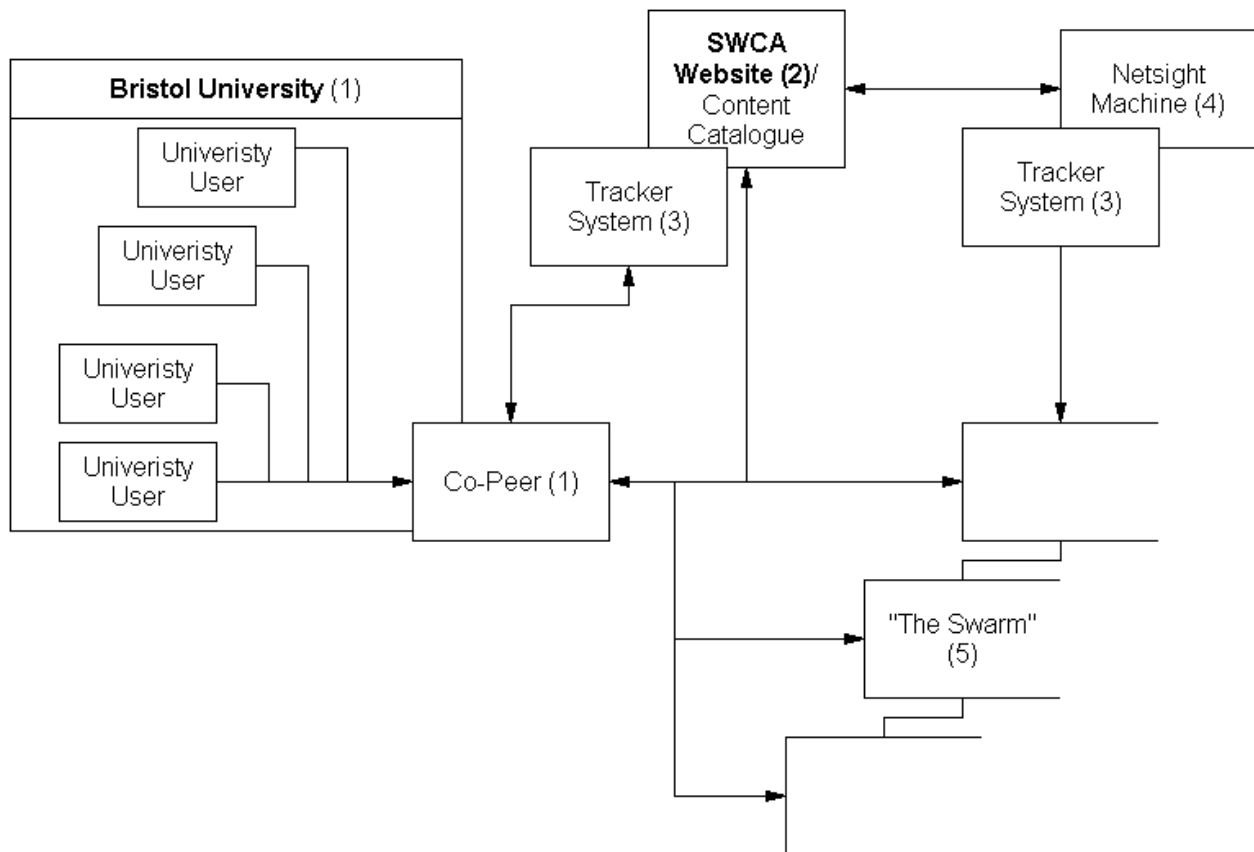


Catbot Technical Design

System Design

The system looks like;



1 – Co-peer (CO) - Bristol University – This consists of a co-peer, installed on a set computer that can connect with the Swarm both to offer content to the Swarm and to retrieve content for users from the Swarm who have requested it. It is based on the **Azureus System**. The users interact with the Co-peer via a web-interface. The users will publish material via the co-peer – how this is to be done is not yet decided. Users interact with the co-peer via the Catbot **Intranet (CatIN)** and **Publishing System (PS)**.

2 – Catalogue Website - The SWCA website contains a catalog of material that is on the system. This material is held on the co-peer. Anyone can search the catalog for content then download it to their machine. The SWCA site hosts the torrent files of published material.

3 - The server that hosts the SWCA website also hosts a Tracker to the material on the co-peer. We could also investigate adding a tracker to the Netsight machine (see below).

4 – The Netsight machine takes copies of all the material added to the co-peer to speed up uploads. It could also have a tracker. It could also look to mirror requests from the co-peer to the swarm for material to speed up downloads.

5 - "The Swarm" is the term given to the larger community of p2p torrent users.

The Intranet (IN)

The Intranet (IN) is the part of the CatBot system that users from within the Network use to access the Co-Peer (CO). The IN, in its default view displays information to the users about what the CO is up-to. This is namely: information about the CO and how it is doing and the IN also displays information about files the CO is downloading and publishing.

