

# Facebook / Flickr Style Image Region Based Tagging

A Google Summer of Code 2008 Proposal for Gallery

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## Abstract

Gallery's Free Software licence and its powerful module system have led to the development of plugins implementing just about every feature imaginable. One popular module, called simply "tags," gives users the ability to associate any number of text tags with an image, and then search through their photo albums by tag. This is a powerful and intuitive way to organize large groups of photos.

Two top photo sharing applications on the web, Flickr and Facebook, have similar functionality, but they have each taken this feature a step further. Both services allow users to associate a tag with a specific area of an image. Facebook uses this idea so that users can tag pictures of friends, and Flickr provides the ability to attach "notes" to user-specified regions of an image.

This project will implement for Gallery the best aspects of image region based tagging found on both Facebook and Flickr, along with features and improvements that will be exclusive to Gallery.

The core feature set will allow a user to associate any region of an image with a tag, a text note, or another user. This will include the combination of a solid backend and an intuitive user interface that will allow adding and editing tags and searching based on these tags.

Once this is in place, additional features to be investigated and implemented include: a suggestion & approval system so users without accounts can tag, integration of person tagging with social networking sites, blocks to display latest tagging activity, and other related features.

## Background

The idea of implementing this feature has been around in the Gallery community for quite some time, and several attempts have been made to develop it. On Gallery's "Feature Vote" page, "Labelling areas of images"<sup>1</sup> has been around since June 2004, and is currently 18th in the rankings. In the time since then, relevant discussion has centered around a topic on the forums entitled "Facebook like image tagging"<sup>2</sup>, and a Codex page for Gallery module "imagenotes"<sup>3</sup> was created. While quite a bit of discussion and thought-work has been put into the imagenotes module, it seems that comparatively little has been done in the way of implementation.

## Task Breakdown & Timeline

This project divides into several major tasks, each of which constitutes a phase of the timeline:

### 1. Discuss and determine best design strategy

*April 21 – May 26 [5 weeks]*

In collaboration with the other developers who have put work into this feature and the core Gallery developers, I will decide on the best implementation strategy for this feature. Major questions to address:

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<sup>1</sup>Tracker #972082

<sup>2</sup><http://gallery.menalto.com/node/47274>

<sup>3</sup><http://codex.gallery2.org/Gallery2:Modules:imagenotes>

- (a) Should image region based tagging be written into the existing “tags” module or does it constitute its own separate module? If it is separate, how should the two modules interact?
- (b) What is the best storage strategy for the tags to allow for efficient searches and queries?
- (c) Is it worthwhile to support both longer notes and shorter tags?
- (d) What are the details that must be considered for proper Gallery integration (user privileges, theming, admin UI, etc.)?

Deliverables for this Phase:

- Detailed feature specification, prioritized into “must have,” “should have,” and “may have”
- High level design and implementation strategy
- Database schema for tag and note storage

## 2. Proof-of-concept prototype of Fotonotes™ in Gallery2

*May 26 – June 2 [1 week]*

Fotonotes is an open source standard, specification, and collection of scripts for annotating images that provided the inspiration for Flickr’s implementation of image region based tagging.<sup>4</sup> In the first week of coding, I will integrate a simple Fotonotes implementation into Gallery2 that provides the default Fotonotes interface and stores the annotations in JPEG EXIF headers (as Fotonotes does by default). This will provide a basic working prototype up-front that can facilitate discussion as development continues.

Deliverables for this Phase:

- A basic working implementation of Fotonotes in Gallery2

## 3. Database tag storage and preliminary Gallery integration

*June 2 – June 23 [3 weeks]*

Fotonotes claims that it provides “stub code for alternate storage strategies (e.g., database).” Using this code and the database schema from Phase 1, I will modify the prototype from Phase 2 such that tags are stored in a database backend. This will involve modification of the PHP callback code in Fotonotes. In the process of doing this, I will begin to modify the Fotonotes code to conform to Gallery standards, which includes details like style and variable names, but also larger issues like conforming to Gallery’s API calling standards and MVC design.

