Art Trade Community

Bachelorarbeit
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im Studiengang Computervisualistik

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1 Introduction

1.1 What is the purpose of the Art Trade Community?

The community is aimed at creative people who have made up their own characters, including drawing them, and who would like to have other people draw those characters in their own style, in exchange for doing the same for other people. The exchange runs repeatedly in monthly rounds organised in a "secret santa" fashion, meaning no participant knows for whom they will draw, or who will draw for them.

One round comprises:

- Prior to the round, people sign up to it, providing contact information, as well as sources (information about their own characters, which will be used by the person who draws for them as basis for their image)
- At the start of the round, the admin assigns partners. Each participant in the round as an artist is assigned a different participant as a recipient, and receives a notification for whom they draw. Repeats should be avoided as much as possible; there should be as much time as possible between one artist drawing for the same participant.
- During the round, each artist uses the sources provided by their participant to draw an image for them, and uploads the finished image.

1.2 Current system

Currently the exchange is run in a Livejournal community. Livejournal is a blogging platform; a Livejournal community is a blog with several authors.

The organisation there takes the following shape:

The Administrator makes one post prior to a round, announcing when it will start and end, asking who will participate. Members of the community can then leave a comment on that entry with their contact information, and a link to a website where they keep information about their characters. They can also choose to leave a comment on another post instead, the "Autosignup list", if they want to be included in any future round.

Assigning recipients at the start of the round involves consolidating information from those two lists and separate records of previous rounds. Once the assignments are finished, the notifications are sent from an email client, which requires copying and pasting of participants' information.

Finished images are submitted by the artist posting a link to the image they uploaded on their own website, or a gallery website, to the community.

This system holds several problems.

Consolidating information between several files by hand is error prone, as is copying and pasting members' signup information.

Finding older images is not easy. While members should tag their images to show for which round, by whom, and for whom they were drawn, some forget this. Even when all entries are tagged, it can be cumbersome to find an image due to the blog entry format, which requires a lot of scrolling when compared to a gallery employing thumbnails.

The aims of this project in short are thus providing a website that supports the basic functions of the
exchange, while providing a better solution than the misused blog for:

- Maintaining a list of sources for each member
- Signing up to an upcoming round
- Support for the admin during assignment of recipients while avoiding frequent repetition
- Sending notification mails
- Submitting images, and clear presentation of those images in galleries

1.3 **Requirements in detail**

- Visitors must be able to create user accounts, providing an email address
  - The system must confirm that the email address is valid
- Registered users must be able to log in.
- Logged in users must be able to provide sources for other people to work from
  - There should be several options for providing sources
    - Provide only one link to a list with character maintained on their own website (current system; most practical for people who already have such a website)
    - Maintain character profiles on-site (practical for people who do not have their own website at all, also for people who would like to provide character profiles optimised for art trades)
    - Provide links to individual character profiles (useful for example if those profiles are a few images with longer descriptions in a big gallery; also useful if the characters are found on a site where several people besides the participant list character profiles)
- The admin must be able to add Rounds to the system, including a name, a start date, and an end date.
- Logged-in users must be able to sign up to any round that has not started yet.
- Logged in users should be able to add themselves to an autosignup list, and also to remove themselves from that list. While a user is on that list, they must be added to all future rounds automatically.
- The system must provide a way for the admin to assign recipients.
  - The admin must be able to remove people from a round before assigning partners (A user who has not completed an assignment from a previous round should not take part in another round until they have completed their prior assignment.)
  - The system must provide information to the admin regarding who drew for whom in previous rounds, to assist with assignments in this round, to minimise repeatedly assigning the same people to each other.
  - The system must keep track of assignments, both those that have not been fulfilled yet, and those that have been completed.
  - The system must provide functionality to send notification emails to the participants of a round, informing them for whom they draw.
- The system should show a logged in user if they have an open assignment, and if they have, provide them with a link to the sources they need to work from.
- A logged in user must be able to edit their profile information.
  - If a user has changed their email address, the system should confirm if that email address is valid.
- A logged in user must be able to add, remove and edit the sources they provided
- It is desirable for them to be able to convert between different types of sources (e.g. turn a link
to an external profile to one maintained inside the system).

