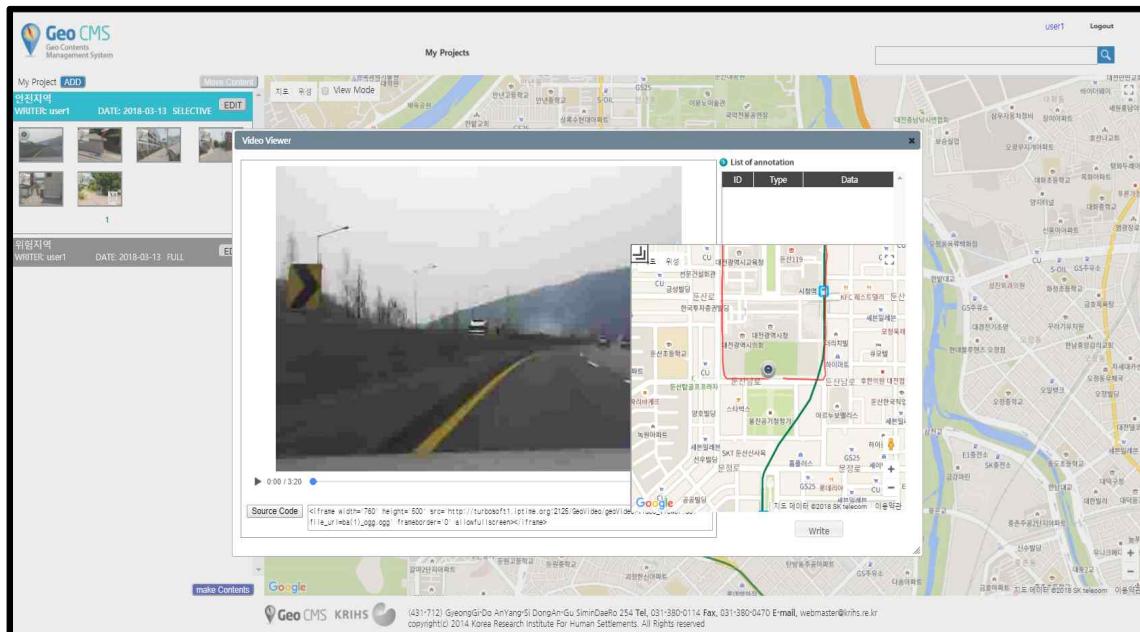
- When clicking Marker, a window showing video is displayed.



GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- In the video viewer window, you can see the source code that can be attached to the video by clicking the Source Code button at the bottom of the video, and a map showing the authoring object table and movement path on the right side is displayed.

The marker on the right moves as it plays.

