

NSF-ATE # 0401990

Technical Note:

Using Free Google Applications for Teachers to
Develop a Web-mapping “Flat Stanley” Website

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Abstract

The Flat Stanley project is a good teaching module for teachers and students to record the journals of Flat Stanley with what has happened and where they have been. The project can improve not only the ability of geography-awareness but also inter-personal relationships. However, the project lacks a user-friendly and interactive digital map to illustrate all Flat Stanley journals. Therefore, in this document, we used Google applications to implement a method and a customizable webpage, making it easy for teachers and student to upload, edit, and map their own Flat Stanley journals on the Internet.

Background

The Flat Stanley project was begun by Dale Hubert, a Grade 3 teacher in London, Ontario, Canada. He encouraged other teachers and students to make their own flat visitor, called Flat Stanley. First, these students took their Flat Stanleys for a few days and kept journals. Then, the Flat Stanleys and journals were sent to other schools where students there treated the Flat Stanleys as special guests and continued completing the journals. At the end, the Flat Stanleys and the journals were returned to the original students. Students also plotted locations where the Flat Stanleys had been on a map and shared the contents of the journals with others (The Official Flat Stanley Project, 2008). This project not only improves students’ geography-awareness but also their inter-personal relationships.

However, the project is not equipped with a friendly and interactive map for teachers or students to plot their Flat Stanley locations. Therefore, we integrated some Google web applications since the interfaces are user-friendly to implement a customizable webpage which combines maps and photos for teachers or students to share their journals of Flat Stanley.

Google has implemented all kinds of web applications on the Internet, e.g. Gmail for email, Picasa for web albums, and Google Pages for web pages. All applications are free for everyone, and can be combined together by Google API (application programming interface), e.g. Picasa web album combines Google maps to demonstrate where photos are taken, as shown in Figure 1.

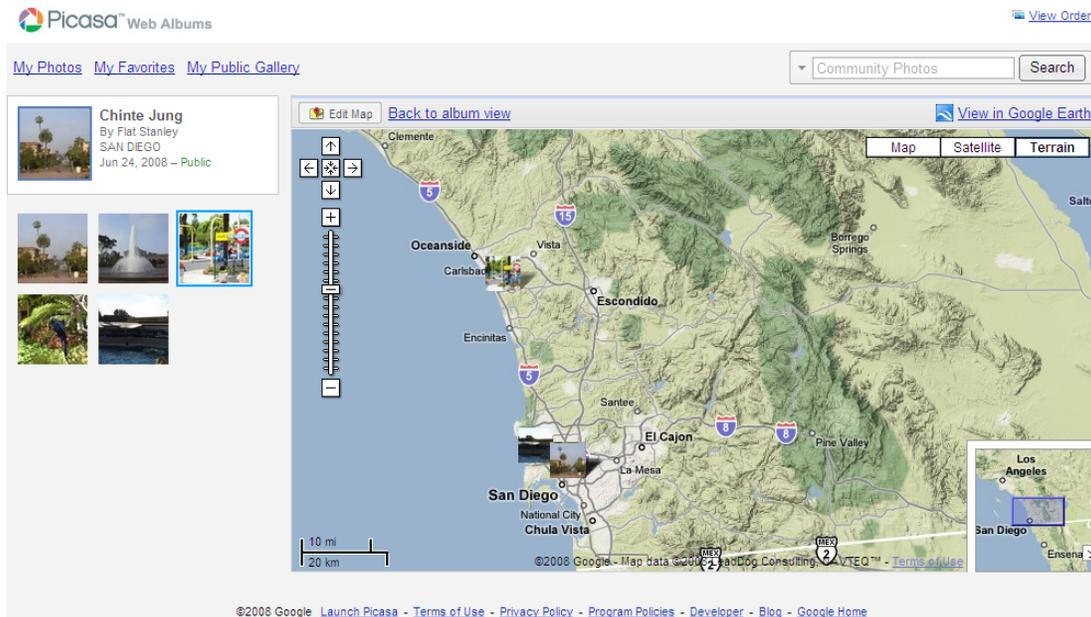


Figure 1: Picasa web albums with Google Maps application

Although Picasa web album has already combined with Google Maps, functions provided by Picasa and Google Maps are limited. It is hard to customize and combine these functions to meet our needs. For example, we can only see photos within an album shown on the map; we cannot see all photos within all albums shown on the map; we also cannot add a customized icon, e.g. “Flat Stanley” icon, on the map.

Therefore, we used Google API of Picasa and Maps to implement a customizable “Flat Stanley” webpage (e.g. <http://stanleymap.googlepages.com/index.htm>) for teachers and students to upload and customize their “Flat Stanley” icons, photos, and maps for illustrating the journals of “Flat Stanley” around the world, as shown in Figure 2.