- It is desirable for them to be able to temporarily hide a source from public view (for example if they have received several images of the same character, and would like the next artist to chose another character to draw)

- The system must display a list of all sources a given user provided, with links to further information about each character.
  - It is desirable that it is possible to sort the list, in case the sources/characters belong to different groups (for example, a user might have some characters from a science fiction setting, and others from a medieval fantasy setting)

- A logged in member must be able to upload images, and add a title and description to them.
  - The system must keep track of which user drew which image, which image was submitted for which user, and for which round an image was drawn.
  - If a logged in user has an open assignment, the system should present them with an upload form that automatically attaches the information of for which user and for which round the image was uploaded.
  - If a user has a locally hosted character profile, they should be able to upload a reference image of that character. The user must be able to delete these images again.
  - It is desirable that a user can upload more than one image for one assignment.

- A logged in user must be able to edit the title and description of an image they uploaded.
  - It is desirable that a user can attach information about which character is shown in an image on any image they either uploaded or that was uploaded for them.
  - For this purpose, the system should offer a list of sources that the recipient of the image has in the system. In addition, there should be a way to enter a name, in case that character has no individual record (e.g. the recipient provided only a link to a list of characters)
  - The possibility of labelling an image to have more than one recipient is desirable.

- Submitted images must be displayed in galleries consisting of thumbnails, which link to one page per image.
  - The individual page for an image must show the image, its title, description, artist, and, if the information applies, recipient and round. It is desirable that the image also shows which character(s) are shown, if this information has been added to the image.
  - It must be possible to limit the gallery to show only images from a given round, by a given artist, or for a given recipient.
  - It is desirable that it is also possible to limit the gallery to all images a given artist has drawn for given participant (since the exchange has been running since 2007 already, repeated assignments happen), or all images that show a given character.

- The website should be interlinked, so that it is easy to find the user profile of an artist or recipient, a character profile, a certain gallery, etc.

- Logged in users should be able to leave comments on images.

- It is desirable that the system notifies artists of comments left on images they drew, and users of replies to comments they wrote.

- It is desirable that a user can opt to receive a reminder email a certain, individually chosen number of days before the end of a round if they are taking part in that round, but have not uploaded an image yet.

- It is desirable that a user can opt to receive a reminder email an individually chosen number of days before the start of a round, telling them if they are signed up to that upcoming round or not.

- It is desirable that the system displays members who have not received art from people who
are tardy, and that other users can volunteer to „adopt“ that assignment, that is, draw an image for the recipient without reciprocation.

- It is desirable that the system provides a way for members to contact each other.
- It is desirable that the system includes a forum.

2 Implementation

The system will be implemented using php and mysql.

The first problem to solve is how the information required for the system shall be organized.

2.1 Database Tables

This table contains information about each user, including contact information.

- id
- username
- shown name
- about
- website url
- website name
- password
- email address

Illustration 1: Simplified Class Diagram

2.1.1 Users

This table contains information about each user, including contact information.
2.1.2 Rounds

- id
- name (for example „January 2011“)
- start
- end

Start and end are timestamps. Comparing them with the current timestamp when the website is viewed is used to determine if a round is open for signup, running, or finished.

2.1.3 Pairings

The pairings table records who is supposed to draw for whom, and with which image that assignment was fulfilled. The columns are:

- ID
- round (rounds.id)
- artist (users.id)
- recipient (0 or users.id of a different user)
- image (0 or images.id)
- adoption (0, 1, or -1)

Round and artist are filled in with the round id and user id as soon as a user signs up for a round. The other fields (except for ID) are set to 0.

When a round starts, the admin assigns a recipient to each artist, which reflects in the database as updating the recipient value for a certain round/artist combination to the user id of the recipient. When the artist submits an image for an open assignment, the image value of that round/artist combination will be updated with the image id.

The recipient and image values can be used to determine if a round has officially started – if there's any recipient value for a certain round value, it has not started yet – or if someone has an open assignment still – if any image value for a certain artist is 0.

Adoption is usually „0“ (not an adoption). If an image is overdue, another user may volunteer to draw for the recipient. Volunteering creates a new record in the pairings table, with the same round and recipient value as the overdue one, with the volunteer's user id as artist value. This record will have a „1“ in the adoption column to mark it as a not compulsory assignment. In addition, the adoption column of the overdue pairing will be set to -1, which is used to remove it from the list of open-for-adoption pairings.

2.1.4 Images

- id
- filename
- title (may be empty)
- description (may be empty)
- artist (users.id of the user who uploaded it)
- artist_role (gift, own, both)
- submission date

**artist_role**

A given image can have two different functions, marked with the value of artist_role.

