Xchanger®

Requirements Analysis Report

by

THYKEtech

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Xchanger®

1- Introduction:

“Xchanger as a public unified exchange server”

Purpose of the Xchanger project is building a unified exchange server providing public users services related to NNTP, Mail, Web and RSS. Although there are some companies those having similar services for public, ThykeTech©’s Xchanger collects all aspects of information exchange in its own body. Xchanger will have all its components strictly cross connected to each other making the users very easy with completely commanding their profiles, accounts, requests for several services. One will be able to look for his /her incoming which are emails both from friends, accompanies; also articles from the news servers that s/he is subscribed to. Moreover mail from email lists. In addition to these one will be able to see, near those above, requested RSSs from several provider.

Xchanger will also provide users to use their subscribed news groups and mail lists using RSS, but from different web pages which makes Xchanger more reachable than any other similar ones.

Xchanger will make the entire web your home…

2- Description of the Xchanger:

Since the earlier days of the Internet there have been news servers, email and email lists which have witnessed many evolutionary events in the history of the development of computers and software. Not every body knows but the first mention of Microsoft MS-DOS, IBM-PC, MTV, Sun Microsystems, Commodore 64 and many others were made in news servers. Although the time has changed, people still exchage their ideas using those old technologies , news servers and mail lists but wtih better interfaces and functionalities. Moreover a younger technology, RSS, has been widely used since several years.

ThykeTech©’s Xchanger will provide its public users with its new server, email list, email and RSS services.

Xchanger proposes giving its users individual accounts. Using their account users will be able send and receive emails. Also they will be able subscribe to mail lists ,ie mail groups. These are the services related to mailing which Xchanger will provide to its users.

Xchanger will also provide its users, using its accounts, subscribe to news groups.

Stated above that RSS is a new technology and Xchanger will also provide some RSS services which are not one way but the users will also be able to provide the system RSSs giving the destination in which their RSSs will be published. These destinations will be possibly one or more news groups. Using two way RSS feeding, people, not knowng about the world of Xchanger, will be included to it.

As ThykeTech© , we propose to make a very strictly cross connected structure that makes the Xchanger reachable and active not in one origin but active in various attention points. First of all any feed in the information database of Xchanger will be able to be reflected to any other location on the web. This will be done making all services provided by Xchanger know about each other. To illustrate, a mail to a user account will be able to be directly sent to a predefined news group if the owner of the account allows. Also the distrubution of the information in this way will be able to be restricted to some others if wanted according to criterions those will be asked from the user. Moreover the same action will be able to be done for sending this mail to mail lists.

Another not-in-existance way of distributing information will be using RSS. Again if the user wants, s/he will be able to deliver information to several web sites using the addresses that the Xchanger will provide. The distribution of information will not be restiricted to delivery from personnal acccounts but also will be able to be done from news groups and mail lists if wanted.

Distribution of information ,upto now, was from databses of Xchanger. But any user will be able provide her/his RSS feed to Xchanger and it will be published in predefined locations on the system.

Xchanger also proposes to make its users feel comfortable about reaching information that are sent to our databases in past times. Users will be given a tool for searching through the past posts if they were made ‘public available’. By this way finding an article in a news group will be no more looking for all ‘maybe’ posts.

One more innovation proposed to be provided by Xchanger will be collecting all attachments that are made to posts and, if allowed, by using the systems search engines, provide them to other users. By this way a one-way traffic of file sharing will be possible.

3- Scope:

Scope of the Xchanger is the superset of scopes of what Xchanger has as services, i.e. Scope of RSS services, scope of New Server, scope of Mailing & Mail Listing.

3-1 Scope of RSS Services:

In Xchanger, RSS services are proposed to be implemented in a two way manner. By saying 'two way', giving the availability of preparing and publishing their own XMLs to users is meant.

Users will be able to read RSS documents from Xchanger servers. These documents may include information those are compiled from the followings:

- Articles those are posted to groups to which the user is subscribed to. The user will be asked to determine the criterions for Xchanger to compile information for RSS document. These criterions may be all posts those are made to the group or posts those are posted by a number of specific writers.
- Mails those are new to the user's mailboxes. Again user will be asked to determine some criterion for Xchanger to compile information.
- Mails those are posted to mail groups to which the user is included in. User will be, also for this case, asked for some criterion.