Mapping Flat Stanley's Adventures with Google Maps

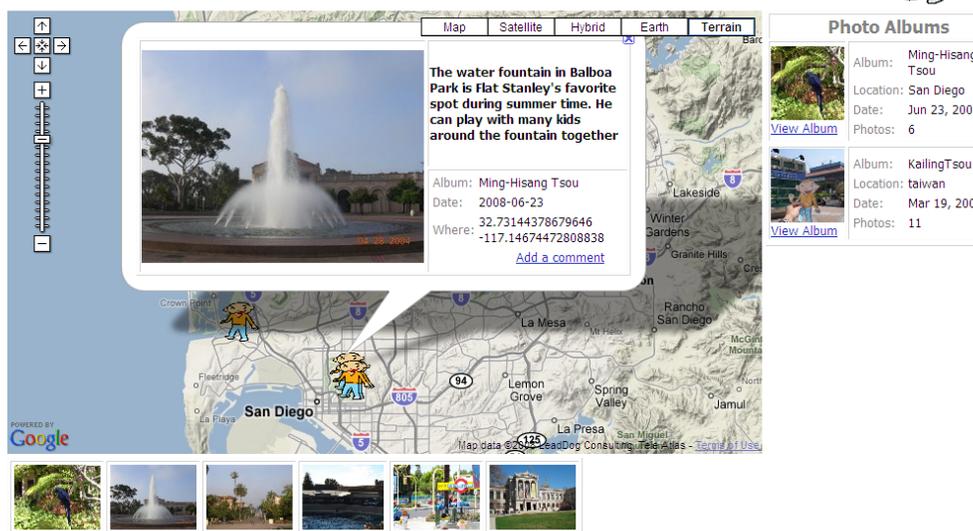


Figure 2: Customizable “Flat Stanley” webpage

Implementation Method

The implementation method is composed of two parts: database and web, as shown in Figure 3. The database aims to use Google Picasa, a web album application, as a database for teachers or students to upload and geo-tag their photos; the web aims to customize a webpage (a template webpage for “Flat Stanley”), which was developed by SDSU, and to use Google Pages, a free web spaces application, to publish a “Flat Stanley” map on the Internet. The detailed steps are described in the following sections.

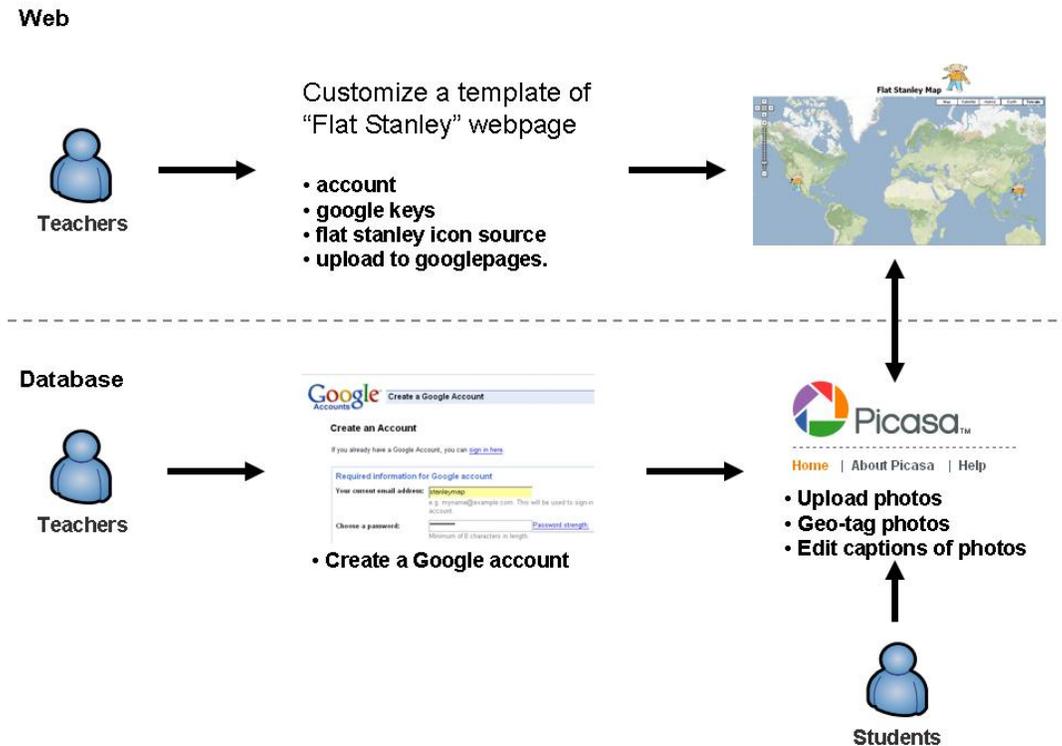


Figure 3: The implementation method

Database

Creating a Gmail for a Google account

Google provides a free email application, called Gmail, which contains 6.7Gb space for everyone. We are going to create a Gmail account so that other Google applications (e.g. Picasa web album and Google pages) can be used by this account. Go to <http://mail.google.com> to create a Gmail account (e.g. stanleymap.test), as shown in Figure 4.

Welcome to Gmail

Once you complete this form, your Gmail username will become your new default email address as well as the primary address identifying your Google Account. Your previous email address will remain a part of your Google Account and you may continue to log in with that address if you prefer.

If you wish to create a separate Google Account for use with the Gmail service then [click here](#) to first log out and create a new Google Account. (Note: you can only be logged into one Google Account at a time).

First name: Flat Stanley
Last name: Flat Stanley
Desired Login Name: Enter a new username @gmail.com
flatstanley.test
Examples: JSmith, John.Smith
check availability! flatstanley.test is available
Password:

Figure 4: Create a Gmail account

Uploading photos to Picasa

After creating a Google account, we can use a Google web photo album application, called Picasa. Picasa web album is a free Google application which provides 1Gb of free space for anyone to upload, edit, and geo-tag his or her photos on the web.

Go to <http://picasaweb.google.com> and log in with your Gmail account to upload photos onto Picasa web album. You do NOT need to download Picasa software to upload your photos. By clicking the “upload” button, as shown in Figure 5, you can create an album and upload photos. If this is not your first time logging into Picasa (i.e. there is already an album in Picasa), the screen will be a little different from Figure 5. Please see Appendix B for more details.

When creating an album, we encourage students to **write their name in the title**, and to **set albums public**, as shown in Figure 6. Thus, the created albums can be viewed by everyone, as shown in Figure 7.