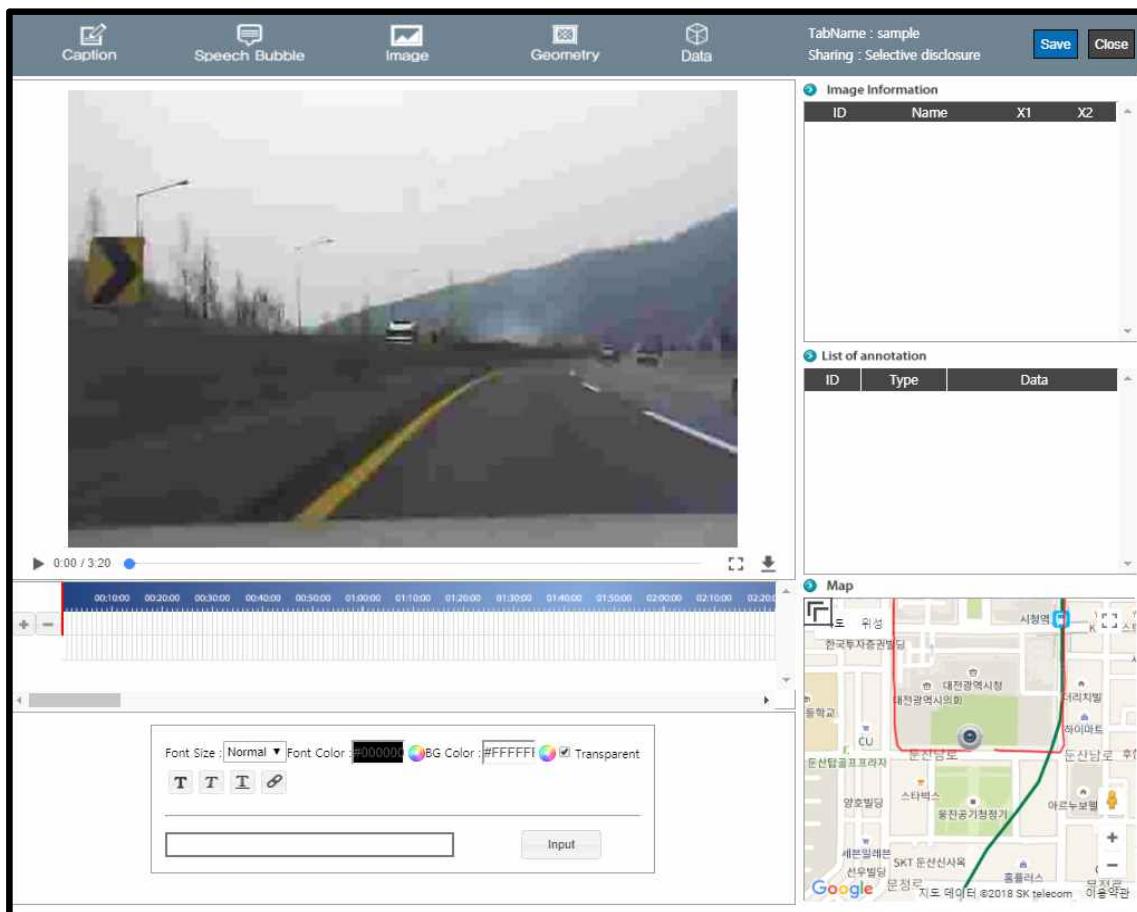


GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- When you click the Write button at the bottom right, a window for editing the movie will appear.

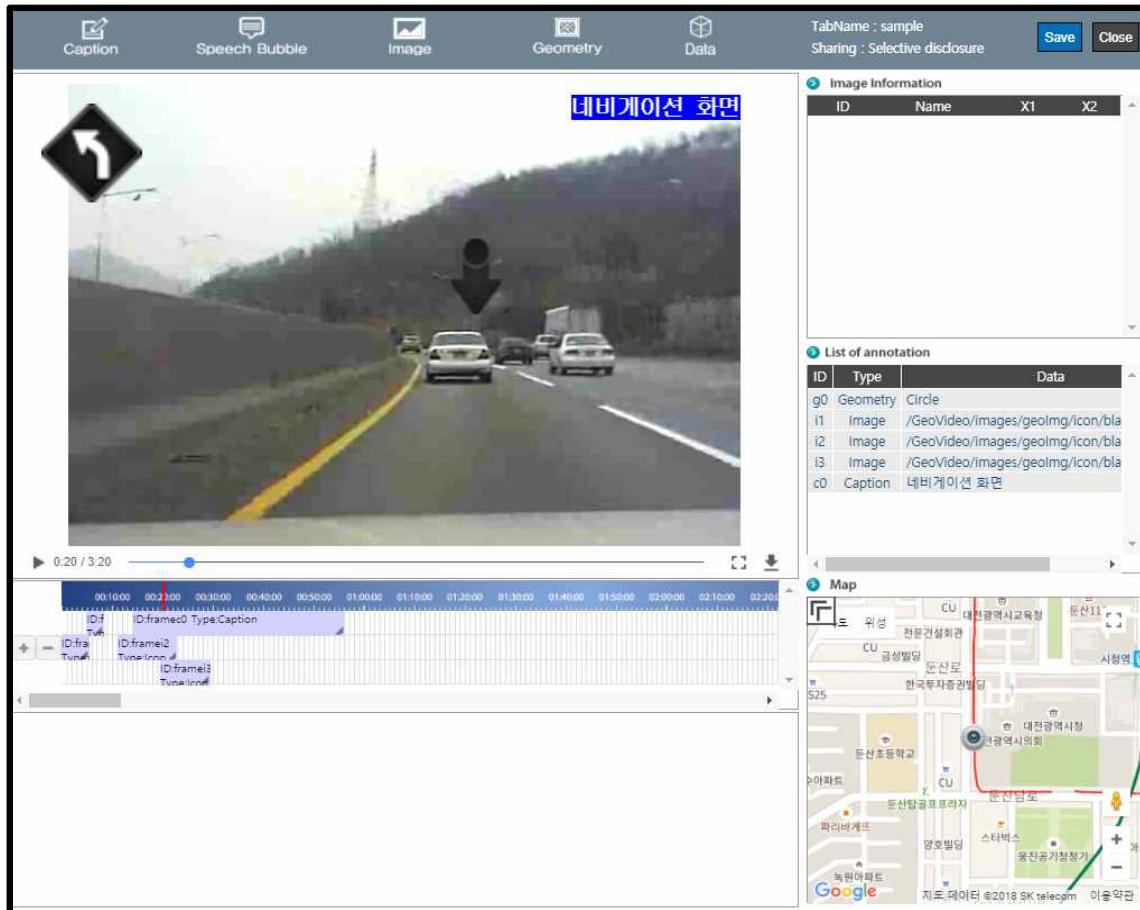
Representing authoring information with area settings and captions