At the end the user will be give an address to get RSS document from.

The innovative part of Xchanger about RSS services is that the users will be able to provide Xchanger system RSS documents. User will prepare the RSS document and will give the system the address of the source. Also user will be asked to specify the location of the publish location in Xchanger system. The location can be a news group, a mail group, a mail account or his/her profile page or some combination of these. To send the RSS feed to a news group or mail group the user should be subscribed to that group or if the location is a mail account the owner of the mail account should agree. User will be free about determining the content of the document. If the publish location of the document is either a news group or a mail group, if the content of the document is not related to the content of the group or if that document has some unacceptable word or etc., the feed will may be no longer taken by the decision of the owner of that mail group or the moderator of that news group. If the feed is taken by a mail account the owner of that mail account will be able to stop taking feed.

3-2 Scope of Mailing Services:

User, upon their request to join Xchanger system, will be given mail addresses that are unique to them. Using their mail addresses, they will be able to send and receive mails from others. The interface for mailing will include a text editor for user to type their messages using several extras such as, beautifying their messages using emotion icons to show what they cannot say but are, drawing and making simple paintings to describe things in their minds. Users will be able to save their incame and sent mails in different directories if wanted. If wanted user will be able to delete or move these directories to different locations in their accounts. If the quota of the user is short, the user will be able to download a directory completely, which will be zipped, and free their quota without losing their old posts. User will be given the option to filter their incoming mails. The user will simply be asked to determine

some criterion to determine the to-be-filtered mails. Those can be mails from some specific people or may be a time period. For finding past postings easily, according to sender, receiver, receive/send date, subject or content, user will be able to make search.

3-3 Scope of Mail Listing Services:

User will be able to join mailing lists. But to join one, one should have an email account already taken. By using mail lists users will be able to send mails to many people those are already joined to that mail list. User will be provided a different interface than his/her mail account interface, but user will be asked whether s/he wants those mails to be posted to his/her own mail account.

There will be an owner of each mailing group. They will be responsible for the well-being of the group. They will be responsible for new comers, either accept or reject their request for joining the mailing group. However there will some mail lists those are public, i.e. anybody having been joined to the Xchanger system will be able to join. Users will be able to search for posts. If the post that is being searched for is in a mail group which is public, it will appear in the results regardless of the users' having been already joined to that group or not. But if the post is in a group that is not of a public group, if the user is subscribed to that group, post will appear in the results, otherwise will not appear.

The users will be able upload attachments to their posts and these attachments will be available to all users those are subscribed to that mailing group and also, if the sender permits that attachment will be also available to any users who are in the Xchanger system. As will be described in the other parts of this document, Xchanger will provide its users a one way sharing of files. The above explained, availability of an attachment to all users, service will be handled using this one way file sharing.

3-4 Scope of News Server Services:

The other service provided by the Xchanger system is using its NNTP server. Users will be able reach Xchanger's news groups, subscribe to any of them, post and read articles. System will provide several ways to connect to its NNTP servers which are, via news reader like Thunderbird, Outlook and via WWW. If the user connects to NNTP servers using the Xchanger's WWW interface, s/he will be able to use searching, making attachments to articles and download others. If his/her news reader provides these functions, using those s/he will be able to do those above.

Xchanger also proposes to make its users able to connect to other news servers. By this way user of the Xchanger system will be able follow a number of other news groups they are subscribed to, getting the held of Xchanger . This service will help its users to collect their various contacts in a single location and reaching any of them will be easier and faster

than ever. To use this service, users will be asked for some information related to the news server to be connected. If needed, users will be asked to give the system their user names and passwords that they use in to-be-connected servers and 'without any doubt' this information will be safe in the system databases.

Another service to be proposed to be provided by the Xchanger system is, as shortly mentioned in above parts of the document, is making its users able to share files, but in a somehow restricted way. First of all, it will neither be a FTP service nor a complete file sharing service. It was described in the above parts that some attachments, if they are allow to, will be collected in the systems database. Then after, a user will be able search some files according some various criterions, such as date of upload, sender, receiver, name of the attachment etc and these searched files will be available for downloading.

4- General Specifications of the System:

4-1. User Profiles:

This section of report explains all technical terms which refer to the users.