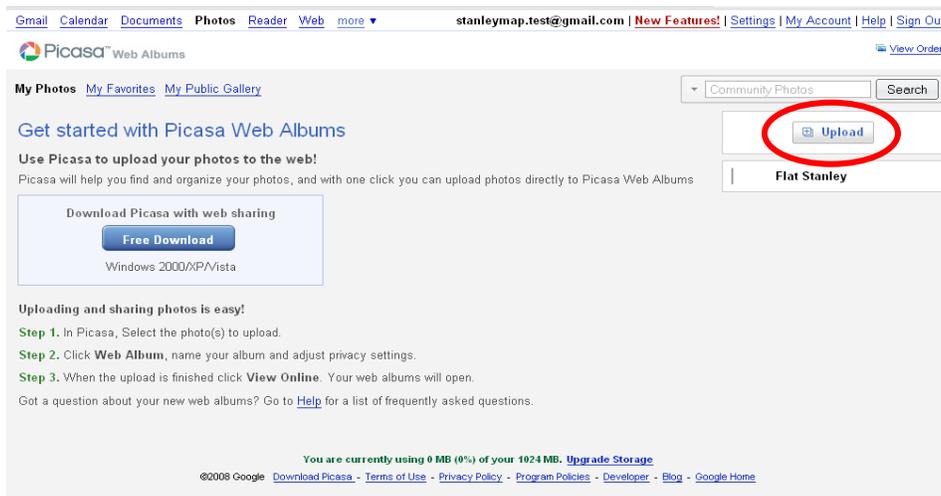


Figure 5: Picasa web album

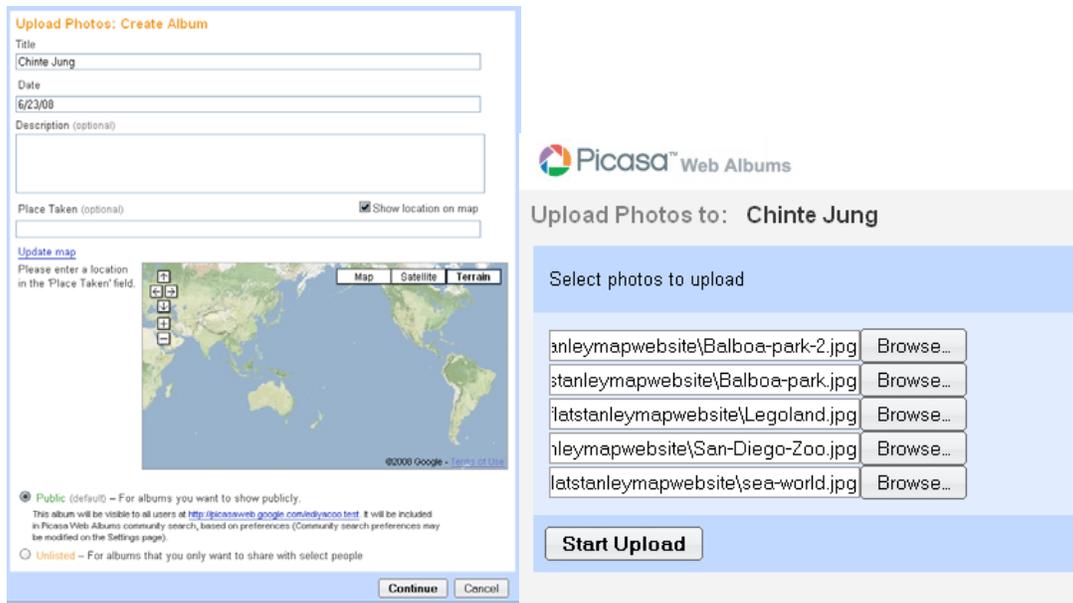


Figure 6: Creating an album and uploading photos

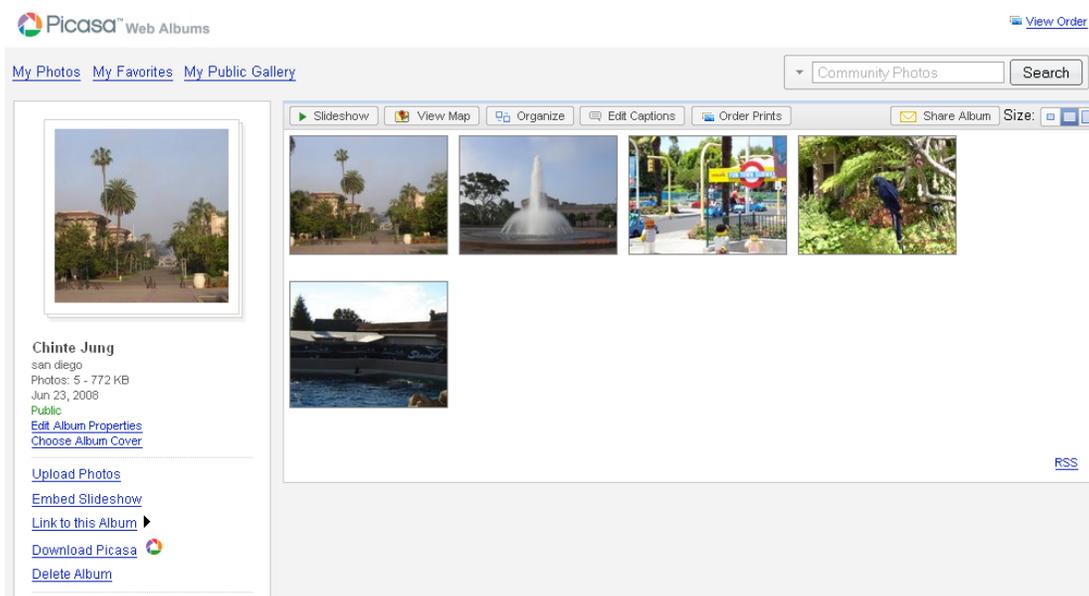


Figure 7: Finishing upload

We can also use the “Edit Captions” button, as shown in Figure 7, to edit captions and journals about Flat Stanley for each photo.

Geo-tagging photos on Picasa

Geo-tagging makes photos geographically-referenced, and we can quickly understand where photos are taken and improve our geography awareness. So, how do we geo-tag photos on Picasa? First, log into Picasa and choose an album. Second, click “View Map”, as shown in Figure 7. Then, we can choose different map types (e.g. map, satellite, or terrain), use map tools (e.g. zoom in, zoom out, or pan the map), and drag-and-drop each

picture onto the map to locations where photos were taken, as shown in Figure 8. After geo-tagging, do not forget to click “Done” button to save this information.