- Top menu: Caption / speech bubble / icon / area setting / data information
- Free area representation using area setting options
- Expressed in caption
- Check the list of objects added to the right
- The frame area at the bottom of the video (information of the objects to be displayed in the corresponding frame of the moving picture)



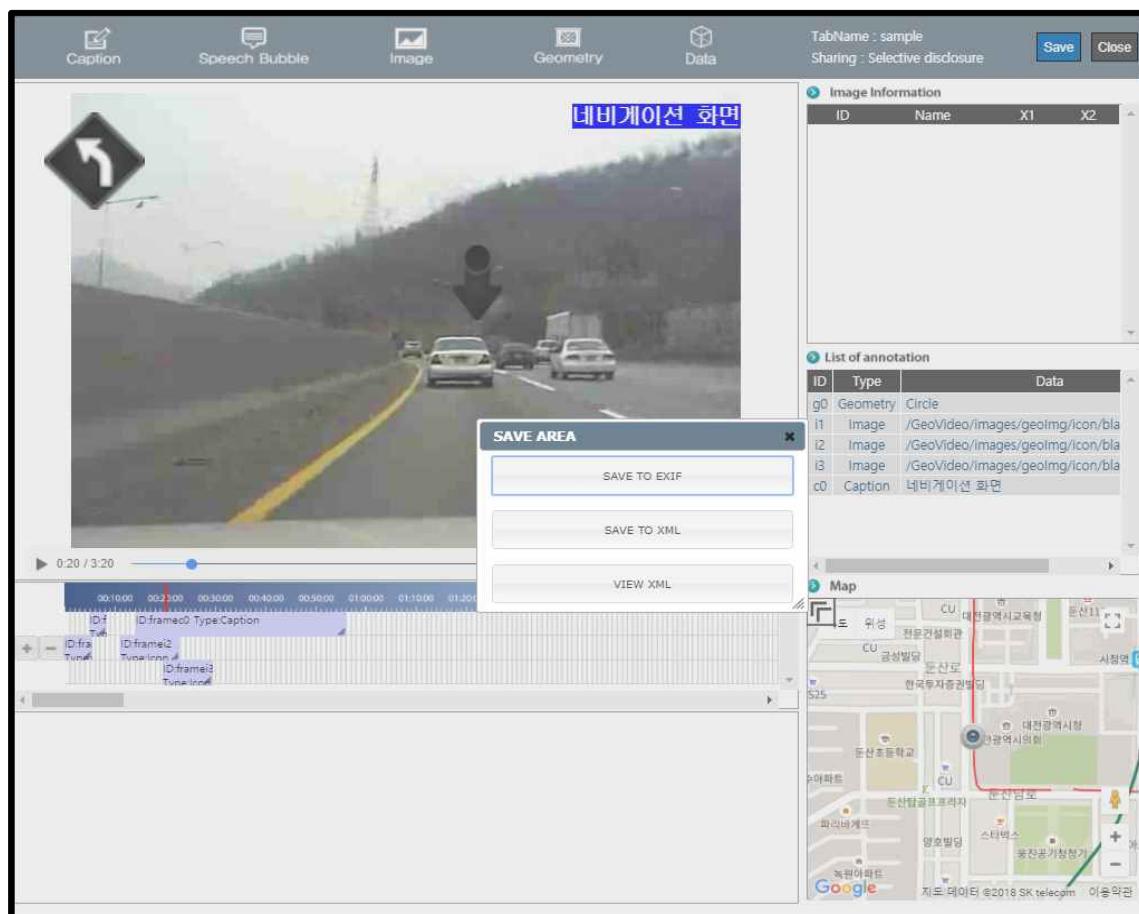
GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- Additional expressions by applying various icons



GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- Select the save method after authoring
 - Save to EXIF
 - Save to XML
 - Content sharing via e-mail



GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- Verifying the XML file

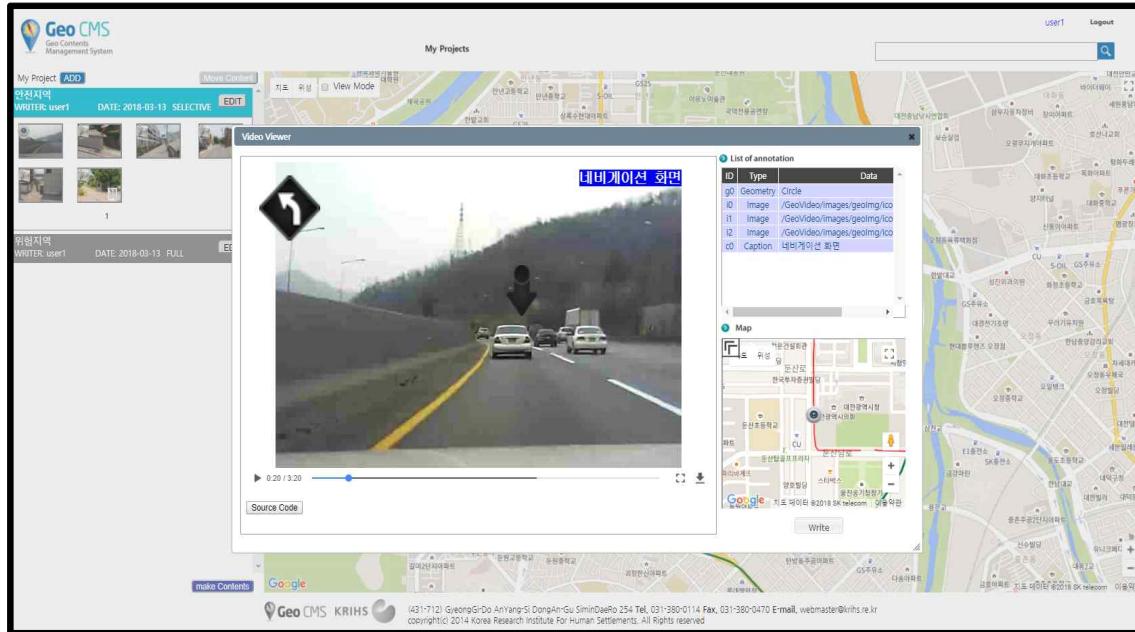
```

<?xml version="1.0" encoding="utf-8"?>
<upcm_obj>
<obj>
<id>g</id>
<top>232</top>
<left>571</left>
<xstr>561_655</xstr>
<ystr>222_312</ystr>
<linecolor>#f16c4d</linecolor>
<backgroundcolor>#FF0000</backgroundcolor>
<type>circle</type>
<frameline>25</frameline>
<framestart>0</framestart>
<frameend>28</frameend>
</obj>
<obj>
<id>i</id>
<top>33.975703254882816</top>
<left>75.97222425097657</left>
<width>54px</width>
<height>54px</height>
<src>/GeoVideo/images/geolmg/icon/black/d105.png</src>
<frameline>0</frameline>
<framestart>25</framestart>
<frameend>42</frameend>
</obj>
<obj>
<id>i</id>
<top>166.97918225878908</top>
<left>425.98960401171877</left>
<width>71px</width>
<height>78px</height>
<src>/GeoVideo/images/geolmg/icon/black/d58.png</src>
<frameline>25</frameline>