The system is going to have below user profiles:

- System Administrator: General Manager of the News Groups, Mail-lists and WWW.
- Special News Group Owner: General Manager of Special News Group.
- Mail-Lists Owner: General Manager of the mail lists.
- Mail-Lists Moderator: Responsible for maintaining the mail-list members.
- Member: public people using the system.

4-2. Functionalities of the System:

This section of report explains all software requirements of the system.

System has two main parts which are news groups and mail-lists. Additionally, there are two parts related to them which are RSS specifications of the system and the integrity between news groups and mail-lists. System is going to have a service which is responsible for maintaining the communication between news groups and mail-lists.
Below, specifications of each main part are listed:

4-2.1 Specifications for News Groups:

- System is going to have a news server and any other hardware to maintain the news groups.
- Members are going to be served with many groups.
- Members are going to be able to access the groups via application programs (MS Outlook express, Mozilla Thunderbird etc.) and World Wide Web.
- A user-friendly interface on web is going to be implemented.
- Interface on the Web is going to include an administrator interface. He is going to have options related to news group operations. Closing and opening a news group are required.
- Administrator should be able to access information of members.
- On the web, member should be able to delete an article sent by him.

- Some news groups are required to be limited access groups. Only a list of members should be able read and write articles.
- Member should be able search specific articles. A search property is a necessity.
- Not all articles are kept in group. Article expiration is a necessity. However, articles in some groups never expire.
- An important point is that member should have options to ask for notification for some groups. These notifications are through e-mail.

4-2.2 Specifications for Mail-Lists:

- System is going to have a mail server supporting SMTP, POP3 etc.
- Each member is going to have a mail provided by mail server.
- A mail-list is going to have an owner who first created the list.
- Members may join several lists.
- Members may unsubscribe from lists.
- Member is going to be able to mail to a list.
- Only the owner can destroy the list.
- Search engine for all lists is required. Member should make a search among groups.
- *Mail Notifier*: A desktop application will be available for e-mail notification.

4-2.3 Specifications for Personal Web Mail:

- An interface for webmail is required.
- All common webmail requirements are also required.
- Downloading selected mails to computer of the member is going to be available.
- Member should be able to archive mails. All mails will be zipped and downloaded to the computer. Hence, mail inbox is going be empty for new mails.
- Member is going to be able to get mails including articles from some news groups. For instance, member wants all articles as mails from ‘cinema’ group or articles of any specific member.
- In the WWW interface user can select a thread and want it as mail.
- Member may ask for articles which are follow-ups of a thread opened by the member as mail.

4-2.4 Specifications of RSS Support:

- Member is going to be able to get RSS for some news groups.
- Member is going to be able to get RSS for articles of some other members.
- Constructing an optional RSS document format may be available. Member can specify the attributes of the RSS document. Here criteria are date, news groups and other members.
- Double Side RSS is a different concept. Member can construct an RSS document and give it to the system. System evaluates it. For instance, a member can take comments from visitors of his/her personal web site and wants to post these comments on a news groups.

4-2.5 Specifications of Attached Files:

- All attached files sent to a news group are going to be collected in a specific place. Therefore, members can see all the files attached to articles. These files are open to download but a file is deleted after a while if it is not downloaded during some period.
- Files attached to e-mails count towards mailbox storage quota of the member.

- Files attached to e-mails for lists count storage quote of the mail-list. (mail group)

4-2.6 Specifications of World Wide Web Interface:

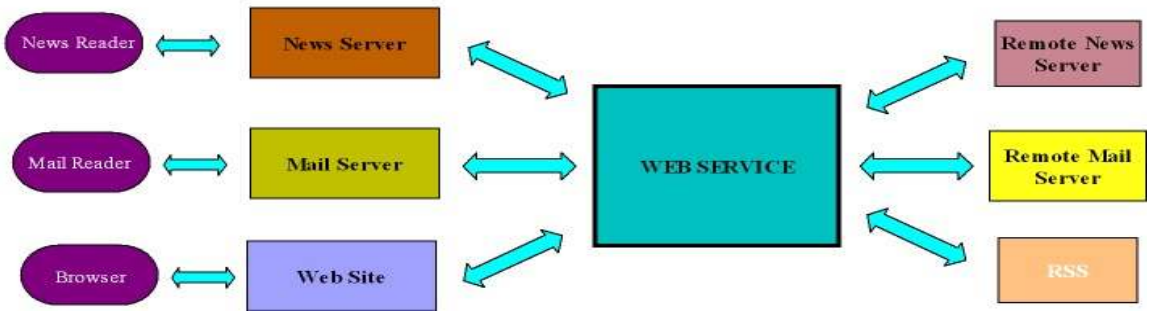
This is the main interface for all modules. Webmail, News groups, administrator interface are all in this www site. Specifications of this site are:

- Authentication is needed.
- A section for profile of member to update his/her profile is needed.
- A section for web mail service is needed. Member can access is/her mailbox and mail-llists.
- A section for news groups is needed. Member can access news groups and read/write articles.
- A section for RSS options is also going to be avaliable. Member can select different options for the structure of the RSS document.
- İf member is administrator, then he/she is going to be able to access to administrator panel.
- Administrator panel includes all options for a news group (opening, deleting, blocking a member, warning a member etc.)

5- Project Team Organization

- This section of the report explains the organization of project team during analysis period of project.
- Project consists of four people:
- *Fuat* is the manager of the project. He is responsible for maintaining meetings and the steps of the project in successful way. Every document related to project is under his responsibility.
- *Burak* is responsible for handling all hardware related issues. During requirement analysis he did all researches and got all points regarding the features of hardware (SMTP, POP3 and NNTP Servers). Then he briefly reported these points to other members of group.
- *Kaya, Tolga* and *Fuat* did researches about software specifications of the system.

6- General Process of System & Process Model

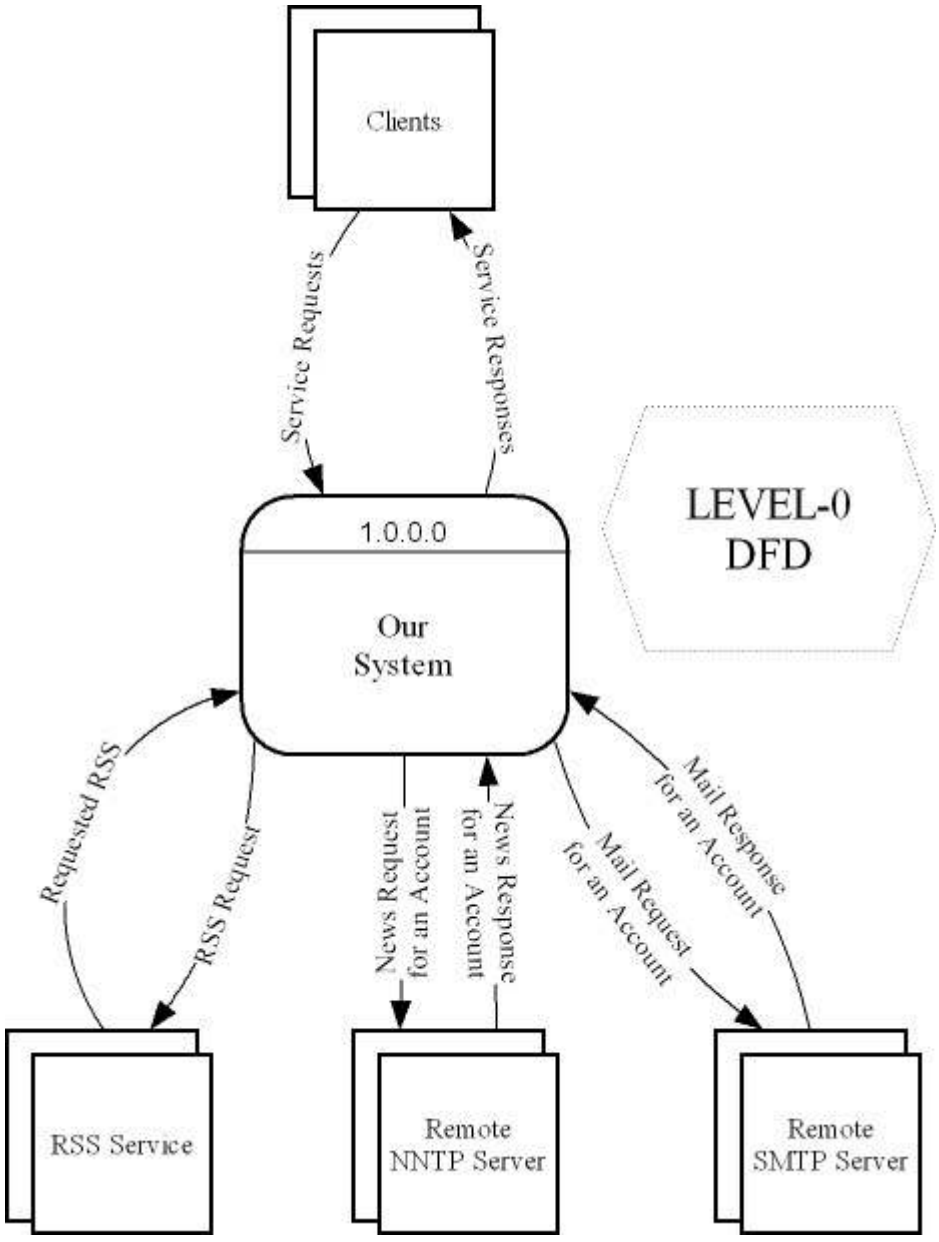


Process Model:

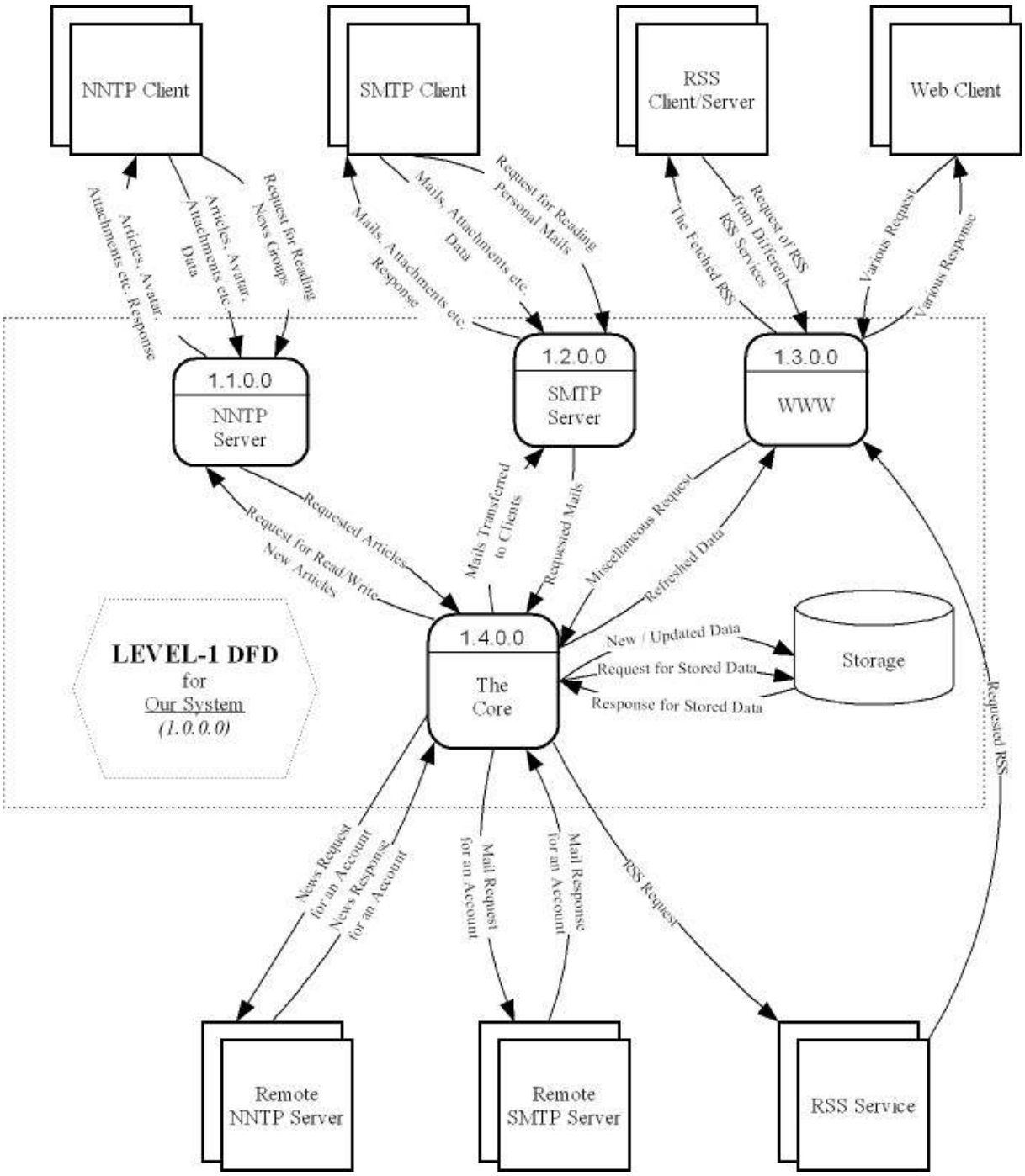
Since our project consists of many utilities and since time is limited, we will follow a model between the incremental model and the concurrent model. We will develop several parts of the projects separately and parallel, and finish all of them about at the same time. Then an overall testing procedure will be applied. We follow this process because testing and development of the features do not require most of the other features. However whenever a risk of disability to complete the project in time is observed , we will replace this model with the exact incremental model and focus on finishing the core of the project first , then an increment , then another increment ... so on . We hope that we will not face such a situation.