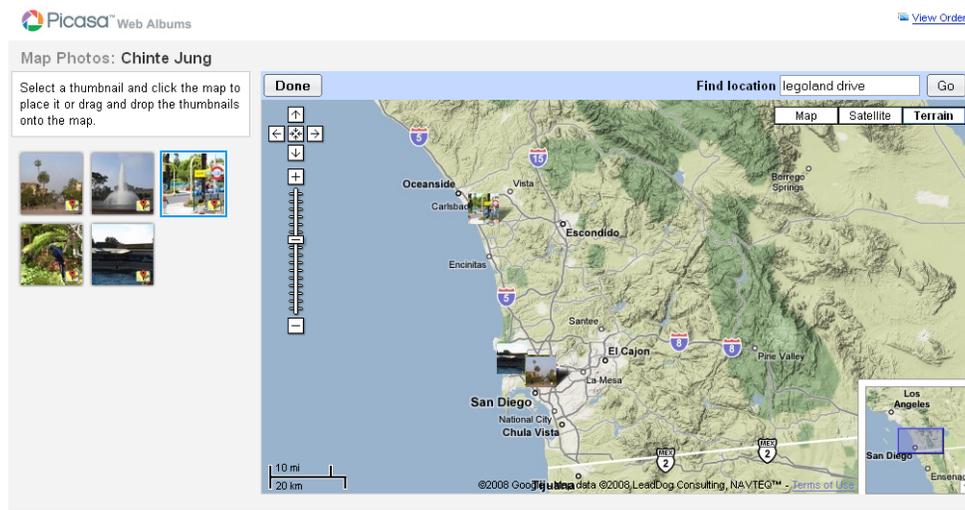


Figure 8: Geo-tagging photos

Web

Now, we are going to download a template webpage developed by SDSU, and customize some parameters for satisfying different kinds of “Flat Stanley” journals.

Getting a template webpage for “Flat Stanley” map

Go to <http://stanleymap.googlepages.com/index.htm>. Then, we will save this customizable template under the file name “*index.htm*”.

Please do NOT directly save, as shown in Figure 9, since it will save all other unnecessary information. Instead, use “View Source” first, as shown in Figure 10, and save this source as a new file into your computer.

In order to save this source as a webpage, please use following settings, as shown in Figure 11:

- **File name: index.htm.** Please remember to add a filename extension (e.g. .htm) to tell computers this file is a webpage.
- **Save as types: all files.** Please select “all files” and do NOT select “.txt”. It will save this source as a text file.
- If you have “**Encoding**” option, please select **UTF-8** for encoding the source.