IN Information

Co-Peer Information (For Co-Peer)

The IN would have (either on a tab or elsewhere on the screen) some information that summarises what the CO itself is how to and how it is doing. This information would be:

- **CO Name** – We will need to name (even if it's just the IP address or hosting machine name) the CO for ease of use and reference.
- **Connection to the Swarm** – Is the CO connected to the Internet? Yes/No (Suggest icon system like Appendix I).
- **Firewall** – Is there a firewall active? Is the fire wall blacking the CO? (Note: See Azureus client, it has icons to say if Firewalled and if TCO/DHT issues are there.)
- **Total Upload Speed** – The speed of the total connection available for upload.
- **Current Upload Speed** – The current speed of the connection available for upload.
- **Download Speed** – The total speed of the total connection available for download.
- **Current Download Speed** – The current download speed of the connection available for download.
- **Hardrive Capacity**- The Total/Current and so % free space on the CO.

Downloaded File Information (Per File)

Also on the IN is a list of the files the CO is currently downloading. Design for this needs space to have practically unlimited numbers of files listed, so some type of scrolling arrangement. When a user goes to the co-peer page they will see a list of all the files being downloaded: For each file it lists the following information:

- **File Connection** – Use the existing Azureus Health Icon structure, though we could re-do the icons from the Azureus 'Health of the connection' (See Appendix I).
- **File Name** – Name of the file being downloaded.
- **File Size** – Total (in MB) of the completed file.
- **Total Downloaded** – Total (in MB) of the file that has been downloaded.
- **Done** – Percentage of the file downloaded.
- **Download Rate** – Of the file.
- **Requester** – User who has requested the file (email address). This is the email address of the person.
- **Amend Download:** Buttons to Pause/Cancel a downloaded file.

Published File Information (Per File)

The IN would have (either on a tab or elsewhere on the screen) a list of the files the CO is currently hosting as published torrents. Design for this needs space to have practically unlimited numbers of files listed, so some type of scrolling arrangement:

- **File Connection** – Use the existing Azureus Health Icon structure, though we could re-do the icons, as discussed for *Downloaded File Information*.
- **File Name** – Name of the file being published.
- **File Size** – Total (in MB) of the file.
- **File License** – Of the published file.
- **File Requests** – Total peer requests for the file.
- **Download Rate** – Of the file.

IN Functionality

From the IN, the user can:

- **Download File:** Request a file we downloaded.
- **Amend Downloading File:** Stop/Cancel a downloading file.
- **Get Downloaded File:** Copy a downloaded file from the CO to a defined own PC/user area.
- **Delete Downloaded File:** Delete a downloaded file from the CO.
- **Publish File:** Request a file be published.
- **Amend Published File:** Stop/Cancel or Delete a published file.
- **Copy Published File:** Copy a published file from the CO to a defined own PC/user area.

The IN needs to have the following buttons on its front page:

- Download File
- Get Downloaded File/s
- Delete Downloaded File/s
- Publish File/s
- Amend Published File/s
- Copy Published File/s

Download File

This is where a user wishes to download a torrent. The design for this would be a box/button on the front page and the user would not need to leave it to add a torrent. The use of this would require the user to:

1. **Open Torrent File** – Either via an 'Open' button or there is a box to put in the URL of the torrent.
2. **Check Torrent File** – The url of the torrent file is cross referenced with the Clean Peer module of the CO to ensure that it is ok to get a torrent from this source.
3. **Add Torrent to CO** – This sends the torrent file info to the CO when then opens the file and adds it to the *Downloaded File information* list.

Get Downloaded File/s

This allows the user to get downloaded file/s form the CO. Torrents downloaded to the CO will need to each be put in their own directories. Therefore this button will work in the following way, upon pressing the 'Get Downloaded File/s' button, a dialogue box opens:

1. **What file/s would you like?** - Opens a dialog box where the users can select (from the accessible folder on the CO – TBC add to CO) what directory or files in a directory they would like.

2. **Where would you like to put the file/s?** - Opens a dialogue box where the users selects the destination directory for the files.
3. **Transfer** – This button is grayed out until the user has put in the information above. Once this has been done, the button becomes active. The user can then click it and the files are transferred over the network as normal.

Delete Downloaded File/s

This allows the user to delete downloaded file/s form the CO. Therefore this button will work in the following way, upon pressing the 'Delete Downloaded File/s' button, a dialogue box opens:

1. **What file/s would you wish to delete?** - Opens a dialogue box where the uers can select (from the acessible folder on the CO – TBC add to CO) what directory or files in a directory they would like to delete.
2. **Delete** – This button is greyed out until the user has put in the information above. Once this has been done, the button becomes active. The user can then click it.
3. **Are you sure?** - A new dialogue box opens up to check if the user is sure. Opens from here are *Yes* (if clicked the files are deleted, and the text in the dialogue box appears when this is done to confirm this, 'File/s Deleted'). The other option is No, where the whole operation is canceled and the user returned to the front page of the IN.