- Gift: This image was uploaded for a trade, and shows characters belonging to someone who is not the artist.
• Own: The image shows characters belonging to the artist; that means it's a reference image for other users to use as example for the looks of that character.
• Both: The image shows both characters belonging to the artist, and to someone else. (Occasionally someone decides to draw for a trade an image that shows one of the recipients' character meeting one of the artists' characters.)
[example: image by quoting_mungo]

2.1.5 Recipients

• image (image id)
• recipient (user id)
While the pairings table records who is assigned to draw for whom, the recipients table records for whom an image actually was drawn, or, to put it another way, who owns the characters in the image in question. This distinction is useful when a user decides to draw characters belonging to more than one recipient.

2.1.6 image_to_chara

• source_id
• image_id
This table links records from the images table to ones from the sources table. It is used to keep track of which character is shown in which image, which is used to built galleries showing images of a certain character. This is not simply part of the images table because one image can show several characters.

2.1.7 Sources

A source is either a character, or a list of characters.

There are four different kinds of sources. The table has the following fields:
• ID
• Name
• Owner (user_id)
• type (list, local, single, name)
• URL (may be empty for certain types)
• Blurb (a short description displayed in lists; empty if type is „name“)
• Profile (empty unless type is „local“)
• Parent (either 0, or ID of a source of type „list“)
A source of the type "name" has only an ID and a name. This record is only used to "tag" an image with the name of the character. The other kinds of sources are information provided by the recipient for the artist to work from.

A source of the type "single" (short for "Single Link") in addition to the above has optionally a blurb (a short description displayed when a list of all sources belonging to a user are shown), as well as an url (required). The url leads to a profile of a character that the recipient maintains on their own website.

A source of the type "local" has a short blurb, and a long profile. People who don't have their own websites with character information can thus host character descriptions at the project website.

A source of the type "list" has a blurb and may have a url. The url should lead to a list of character profiles. A list without a url can be used to group character profiles e.g. when a user has several separate settings.

### 2.2 Activities

#### 2.2.1 Registering

When a new user registers to the site itself, they need to enter a username, password, and an email address. A new record is added to the `users` table, containing the username and encrypted password, as well as an auto-generated id.

The email address is treated differently to make sure it is valid, and used by the person who signed up: In the table `new_emails` a new record is saved containing the id of the new account as well as the email address, and a hash generated from it.

A message is sent to the unconfirmed email address including a link to the confirmation script, with the hash in the query string. The confirmation script searches the `new_emails` table for the hash, and if it is found, it copies the email address from the corresponding record into the record in the users table with the matching users.id.

If there is no confirmed email address attached to an account, the member can log in, comment, and edit their profile, but they cannot sign up to exchange rounds.
2.2.2 Adding Sources

A source is either a character profile, or a list of character profiles. Per the rules, each member must provide references for at least two characters.

The minimum is adding one link to a list of characters the member maintains on their own website, or elsewhere.

They can chose to provide individual links to each character profile, or write character profiles hosted in the system.

When adding the information of an image, it is possible to mark that a certain character (a single link or local profile) is shown in that image. It is also possible to enter a name, in case, for example, the owner of the character only entered one link rather than individual profiles.

A user can change the type of a source freely between name, local, and single link – for example from name to single to expand a name someone else entered for them to a direct link to the character profile, or from local to name to „retire“ a character from the exchange without losing the „show all images of this character“ option.

It is also possible to assign a character to a list. In case someone has a lot of characters from several projects, they can thereby sort it into sections, and give a few words of information that's common to a certain group of characters.

Add link to a single character profile

Illustration 4: Example of an "add source" form
2.2.3 Creating Rounds

The admin can create rounds. This adds a new record to the *rounds* table. At the same time the system checks if any users are on the autosignup list (that is, if the value of the column „autosignup“ is 1 in their users record). If any users are found on that list, the system automatically signs them up at this time.

As soon as a round is created, a gallery site for it can be visited, where a list of signed up members as well as the start date can be seen.

2.2.4 Signing up to Rounds

On the „Sign up to Rounds“ page, if there is a round in the system that has not started yet, a signed-in member can fill out a simple form with two check-marks: One for the next round, and one for the Autosignup list. They can change their choice at any time before the new round starts (sign out of a round they signed up previously, sign out of a round they were added to since they were on the autosignup list, sign up again, etc.)

In the database, a record is added to the pairings table with the rounds.id as round and users.id of the person who signed up as artist, and recipient, image and adoption 0.

**Sign-up Central**

You have an open assignment from round January 2011 for amykcyrway.