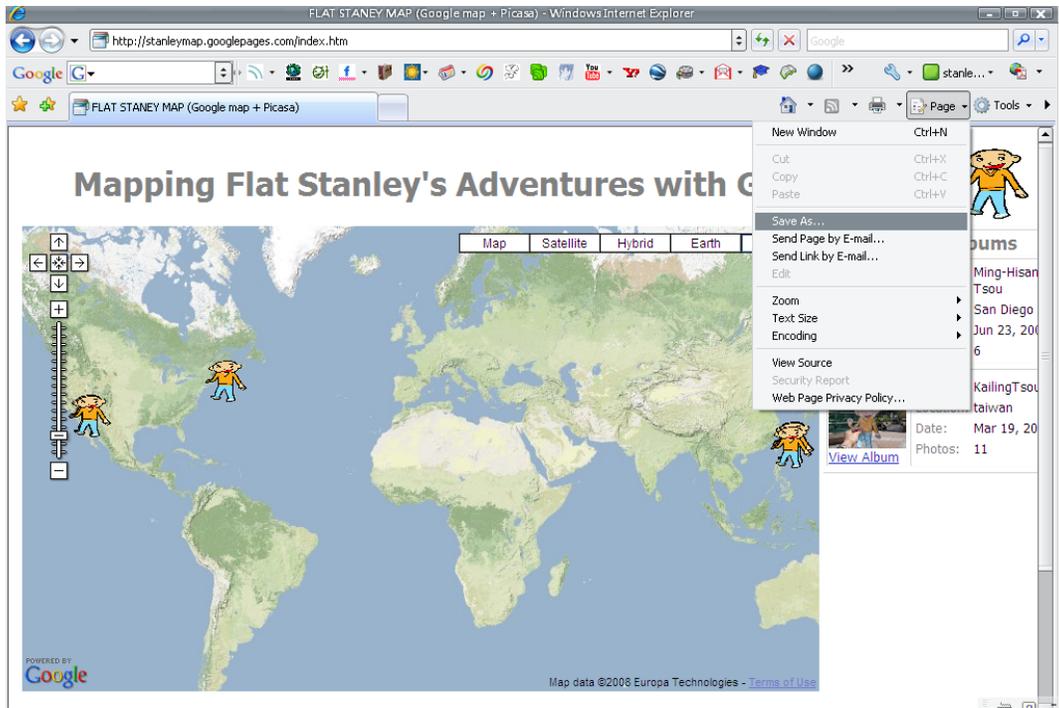


Figure 9: Do NOT use “save as” to download a template webpage

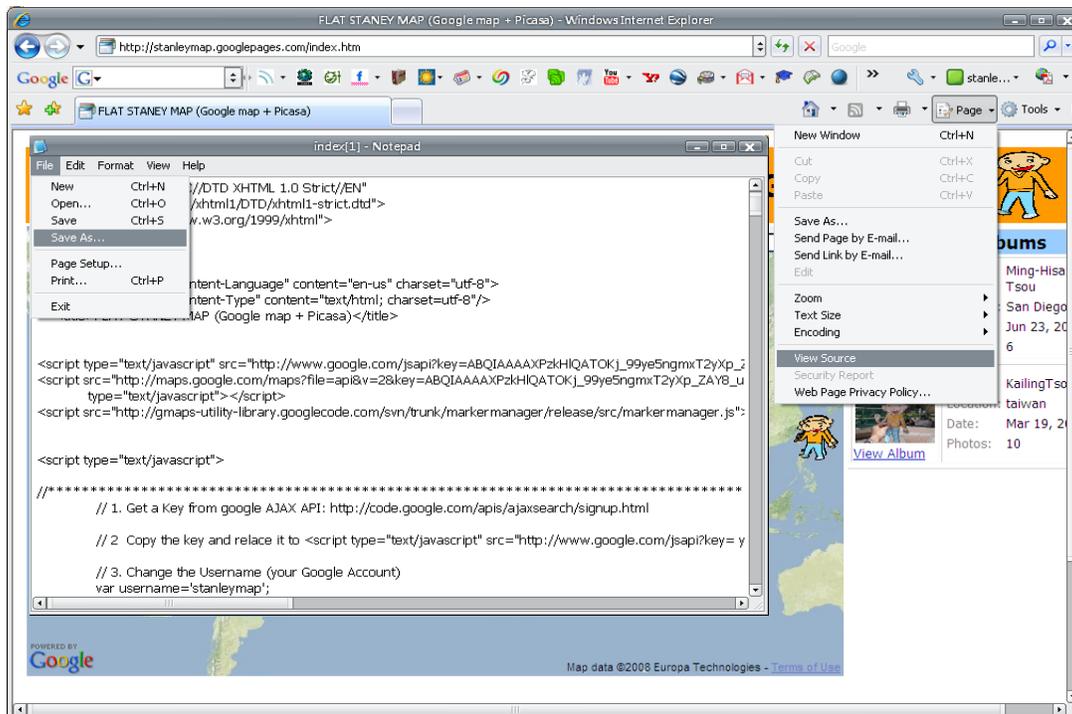


Figure 10: Use “view source” of index.htm and save the source as a new file into your computer

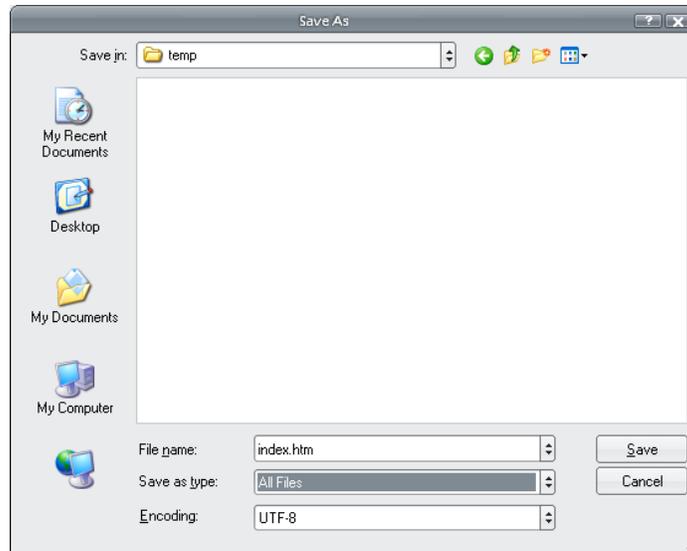


Figure 11: the settings when saving the source as a new file.

Customizing the template

Now, using text editing software (e.g. Notepad), customize some parameters in the webpage to meet your need. For example, change Picasa username, “Flat Stanley” icon, and the size of the icon. In the following, we used **Notepad**, illustrating how to customize these parameters.

Open the webpage with Notepad and find the paragraph between “//*****”, as shown in Figure 12. In this paragraph, we are going to customize four parameters:

```

index[1] - Notepad
File Edit Format View Help
<script type="text/javascript" src="http://www.google.com/jsapi?key="></script>
<script type="text/javascript">
//*****
//-----
// If you upload this file into "GooglePages", you do NOT need Google API Key. Please IGNORE step 1 and 2.
// Otherwise, please follow step 1 and 2 to get Google API Keys

// 1. Get a Key from google AJAX API: http://code.google.com/apis/ajaxsearch/signup.html
// 2 Copy the key and relace it to the above script (e.g. <script type="text/javascript" src="http://www.google.com/jsapi?key= your key">)
//-----

// 3. Change the Username (your Google Account)
var username="stanleymap";

// 4. input your "Flat Stanley" picture URL
var imageUrl="http://stanleymap.googlepages.com/FlatStanley.png";
var imageWidth="40";
var imageHeight="40";

//5. Copyright
var Copyright="Copyright@SDSU NSF-ATE Project: Stanley Map";
var CopyrightLink="http://geoinfo.sdsu.edu/hightech/";
//*****

```

Figure 12: Using Notepad opens the webpage

(1) **Google API key** is an authorized key to embed Google application programming interfaces (API), e.g. Google Maps, which can be run in web pages. The Google API key is valid within a directory in a web server.

However, since we use **Google Pages** application as a directory, we do **NOT** need a Google API Key. Otherwise, we would need a Google API Key (please see Appendix A if interested in learning more about applying a Google API Key).

(2) **Changing usernames** lets the template webpage obtain all photos stored in Picasa under that username. Because we have already created a Google account (stanleymap.test), we input this Google account name to replace (stanleymap), as shown in Figure 13.

For example, `var username="stanleymap.test";` Please do NOT ignore the quote (“”) and semi column (;).



Figure 13: Change username

(3) **Changing “Flat Stanley” icon** customizes different “Flat Stanley” images into your webpage. You can upload your own “Flat Stanley” image into Google pages by replacing this link (<http://stanleymap.googlepages.com/FlatStanley.png>) with yours.

For example, `var imageUrl="http://stanleymap.googlepages.com/FlatStanley.png";` Please do NOT ignore the quote (“”) and semi column (;). You can also change the icon size (e.g. `imageWidth` and `imageHeight`), which will be shown on the map.