7- Functional Modeling and Information Flow

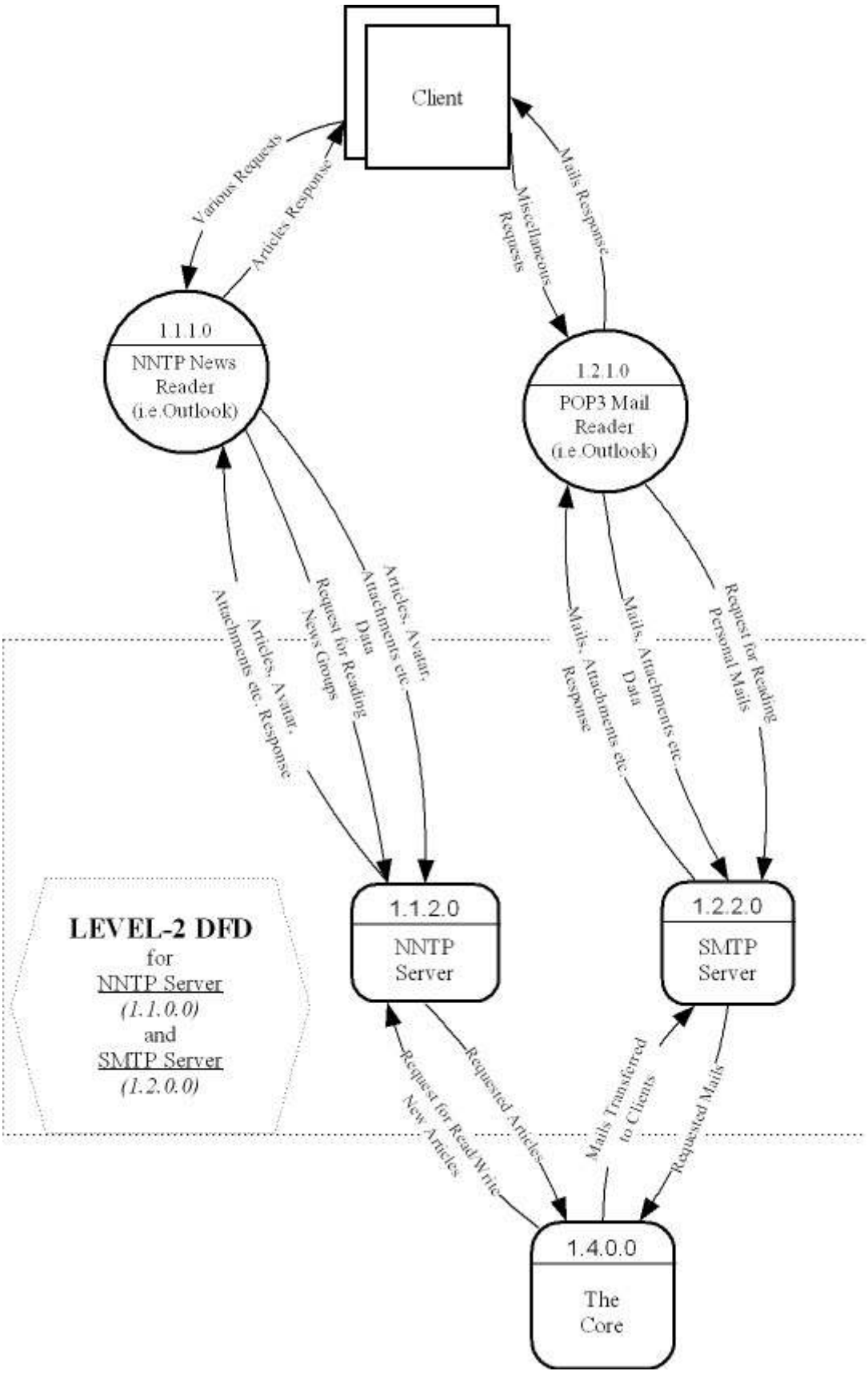
7-1 Data Flow Diagram – Level 0