Publishing System (PS)

This is the system that is used by the IN to publish files to the CO. It is the way that the institutions will publish their creative archives.

This process is done using a software wizard¹ (Nb: in some OS software these are called 'Druids'). The software wizard will guide the user though the stages of publishing a file:

1. **Login** – The user must login into the IN to be able to publish files.
2. **What is the name of the project /film etc. (or part of the project) you are publishing now?** - Assuming the publishing allows the putting up of multiple files in one go, we need an overall name of the project (or part of the project) being published.
3. **What License will you be publishing these files under?** - A drop down box of options for publishing taken from the CreativeCommons.org website.
4. **How many files are you looking to publish in this project?** 1+ - a drop down box to a set maximum (see above, if allow need to set an upper limit)
5. There is then a **Browse** button for the file to add the file.
6. For each file we ask the following: **What type of file is this?**- A drop down box with options Video/Audio/Other.
 1. If the user has selected '**Video**' here then we need to check about converting the video into a set format. So the user is given the question, **“How do you plan this video to be used?”** NB: The user option allows the user to select the extension from the list we have or select 'no change' indicating they wish to transfer the file as is. Options are:
 2. The following table is an initial outline for the filetypes and outputs, however, we are investigating this at the moment:

¹ [http://en.wikipedia.org/wiki/Wizard_\(software\)](http://en.wikipedia.org/wiki/Wizard_(software))

<i>Use</i>	<i>Codec</i>	<i>File Type</i>	<i>Recommended Software</i>
Easily Watched on any Computer	Xvid	AVI	VCL Media Player
Burned to a DVD or VideoCD	?	MPEG-4	?
Watched on a Big Screen/Projector	As is...	As is...	
Web Film/Upload to YouTube etc.	Xvid	AVI	VCL Media Player
Mobile Phones	?	3GP	-
PSP	?	PSP MPEG4	-
iPOD	?	MP4	-
User Option	-	-	-

3. If the user has selected '**Audio**', the user option is as above, or the options are:

<i>Use</i>	<i>Codec</i>	<i>File Type</i>	<i>Recommended Software</i>
Easily listened to on any Computer/Music Player	-	MP3 or OGG	?
Retained at the highest quality for re-use	-	WAV	?
User Option	-	-	-

4. If the user selects '**other**' from the **What type of file is this?** Question, then it leaves the file format as is.
5. For each file the user also needs to give the **Filename** they wish it to be called (or leave blank for the same as the browse option.) This will differ to PSP videos which need conversion of file name to work.
7. The user can then add additional information for the torrent/website (all optional):
 1. Image (JPEG or GIF)
 2. Film Information (Text)
 3. Project Credits (Text)
 4. URL (Text)
 5. Contact Email (Text, we need to anti-spam this!!)
 6. Search keywords (text, separated by a comma)
 7. Project Category – This is a list of the genre (e.g. Drama, art etc.) that the files cover. Users can add new categories by clicking on an 'Add' tab.
 8. We then add from the upload information:
 1. Film License
 2. Number and types/format of files
 3. Suggested software user needs (URLs – linked to a database of recommended software that any registered user can edit).
8. **Error messages:** If the user tried to publish a file/s to the CO and there is not enough space, then the CO sends a message to the user to say so.

Co-Peer (CO)

This is the software installed on a single machine within the institution that acts as a peer to connect to the wider p2p swarm.

The CP needs to be linked to the IN so users can access its functions. Only the technical support people ever directly use the CP, normal users only interact with it via the IN. The CO needs to know the following things to inform the IN:

- CO Name – We will need to name (even if it's just the IP address or hosting machine name) the CO for ease of use and reference. This is done at setup of the CO and can only be changed by a technical support.
- The setup will also need to set the firewall and bandwidth information.
- See IN **above** for rest on CO information.

Torrent Check

The system with, before it allows any torrent to run (or just after, as long as it checks!) that the torrent URL comes from a list of approved torrent sites (see appendix).

Directory Structure

The CO is the storage for all the files on the network. This means that over time, a huge number of files will be added. The CO will need to use an auto system for filing. Suggested Directory structure is per month/year and project. As in each month a new dir is created, e.g. Jan07, then when a file is published, a new dir in the appropriate date folder is created with the files in.

Log Files

The CO needs to keep records of activity. Suggested Directory structure is per month/year and a text file dropped in each month to say – date/time/user and either project title or torrent URL of each download and publish request.