(4) **Changing copyright and hyperlink** lets you add your own webpage link on the template webpage. Next to `var CopyrightLink`, replace `http://geoinfo.sdsu.edu/high/tech/` with web address from when you geo-tagged photos on Picasa.

For e.g. `var CopyrightLink="http://picasaweb.google.com/edwardc13/EdwardChin"`

Uploading the template to Google Pages

After customizing your own “Flat Stanley” webpage, you can upload and publish this webpage into Google Pages. Google Pages is a free Google application which provides 100mb of free space for everyone to publish web pages or resources on the web.

Go to Google Pages (<http://pages.google.com>) and log in with your Google account. You can see that the URL of Google Pages depends on your Google account. For example, if your Google account is “stanleymap.test”, then the URL of Google Pages is <http://stanleymap.test.googlepages.com>.

Click the “upload” button on the right, as shown in Figure 14, and browse your webpage file, as shown in Figure 15. Select your customized template *index.htm* and upload it.

After uploading the file, there is a file link in uploaded stuff, as shown in Figure 16. By clicking on the link, you can access your own “Flat Stanley” map on the web (e.g. <http://stanleymap.test.googlepages.com/index.htm>), as shown in Figure 17.



Figure 14: Upload webpage into Google Pages



Figure 15: Browse your file and upload into Google Pages



Figure 16: Finish uploading file



Figure 17: Your customized “Flat Stanley” map

Conclusions

Google has published all kinds of web applications for everyone to use for free on the Internet. In the “Flat Stanley” webpage, we combined Google Picasa web album and Google Maps application so teachers and students can easily upload, edit, and geo-tag

their photos on the Internet. Additionally, they can quickly create their own “Flat Stanley” webpage to illustrate where “Flat Stanley” has been and what “Flat Stanley” has seen around the world.

References

The Official Flat Stanley Project (2008) <http://www.flatstanley.com/> [access 2008/06/25]

Appendix A: Applying a Google API Key

Google API key is an authorized key to embed Google application programming interfaces (API), e.g. Google Maps, into web pages. The Google API key is valid within a directory in a web server.

In the following, we used SDSU web server (<http://geoinfo.sdsu.edu>) as a directory for an example to access a Google API key.

Go to Google API key website: <http://code.google.com/apis/ajaxsearch/signup.html> and sign in your URL of directories (e.g. <http://geoinfo.sdsu.edu>) to access a Google API key, as shown in Figure 16.

Docs > Sign up for an API key

Sign-up for an AJAX Search API Key

The Google AJAX Search API lets you embed Google Search in your personal web pages. A single AJAX Search API key is valid within a single directory on your web server, including any subdirectories. Signing up the URL <http://www.mygooglesearchsite.com/mysite/>, for example, will create a key usable within all URLs in the <http://www.mygooglesearchsite.com/mysite/> directory. See the [API documentation](#) for more information. You must have a [Google Account](#) to obtain a Google API key, and your API key is tied directly to your Google Account. You can generate multiple API keys for your account if you have multiple web sites.

Here are some highlights from the terms of use for those of you who aren't lawyers (but be sure to read the entire document):

- Your web site must be freely accessible to end users.
- Google will upgrade this API periodically, and you must update your site to use new versions of the API as they become available. The Google AJAX Search API team will post notifications of updates on the [Google AJAX Search API Blog](#). If we make a change that isn't backwards-compatible, we will give you at least a reasonable amount of time to make the transition; during this period both versions of the API will be supported. Please transition your code as soon as possible to avoid interruptions in your service.

Google AJAX Search API Terms of Use

Thank you for using the Google AJAX Search API. By using the Google AJAX Search API (the "Service"), you ("You") accept and agree to be bound by the following terms and conditions (the "Terms of Use"). In addition, if your use of the Google AJAX Search API incorporates images or data from the Google Maps service, you agree to be bound by the Google Maps Terms of Use.

1. Service.

1.1 Description of Service. The API consists of JavaScript and associated service protocols that allow You to display results from Google searches, including text and URL results from Google Web Search and results from searches on other Google services ("Google Search Results") on your website, subject to the limitations and conditions described below. The API is limited to allowing You to host and display Google Search Results on your site, and does not provide You with the ability to access other underlying Google

I have read and agree with the terms and conditions ([printable version](#))

My web site URL:

Figure 16: Get a Google API Key

After getting a Key (e.g.

“ABQIAAAAXPzkHIQATOKj_99ye5ngmxTpVH2toeEwbyQGC0vzAC5qVTYz0BQy3pl4cGrVvMLNMFHqlcExdZVLjw”), copy this key and paste it behind the following text in our customizable webpage:

`<script type="text/javascript" src="http://www.google.com/jsapi?key= your key">`

For example, `<script type="text/javascript" src="http://www.google.com/jsapi?key=ABQIAAAAXPzkHIQATOKj_99ye5ngmxTpVH2toeEwbyQGC0vzAC5qVTYz0BQy3pl4cGrVvMLNMFHQlcExdZVLjw">`, as shown in Figure 17.

```
<script type="text/javascript" src="http://www.google.com/jsapi?key=ABQIAAAAXPzkHIQATOKj_99ye5ngmxR76UfSz1xJ7G_wfcsYB_r8Xvlu8vohRwadS5tW9uRwun7hDdXmk3f
</script>
<script src="http://gmaps-utility-library.googlecode.com/svn/trunk/markermanager/release/src/markermanager.js"></script>
```

Figure 17: Copy and paste a Google API key to customize your webpage.

Then, you can have your own Google API Key and publish the customizable webpage into your web server.

Appendix B:

If this is not your first time creating an album or uploading photos in Picasa

If this is not the first time you have created an album and uploaded photos in Picasa (i.e. there is an existing album in Picasa), the screen shown may be similar to Figure 18. However, the upload procedure is similar as previously mentioned.