Deliverables for this Phase:

- An implementation of the database schema from Phase 1
- A modified prototype that stores tags in a database backend
- Modified Fotonotes code that conforms to Gallery’s standards

## 4. Continued Gallery Integration

*June 23 – July 21 [4 weeks]*

In this phase I will begin work on all of the peripheral tasks needed to make this feature work properly with the rest of the Gallery paradigm. This includes writing code for identifying the presence of tags on images in all of the different available views, creating and checking for user privileges, writing an admin interface, and doing anything else that was identified in Phase 1 to properly integrate this new feature into Gallery. At the end this phase I hope to be able to release a beta version of the new feature to the Gallery community for testing and feedback.

Deliverables for this Phase:

- Tag views for including on different views
- Integration with user privileges system
- Admin interface with exposed relevant settings
- Other integration deliverables to be determined in Phase 1

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<sup>4</sup><http://www.fotonotes.net/>

- GSoC midterm evaluations (due July 7)
- Beta Release

## 5. Test, Review, Cleanup, Additional Features

*July 21 – August 11 [3 weeks]*

With the bulk of the implementation work done, I will work on getting all of the code well tested and ready for production. This will involve writing unit tests for all code, ensuring they pass, and performing code reviews with other members of the Gallery development community. I will give particular attention to security considerations and potential performance optimizations.

If in this Phase I find myself ahead of schedule, I can investigate some of the additional features mentioned in the abstract or ideas that came up during Phase 1 or elsewhere in the process.

Incorporating improvements from the code reviews and from user testing and feedback of the Beta Release, I hope to be able to make a Final Release by August 11, 2008, Google’s suggested “pencils down” date.

Deliverables for this Phase:

- Unit tests for all code
- Incorporated suggestions from users of the Beta Release
- Completed code reviews, patched security holes, performance optimizations
- Final Release

## Benefit to the Gallery project

This I believe is a valuable feature for Gallery to have because it is one of the most important parts of why people use Facebook and Flickr to share their photos online. The ability to tag objects in pictures, and especially people, is a powerful tool for making the photos as they are stored in Gallery a richer experience. This is the sort of feature that even the most non-technical of users would agree makes storing photos with Gallery more useful and more fun. This is why we don’t just print our photos and put them in books anymore.

## About the Author

I’ve been tinkering around with computers ever since I was 7 years old and realized that my dad’s 386 had games. I have taken that interest and enthusiasm for technology into my studies, and I will be graduating in May 2008 with a degree in Computer Science from Marquette University. My first real experience in programming for the web came in 7th grade when I decided to create “The St. Margaret Mary 7th Grade Home Page”, where I learned how cool MIDI background music could be and how popular the ability to put someone’s name up in lights on the Internet makes you with your classmates. In high school I was faced with the task of creating websites for three different student rock bands, and without knowing what CMS stood for I decided I would build a system using PHP and MySQL that allowed band members to update information on the site themselves. “Rubber Band 1.0” was an abomination of coding practice, but it worked and it was my first real experience coding a large system in PHP.

Since then, with many years of web development side projects and Computer Science classes under my belt, I have a much greater knowledge of programming, web standards, usability, and software engineering, and I’ve gained many of the sorts of skills that would make me fit for this project.

With respect to my motivation for taking on this project, I have several reasons to be incredibly excited about it. First of all, I’ve been a Gallery2 user for several years, having spurned Facebook and Flickr for not letting me store full resolution images and forcing me to let them have control of my personal files. I believe strongly in Free Software, and I believe the Gallery project has done a great job of proving that an open source project really can be the best out there. That being said, I myself have felt Gallery’s limitations as a user, and I feel that I’ve got the background and the skills to really be able to help improve it. I hope

that this project will be the opportunity for me to begin contributing to Gallery and open source software in general, which is something I hope to do for the rest of my life.

One of the challenges I am prepared to take on is making up for the fact that I do not have a lot of prior experience with the Gallery codebase. I have hacked around with themes before, implementing ThickBox support for my own personal installation at one point, but I have never done anything that dives into the core of Gallery's code. I believe that my extensive experience with large systems and with PHP/MySQL programming will allow me to learn quickly such that I will be able to write quality code for the Gallery project.