**Upcoming: March 2011**

- Signup open until: 2011-03-01 08:00:05 (another 6 days, 11 hours)
- The deadline for images will be: 2011-03-31
- Sign up to this round: 
- Automatically sign up to future rounds: 

[Save]

*Illustration 5: Signup form, including a reminder of an outstanding image*

2.2.5 Creating Pairings

When the start date of a round has passed, the admin must determine who draws for whom in this round. These assignments should be made up so that frequent repeats are avoided, e.g. if member A has drawn for member B three months ago, they should, if at all possible, not draw for member B again this month. Of course each participant in a round must be assigned to exactly one other participant, each as artist and as recipient.

For this purpose, the system offers a form in shape of a matrix, with at the beginning the possibility to assign any participant to any other participant. The admin can „go back one round“, which will disable any pairings that have occurred in the round before, and repeat that for an arbitrary number of rounds.

The admin can also save one or more pairings, which will mark the other possible assignments in that column and row as unavailable. This is saved in the database by updating the recipient field of the record in the pairings table for the round and artist in question.

It is possible to *remove* a participant from the round entirely at any time (for example if they owe someone an image from a previous round still), or to *clear* someone's pairing for the round that is
currently in the works. Removing them removes the corresponding entry in the pairings table, clearing the assignment merely sets the value of the recipient column back to 0.

The underlying structure to check which pairings should be unavailable consists of two arrays, one for pairings in the round in the works, the other containing information who drew for whom in which round. When the matrix is displayed, nested loops check when one cell is displayed if within the chosen number of rounds the pairing this cell represents has occurred, or not.

Once all participants in a round have an assigned recipient, the admin can send a round-mail. This will have the same subject and start of the message, with the last line, „You will draw for [link]“ individually different for each participant. [link] will be replaced to a link to the profile of their recipient, where information about their characters can be found.
2.2.6 Uploading an Image

Upload an Image

Upload outstanding image

Submit your image for round ‘January 2011’ for amykyrway.
Choose a file to upload:
Title:
Description:

- Upload a reference image for one of your local character profiles.
  - Please pick your references carefully - you can always link to more offsite.

Illustration 8: Upload page while the logged in user has an open assignment

The Upload page checks if the logged-in user has any outstanding images – that is, records in the pairings table with this user's id as the artist value, and 0 as image value. If this is so, it displays a form for each of these outstanding assignments in which the round and recipient information is already determined, requiring the artist to only upload the image (and offering them opportunity to enter a title and description). This removes the risk of an artist entering incorrect or no information.

After the file is uploaded, the system checks if it is one of the supported file types (jpg, png, gif), and if it is below the maximum file size allowed. If the file type is acceptable, but the file size is too big, it informs the artist of this problem, displays the current size in pixels, and offers to shrink the image to a size the artist enters. If the image is a png file, the form also offers an option to convert it to png (since jpps are generally smaller than full colour pngs).

If the image file is acceptable, the system moves it to permanent storage and adds information about it to the database.

A new record with title, description, file name, artist and artist_role=giver is added to the images table.

The image value for the pairings record for this round, artist and recipient is updated to the id of the just added image.

A new record is added in the recipients table with the users.id of the recipient, and the newly added images.id.

In addition, the images.id is prepended to the file name of the image, to avoid accidental overwriting of an older file with the same file name, and the image is copied into a different directory, and this copy shrunk to be smaller than 150x150, to use as a thumbnail.
2.2.7 Editing Image Information

The user who uploaded an image or the recipient of an image (or an admin) can edit which character is displayed in an image.

When the „edit image“ form is displayed, the system checks whose characters are in the image – the artist if the artist_role value is not „gift“, and any recipient according to the recipients table – and fetches all characters belonging to those users from the sources table. The form shows a checkbox for each character.

It is possible to enter a new character name in this form, too, in case there is no record for a particular character (e.g. if the recipient has only provided a link to a list of characters)

The artist in addition to that can edit the title and description of an image.

![Edit Image Information form. Shows an image submitted into the system for Toraneko, and a check list will all (2) of their characters.](Illustration)

2.3 Displaying Information

2.3.1 A Logged in User's outstanding art

When the site is viewed by a logged-in user, it shows in the navigation either a message saying they have no open assignment, or it lists for whom the user is supposed to draw, and with what deadline.
A link to the recipients profile with sources list as well as a link to the image submission form is also provided.