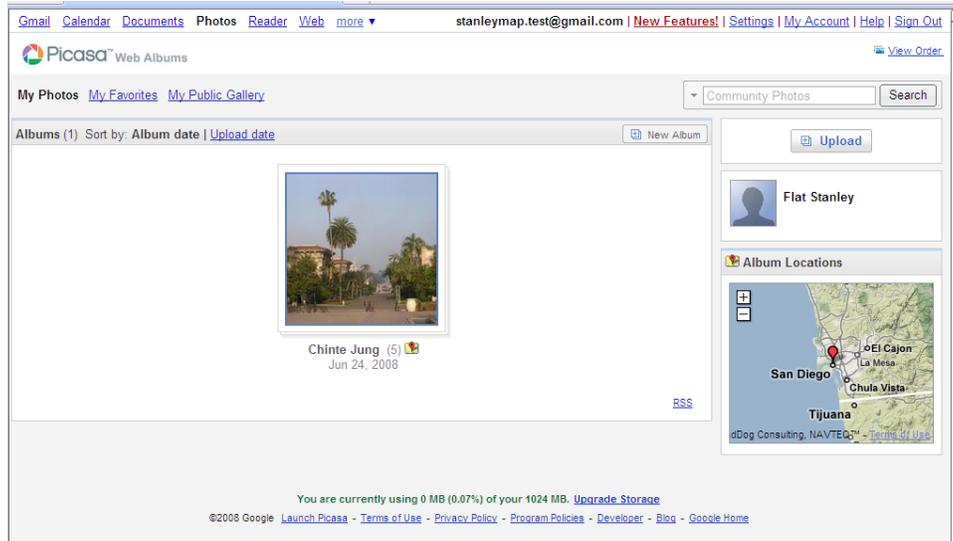


Figure 18: If there is already an album in Picasa, this screen may be shown.

By clicking the “Upload” button, as shown in Figure 18, a window will pop-up, as shown in Figure 19. If we want to upload photos into an existing album, we can select the album and “add photos” to upload photos, as shown in Figure 20.

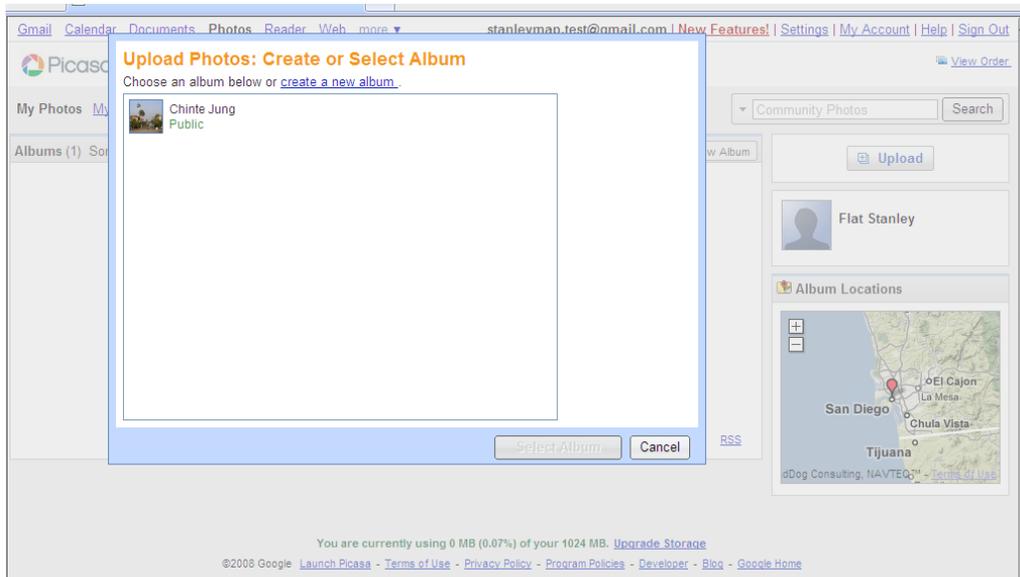


Figure 19: Create a new album or select existing albums



Figure 20: After we select an existing album, we can use “Add Photos” to upload our photos into Picasa.

Or, if we want to create a new album (i.e. it’s for another student to upload his/her photos), we can click “**create a new album**”, as shown in Figure 19, and input album title, description, and place taken information. Do not forget to set this album for “Public”, so that everyone can enjoy it, as shown in Figure 21.

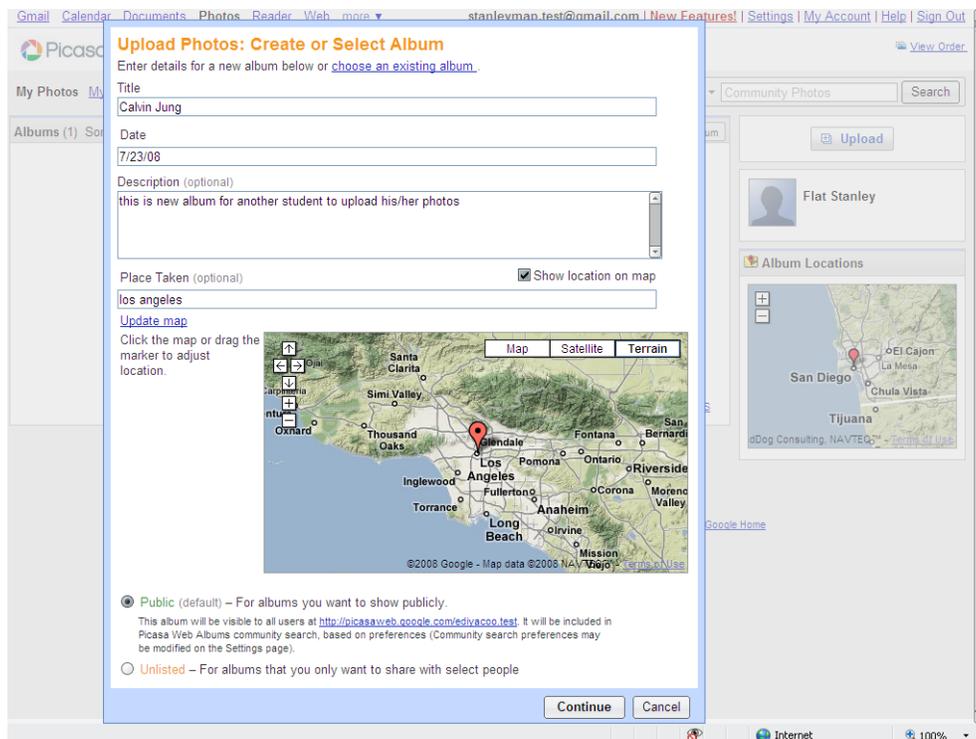


Figure 21: Create a new album and input related information.