Catalogue Website

Front Page

The front page

- Top Downloads – Lists the project titles of the top 10 downloaded torrents, with a link that goes to a page listing the top 100 torrents.
- Search – searches through the catalog to find by keyword.
- Browse – by date, category, license, use (aka file type, so can search for mobile phone films)
- Recently Added – Lists the most recently added 10 files. This lists the project tile, the image (if added, else a default image) and first 5 lines of file information.
- Help! - Goes to a sub menu of:
 - What is CatBot
 - What is a torrent
 - How do I use this site
 - How to download
 - How to publish
- About CatBot

Per Torrent

Each torrent page has the following information:

- Project Name
- category
- Image
- license
- Credits
- Contact
- URL
- Contact
- Text
- Number of seeders/leechers (suggest displayed using same system in scoring as in Zen Dojo demo)
- Total number of downloads (number)
- Table of files/type/codec/recommended software links/file size and a total file size, e.g:

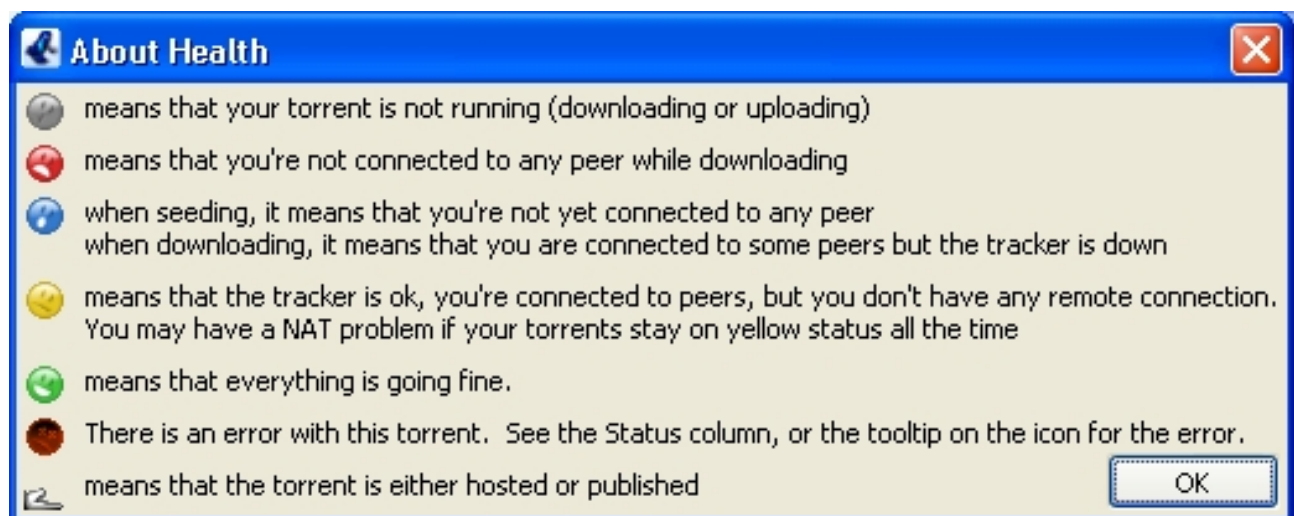
<i>File Name</i>	<i>File Type</i>	<i>Codec</i>	<i>Recommended Software</i>	<i>File Size</i>
breakcore_film	AVI	Xvid	VLC Media Player Xvid Codec	36 M
				36 M

BMEX Co-Peer Design

The BMEX Co-Peer will automatically download and seed popular torrents from the CatBot website. I suggest that this system is just a version of Azureus with a CO that downloaded every file added to CatBot website and then stores it.

Appendix

Appendix I – Health Icons



Appendix II – Recommended Software Manager

This is something only an admin can add, normal users can't. For each file type and codec we can add a list of software types and URLs so users can get the software needed to use the files. In the example above, when the user clicks on 'VCL Media Player' it will take the user to a page of CatBot with the following information displayed:

- Software Name
- Recommended for: (a drop down list of all codec and file types taken from what we add to CatBot in publish, you can only select one)
- URL
- Information – A helpful summary of what this software is for and information about it.

This information is held in a table that the admins can access and add to/edit. While you can't edit the list of file types codec here, you can add additional software to one file type or edit links/info an an existing recommendation.

Appendix III – User Manager

The user manager would be a self-administrated system that allows people to;

- Create a user name – The user name would be the same as their email. For this they need to provide an email address that is validated (e.g. @bristol.ac.uk)
- Re-set the password – by entering an email.
- Delete the username.

Appendix IIII – Approved Torrents

This would be a separate list of website addresses held on the Catalogue Website but only accessible to be edited by a higher level administrator, that has what websites torrents are allowed to come from, e.g. CatBot, LegalTorrents.org, Bittorrent.com etc.

Appendix V – Project Category Manager

This allows any user with a valid login to create Project Category for a published file. The list of existing ones would need to be retrieved from the CatBot Catalogue Website, or the user can select to 'add' a new category.