This information is found by selecting from the pairings table all records in which the artist field is equal to the logged-in user's id, and the image value is 0.

### 2.3.2 Displaying Sources

To display all sources that belong to a given user, the system fetches all records from the sources table with the owner field equal to the id of the user. They are saved in a multidimensional array of the following structure.

```
List-id => {
  id=>list-id, url=>http://blah.com, title=>"example", description=>"short example",
  children {
    character-id => { character }
  }
}
0 => {
  children {
    character-id => { character }
  }
}
```

Single characters are put into this array using the parent value, that is, either the sources.id of the list they are assigned to (that is, list-id), or 0, if they are not assigned to a list.

Displaying all those sources is a loop over all lists, for each to display the title, url and description and to loop over its children, all characters assigned to that list.

If the only list is the one with id 0, that is, no characters are assigned to a list, only the characters are displayed. If there are other lists, an additional heading of „Characters not on a list“ is displayed.

*Illustration 10: Main page after log in. Note info about overdue art near the top of the sidebar.*
Name of List  [http://example.com](http://example.com)

blurb: This is an example list.

<table>
<thead>
<tr>
<th>Name of Character 1</th>
<th>Local Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>blurb</td>
<td></td>
</tr>
<tr>
<td>Images: 1 Reference - 1 by others</td>
<td></td>
</tr>
<tr>
<td>edit - change icon</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name of Character 2</th>
<th>Offsite Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>blurb</td>
<td></td>
</tr>
<tr>
<td>Images: none here</td>
<td></td>
</tr>
<tr>
<td>edit - change icon</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name of Character 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Images: 1 by others</td>
</tr>
</tbody>
</table>

Illustration 11: Sources, as shown to anyone but their owner. One source of type "list", one each of the other types, attached to that list

Name of List  [edit](http://example.com)

blurb: This is an example list.

<table>
<thead>
<tr>
<th>Name of Character 1</th>
<th>Local Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>blurb</td>
<td></td>
</tr>
<tr>
<td>Images: 1 Reference - 1 by others</td>
<td></td>
</tr>
<tr>
<td>edit - change icon</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name of Character 4</th>
<th>Local Profile hidden</th>
</tr>
</thead>
<tbody>
<tr>
<td>blurb</td>
<td></td>
</tr>
<tr>
<td>Images: none here</td>
<td></td>
</tr>
<tr>
<td>edit - change icon</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name of Character 2</th>
<th>Offsite Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>blurb</td>
<td></td>
</tr>
<tr>
<td>Images: none here</td>
<td></td>
</tr>
<tr>
<td>edit - change icon</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name of Character 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Images: 1 by others</td>
</tr>
<tr>
<td>edit - change icon</td>
</tr>
</tbody>
</table>

Illustration 12: Sources, as shown to their owner, including links to edit or to upload an icon, as well as a source of type "local" that has been hidden.

**Circle of Many Faces**

Fantasy story, setting vaguely inspired by English/French/Spanish colonization of Caribbean.

<table>
<thead>
<tr>
<th>Lin</th>
<th>Local Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>A female member of the Clarita Island Guard, Li’s story is a mystery even to her friends. More physical than most women and possessing an accent that does not match her face, Li is lying low on the ex-criminal haven of Clarita Island.</td>
<td></td>
</tr>
<tr>
<td>Images: 2 Reference - 2 by others</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sam</th>
<th>Local Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sam lives on Clarita Island with his sister, Asilma. A twin of curse, he is only vaguely aware of what this means to him and his sister. He works as an herbalist and sells medicines. He is in love with his best friend, but not permitted to be with her.</td>
<td></td>
</tr>
<tr>
<td>Images: 1 Reference - 2 by others</td>
<td></td>
</tr>
</tbody>
</table>

Illustration 13: Real data example of sources, including icons.
2.3.3 Displaying a gallery

A gallery displays thumbnails of images fitting conditions included in a query string. If only one image if found by a query string, it forwards to that one image, rather than displaying a gallery with one thumbnail.

Query: adoptions

This is a special gallery. It displays any images that were drawn by volunteers to fill in for someone who did not submit an image they were assigned to draw.

Query: own

This is a gallery of reference images, that is, images which show characters owned by the artists. own=[users.id] displays all reference images by the given user only.

Query: round=[rounds.id]

Shows all images that were submitted to the given round.

Query: by=[users.id]

Shows all images drawn by the given user.

Query: for= [users.id]

Shows all images drawn for the given user by others.

Query: of= [sources.id]

Shows all images drawn of a given character.