```

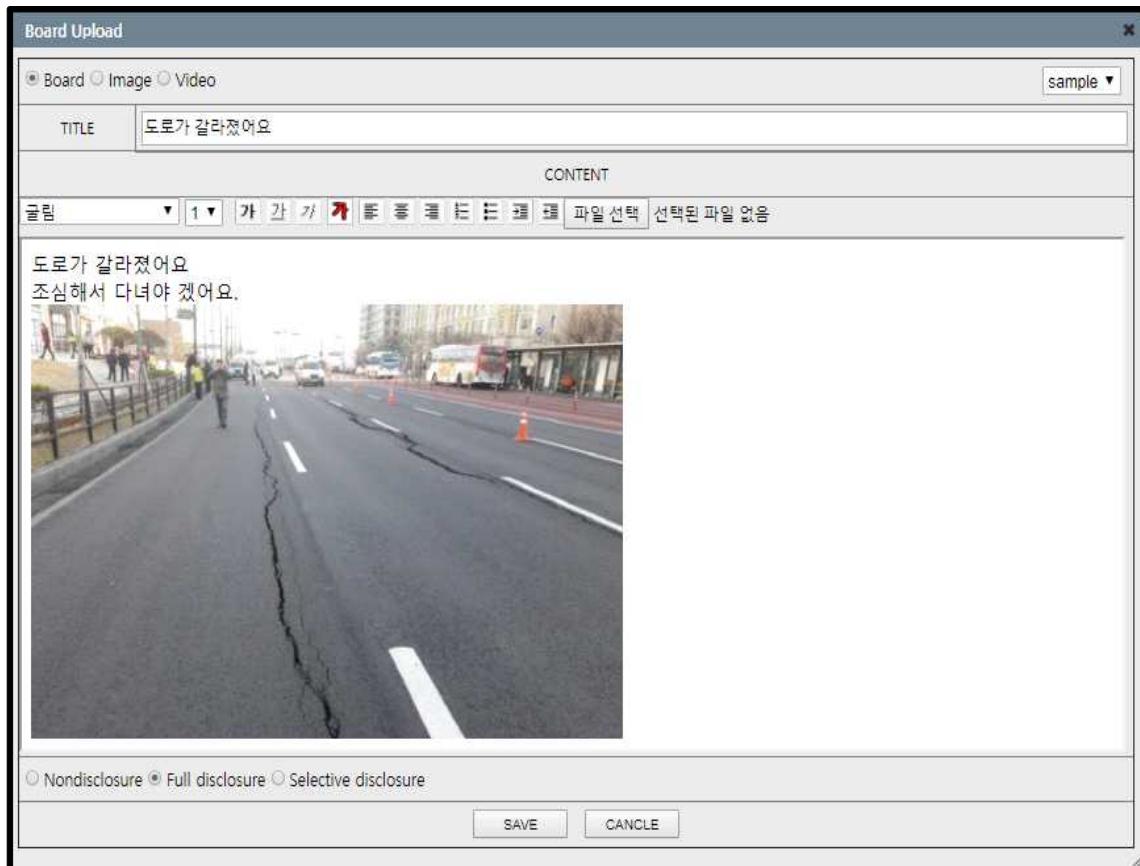
GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- Confirmation of authoring items through Viewer



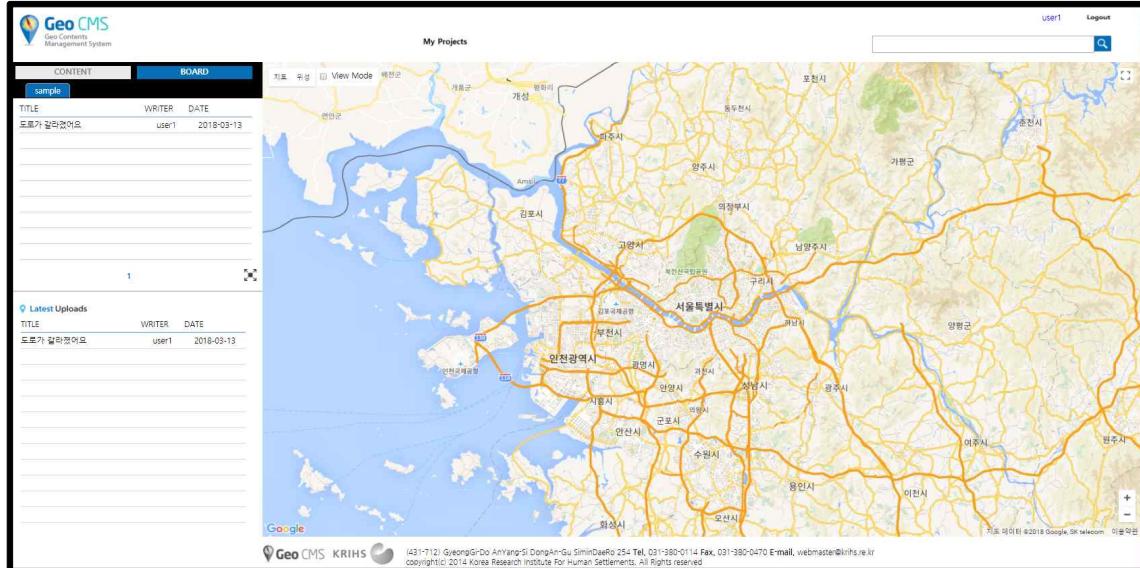
GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- Upload a post
 - Click the 'make Contents' button to create the content and select the Board to upload the video.
 - You can attach images using file selection.
 - You can select the tab to save through the right selection box, and it does not belong to the project.



GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- Confirm posting
 - When you select Board on the main screen, the tab of the post will appear and the list of posts on that tab will appear.



- Checking the bulletin
 - If you select a bulletin from the list in the tab, the corresponding bulletin board viewer appears as a popup and you can see the contents of the bulletin.



GeoCMS manual	Project classification	Land Spatial Information Research Project
	Project Name	GeoCMS

- Modify the post
 - After selecting the relevant post in the list, click the 'MODIFY' button in the Board Viewer and the Board Upload screen will appear, where you can modify the post. After editing the post, you can save it by clicking the 'SAVE' button.