Then, we can upload our photos into this newly created album by clicking “Add Photos”, as shown in Figure 22.

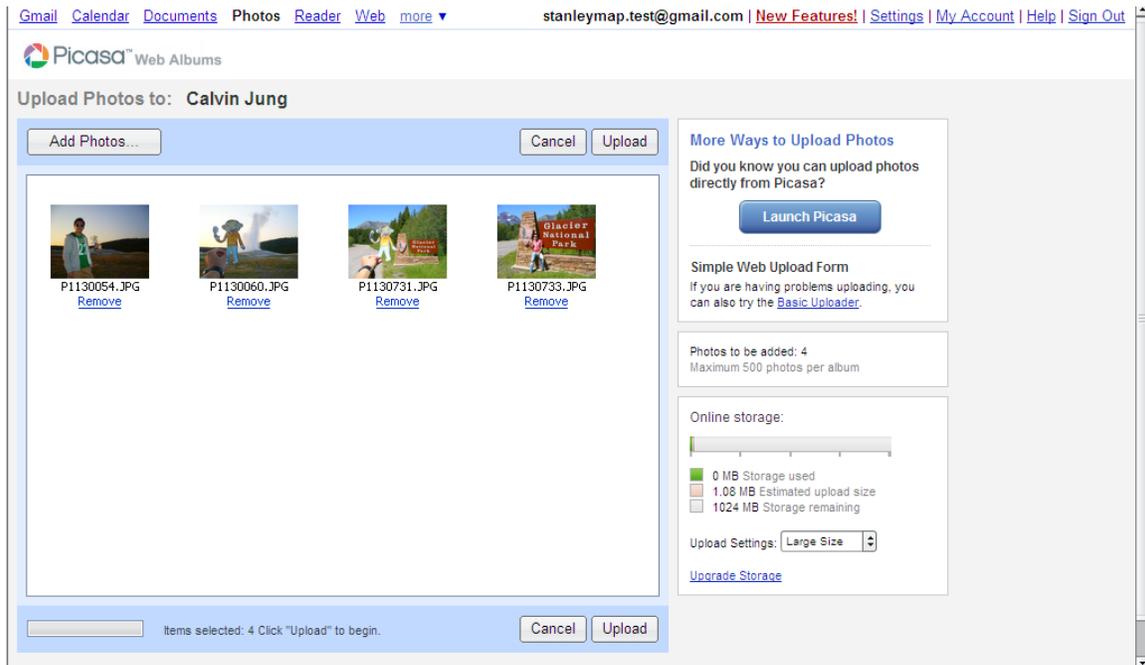


Figure 22: Adding photos into the new album

Finally, we will see there are two albums in Picasa. And, do not forget to edit captions and geo-tag photos in the new album, telling us where and what Flat Stanley has been up to.

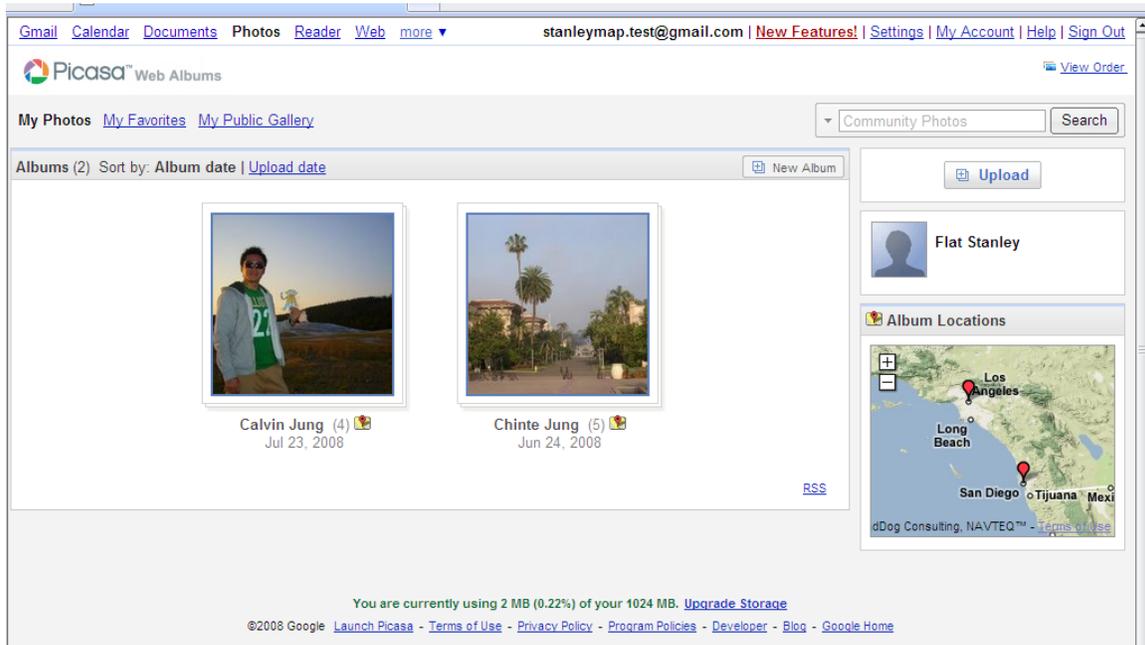


Figure 23: Finish creating a new album and uploading photos