The round, by, for, and of queries can be combined, for example round=53&by=1 will find all images (usually 1) which user 1 submitted for round 53; by=1&for=3 will display all images drawn by user 1 for user 3. If by and for have the same value, the viewer will be forwarded to own=users.id.

This is achieved by adding to the „SELECT“ part of the MySQL query string and saving the name of the needed table for the „FROM“ part of it in an array, from which the complete query can be constructed.

If a „gallery“ found by such a query would contain only one thumbnail, the image page is displayed instead.
2.3.4 Displaying an image

File name, title, description and owner are drawn from the image table directly, recipients from the recipients table, characters from the image_to_chara table.

Illustration 14: Gallery with query "by=1&for=8" - note dropdowns in sidebar to control which gallery is shown.

2.3.5 Related Links dropdown menus

The „Related Links“ dropdown navigation shows up on pages that relate to individual users or characters: User profiles, character profiles, galleries including the relevant users.id or sources.id, images by or for the user, or of the character. They enable quickly navigating between profiles and galleries.
2.4 Additional Functionality

2.4.1 Image Comments

Image comments are saved in a table named comments, with the following fields:
- id
- image_id (images.id)
- comment_id (0 or comments.id)
- user_id (users.id of the user who wrote the comment)
- submissiontime (timestamp)
- text (the actual comment)

Comment_id is 0 for a comment referring directly to an image. If a comment was left as a direct reply to another comment, this field holds the id of the parent-comment.

To display a list of all comment on an image, it first selects all with a given image_id, and comment_id=0, saving them in an array. Then for each comment it searches the database for any replies, adding them to the comment in a sub-array, and recursively searches for further replies to all comments found in this way.

### Comments

<table>
<thead>
<tr>
<th>Comment by Anke Wehner left on 2010-12-30 09:20:27</th>
</tr>
</thead>
<tbody>
<tr>
<td>I really like the structure of the sky. The colours in general worked out really nice.</td>
</tr>
<tr>
<td>reply — edit</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comment by kuroiyousei left on 2010-12-30 09:22:53</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thanks! I thought so too; actually, the colors are kindof the only reason I like this piece at all XD</td>
</tr>
<tr>
<td>reply</td>
</tr>
</tbody>
</table>

Illustration 17: A thread of two comments
2.4.2 Email Notifications

Users can choose to have reminders about their status sent, and choose at what time, relative to the end of a round, these are sent. Information about this is saved in the table email_settings, which has the following fields.

- user_id
- type (imageforme, commentforme, reminder, status)
- type_id
- interval (at the moment this is always „immediate“, plans to support „daily“ and „weekly“ in future)

If a user wants to receive an email whenever a comment is left on one of their images, a record with their users.id and type = commentforme is added to this table. (type_id is 0)

If a user wants to receive an email whenever a new image is uploaded for them, a record with their users.id and type = imageforme is added to this table. (type_id is 0)

If a user wants to receive an email a certain number of days before a round ends if they have not yet submitted their image for this round, a record is added with their users.id, type = reminder, and type_id = number of days before the round ends.

If a user wants to receive an email a certain number of days before a round starts, reminding them if they are signed up to that next round or not, a record is added with their users.id, type=status, and type_id = number of days before the round starts.

The form to sign up for these notifications is set up so that the number of days is at most 15 and at least 1.

**Send me an email...**

- When an image is uploaded for me.
- When someone comments on an image I uploaded.

Reminder for Submissions:

3. □ days before a round ends, IF I have not submitted an image I promised.
   (Counts both round entries and pledged adoptions.)

Status/Signup Reminder:

4. □ days before a round starts, tell me if I'm signed up, and if I owe any images still.

[Save Changes]

*Illustration 18: Notification subscription form. The drop-downs have the numbers 1-15.*

The „reminder“ and „status“ emails are checked by a script that runs once a day via cronjob. It calculates how many days there are from now to the start of the next round/end of the current round, pulls out of the email_settings table any records with a matching number of days, checks the applicable status of the member in question, and sends the mails.
2.4.3 Adoptions

It happens that an artist who signed up for a round does not complete their image on time. In that case, the artist may not take part in any round until their assignment is completed.

The system displays a list of people with overdue assignments. Other users can volunteer to fill in, so that the recipient receives an image for that round, even if the late artist never returns.