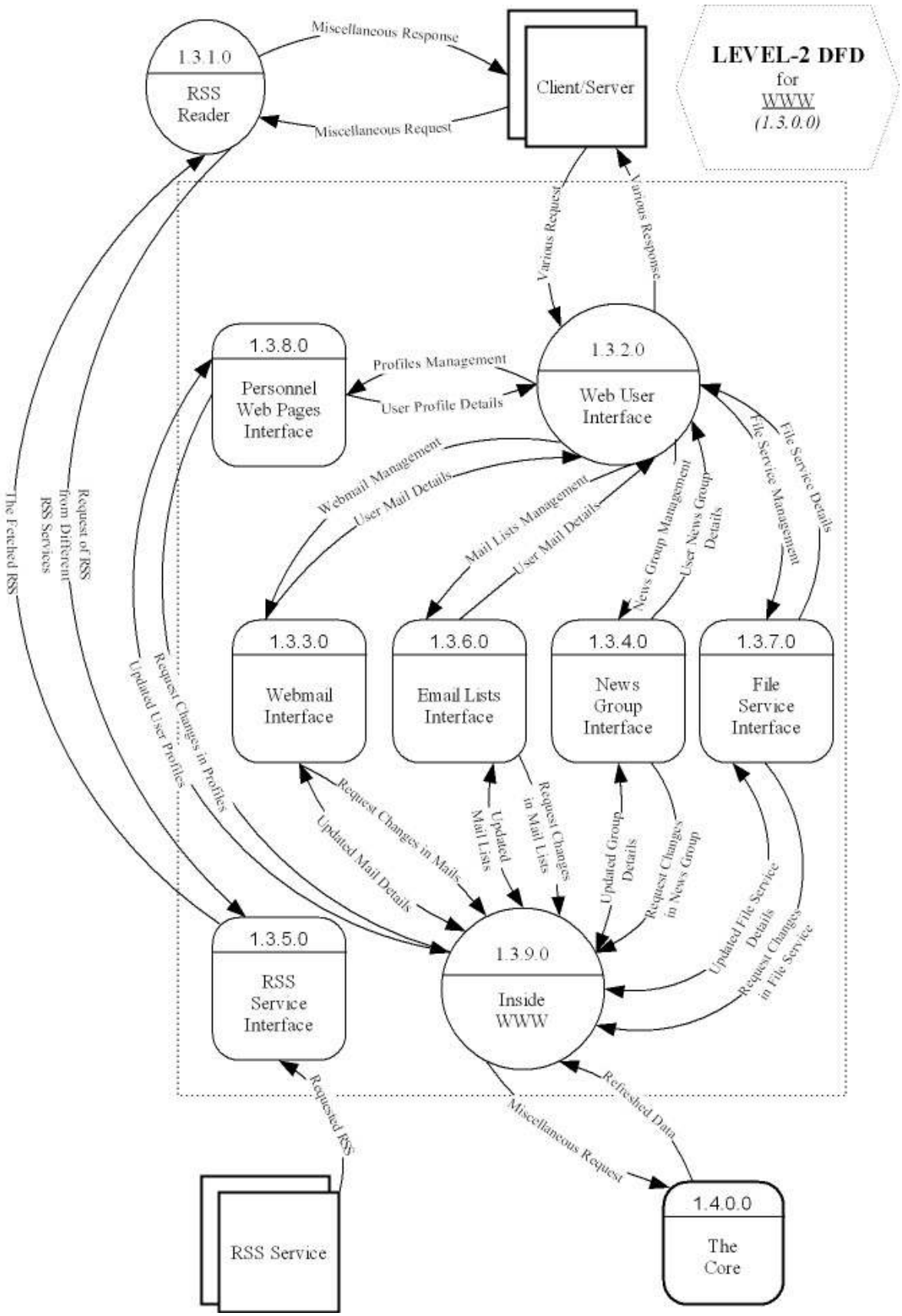
7-2 Data Flow Diagram – Level – 1 (Our System)