<table>
<thead>
<tr>
<th>Round</th>
<th>Recipient</th>
<th>Overdue</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 2009</td>
<td>kuroiyousei</td>
<td>old user</td>
</tr>
<tr>
<td>January 2011</td>
<td>amykcyrway</td>
<td>Anke Wehner</td>
</tr>
<tr>
<td>October 2010</td>
<td>kuroiyousei</td>
<td>old user</td>
</tr>
<tr>
<td>April 2007</td>
<td>kuroiyousei</td>
<td>old user</td>
</tr>
<tr>
<td>February 2007</td>
<td>Eliza</td>
<td>old user</td>
</tr>
<tr>
<td>April 2010</td>
<td>shinmaxwell</td>
<td>old user</td>
</tr>
<tr>
<td></td>
<td>Volunteered</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Submit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lychnobia</td>
<td>volunteered</td>
</tr>
<tr>
<td></td>
<td>Anke Wehner</td>
<td>completed an adoption image</td>
</tr>
<tr>
<td></td>
<td>orongish</td>
<td>completed an adoption image</td>
</tr>
</tbody>
</table>

All entries shown are from rounds which ended in the past, and an entry in the pairings table with image=0 (no image submitted).

The first entry had not been adopted (pairings.adoption=0), and the image is owed by someone but the logged in user, thus allowing to volunteer.

The second entry has not been adopted, but represents an image owed by the logged in user, thus allowing to submit directly.

The third entry has been adopted – in the original record with „old user“ as artist, the adoption value was set to -1 to mark this, and another entry with lychnobia as artist and adoption set to 1 was added to the pairings table.

The following entries have been adopted and images by the volunteers completed.

An entry it removed from this site if the original artist comes back to submit the image, even if an adoption image had been submitted previously. (The adoption images stay in the gallery, though.)

2.5 Log-in and account creation with OpenID

As alternative to creating an account on the site, people can also log in using OpenID. This is an open source protocol for authentication.

Example: Someone uses their Livejournal account as OpenID identifier, that is, enters username.livejournal.com in the appropriate log in field. The system asks Livejournal if this person is really logged in to the provided account. If this is so, Livejournal returns a positive reply, and the art trade system logs the user in.

The system then treats the identifier as username, and checks if an account with the username „username.livejournal.com“ exists already in the users table. If it does, the user is logged in.

Otherwise, a new account with that username is created. No email or password exist for that account. Identifying with OpenID replaces the password. The user can comment and create a profile, but to take part in exchanges, they need to provide a valid email address.

The LightOpenID library was used in implementation.
3 Result

The system went live at characterartexchange.com in the second half of December. People submitted images for the December round (which had been started on Livejournal) on the new website. The January round has been completed entirely on the new site, and the February round is in progress. New members who have not taken part in the exchange on Livejournal have joined.

Setting up the new round took markedly less time (~15 minutes for January compared with ~40 minutes for December, despite there being 8 rather than 5 participants), particularly since it was easier to retract steps.

The galleries are more compact and show thumbnails of all images, making it easier to scan for a certain image. Compare:

![Illustration 20: November '10 gallery on the new site](image-url)

![Illustration 21: November '10 submissions on the old site (Livejournal), normally requires scrolling to see all](image-url)
3.1 Check against detailed requirements

- Visitors must be able to create user accounts, providing an email address. - done
  - The system must confirm that the email address is valid. - done
- Registered users must be able to log in. - done
- Logged in users must be able to provide sources for other people to work from. - done
  - There should be several options for providing sources. - done
    - Provide only one link to a list with character maintained on their own website. - done
    - Maintain character profiles on-site. - done
    - Provide links to individual character profiles. - done
- The admin must be able to add Rounds to the system, including a name, a start date, and an end date. - done
- Logged-in users must be able to sign up to any round that has not started yet. - done
- Logged in users should be able to add themselves to an autosignup list, and also to remove themselves from that list. While a user is on that list, they must be added to all future rounds automatically. - done
- The system must provide a way for the admin to assign recipients. - done
  - The admin must be able to remove people from a round before assigning partners. - done
  - The system must provide information to the admin regarding who drew for whom in previous rounds, to assist with assignments in this round, to minimise repeatedly assigning the same people to each other. - done
  - The system must keep track of assignments, both those that have not been fulfilled yet, and those that have been completed. - done
  - The system must provide functionality to send notification emails to the participants of a round, informing them for whom they draw. - done
- The system should show a logged in user if they have an open assignment, and if they have, provide them with a link to the sources they need to work from. - done
- A logged in user must be able to edit their profile information. - done
  - If a user has changed their email address, the system should confirm if that email address is valid. - done
- A logged in user must be able to add, remove and edit the sources they provided. - done
  - It is desirable for them be able to convert between different types of sources. - done
  - It is desirable for them to be able to temporarily hide a source from public view. - done
- The system must display a list of all sources a given user provided, with links to further information about each character. - done
  - It is desirable that it is possible to sort the list, in case the sources/characters belong to different groups. - done
- A logged in member must be able to upload images, and add a title and description to them. - done
  - The system must keep track of which user drew which image, which image was submitted for which user, and for which round an image was drawn. - done
  - If a logged in user has an open assignment, the system should present them with an upload form that automatically attaches the information of for which user and for which round the image was uploaded. - done
  - If a user has a locally hosted character profile, they should be able to upload a reference
image of that character. The user must be able to delete these images again. - done
  ◦ It is desirable that a user can upload more than one image for one assignment. - PARTIAL – the database supports this, but there is no way to enter the information yet.
  • A logged in user must be able to edit the title and description of an image they uploaded. - done
    ◦ It is desirable that a user can attach information about which character is shown in an image on any image they either uploaded or that was uploaded for them. - done
    ◦ For this purpose, the system should offer a list of sources that the recipient of the image has in the system. In addition, there should be a way to enter a name, in case that character has no individual record. - done
    ◦ The possibility of labelling an image to have more than one recipient is desirable. - PARTIAL – the database supports this, but there is no way to enter the information yet.
  • Submitted images must be displayed in galleries consisting of thumbnails, which link to one page per image. - done
    ◦ The individual page for an image must show the image, its title, description, artist, and, if the information applies, recipient and round. It is desirable that the image also shows which character(s) are shown, if this information has been added to the image. - done
    ◦ It must be possible to limit the gallery to show only images from a given round, by a given artist, or for a given recipient. - done
    ◦ It is desirable that it is also possible to limit the gallery to all images a given artist has drawn for a given participant, or all images that show a given character. - done
  • The website should be interlinked, so that it is easy to find the user profile of an artist or recipient, a character profile, a certain gallery, etc. - done
  • Logged in users should be able to leave comments on images. - done
  • It is desirable that the system notifies artists of comments left on images they drew, and users of replies to comments they wrote. - done (users can opt-in)
  • It is desirable that a user can opt to receive a reminder email a certain, individually chosen number of days before the end of a round if they are taking part in that round, but have not uploaded an image yet. - done
  • It is desirable that a user can opt to receive a reminder email an individually chosen number of days before the start of a round, telling them if they are signed up to that upcoming round or not. - done
  • It is desirable that the system displays members who have not received art from people who are tardy, and that other users can volunteer to „adopt“ that assignment, that is, draw an image for the recipient without reciprocation. - done
  • It is desirable that the system provides a way for members to contact each other. - MISSING
  • It is desirable that the system includes a forum. - MISSING

3.2 Problems and further plans
The feature to add multiple recipients to one image needs to be finished. This includes making sure that the „edit image“ form displays all recipients and their characters.

A form that allowed logged in users to upload additional images, picking the round and recipient freely, was initially part of the site. However, people using this to upload their regular submissions from previous rounds, rather than only additional rounds, caused problems. (The regular process would have been to wait for the admin to create pairings records and upload images into these „blanks“, which was not explained clearly.) The form should be re-worked to show a logged-in user for whom they drew in which round, and letting them submit a second image to these assigned and completed pairings.
Two people have accidentally used the form to upload an exchange image to upload a reference image, so apparently the upload site must be structured better.

One of the new members misused the types of sources, entering each individual profile as a type „list“ and attached links of type „single“ to one, linking to additional images of that character. Another entered a single character as a list and pasted urls linking to two images into the blurb. This suggests that either things are not explained clearly enough on the website, or adding another kind of source, namely a link to an image, so be attached to a single character, might be desirable.

While the basic functions work, at the moment the website is not much of a community, in the sense of a place for its members to interact. A forum and messaging system (or at least email form) are required here. The code for image comments should be adaptable to base a forum on.

Further desirable features include

- Comprehensive statistics about a user's images and characters
- Free tags on images, and galleries based on those
- Option for users to add multiple own websites to their profiles, and to search users based on which websites they linked (e.g. „show me all users who have given a link to their flickr gallery“)

4 Sources


Mewp: LightOpenID Library. http://gitorious.org/lightopenid#more; retrieved: September 2010