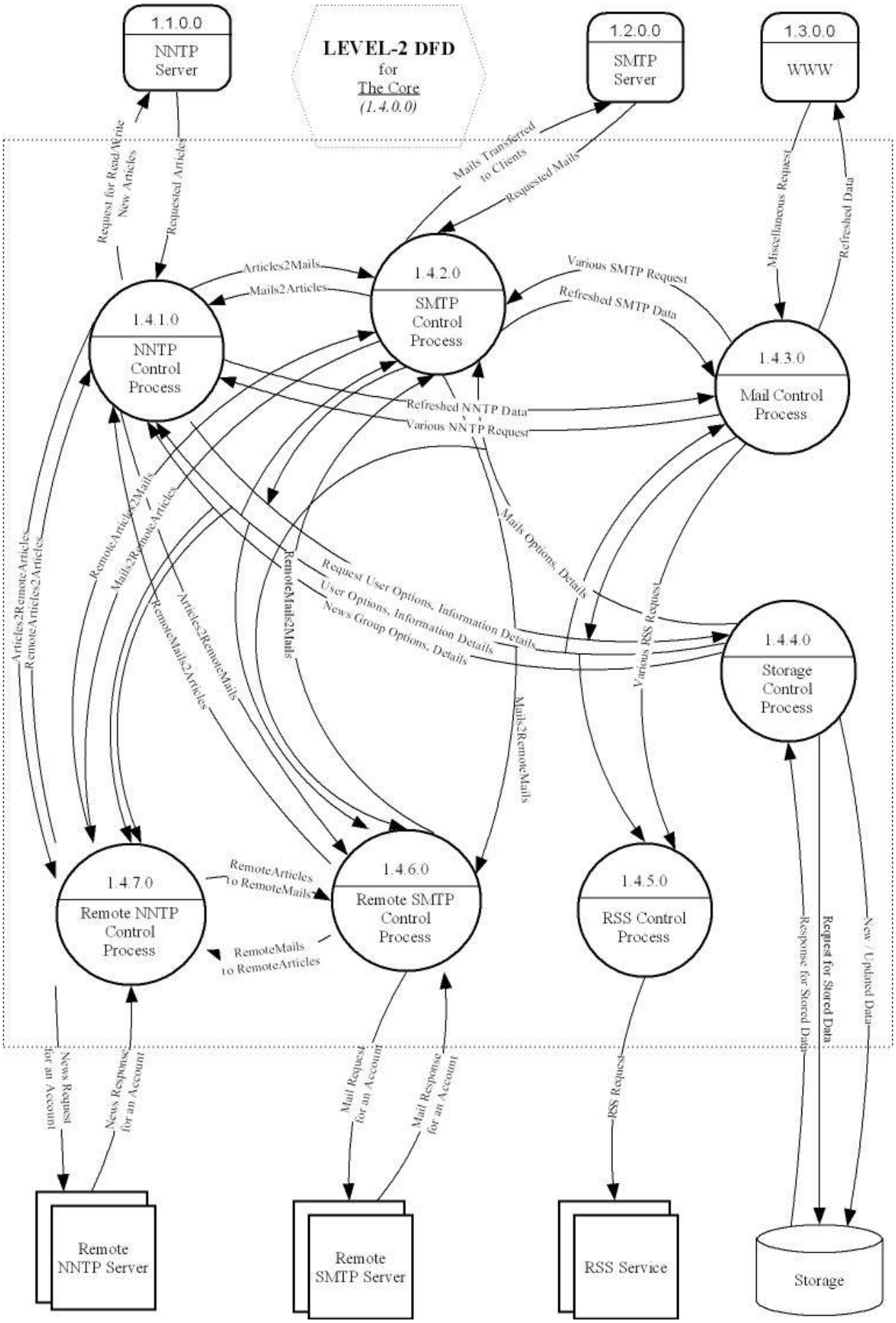
7-3 Data Flow Diagram – Level – 2(NNTP Server & SMTP Server)



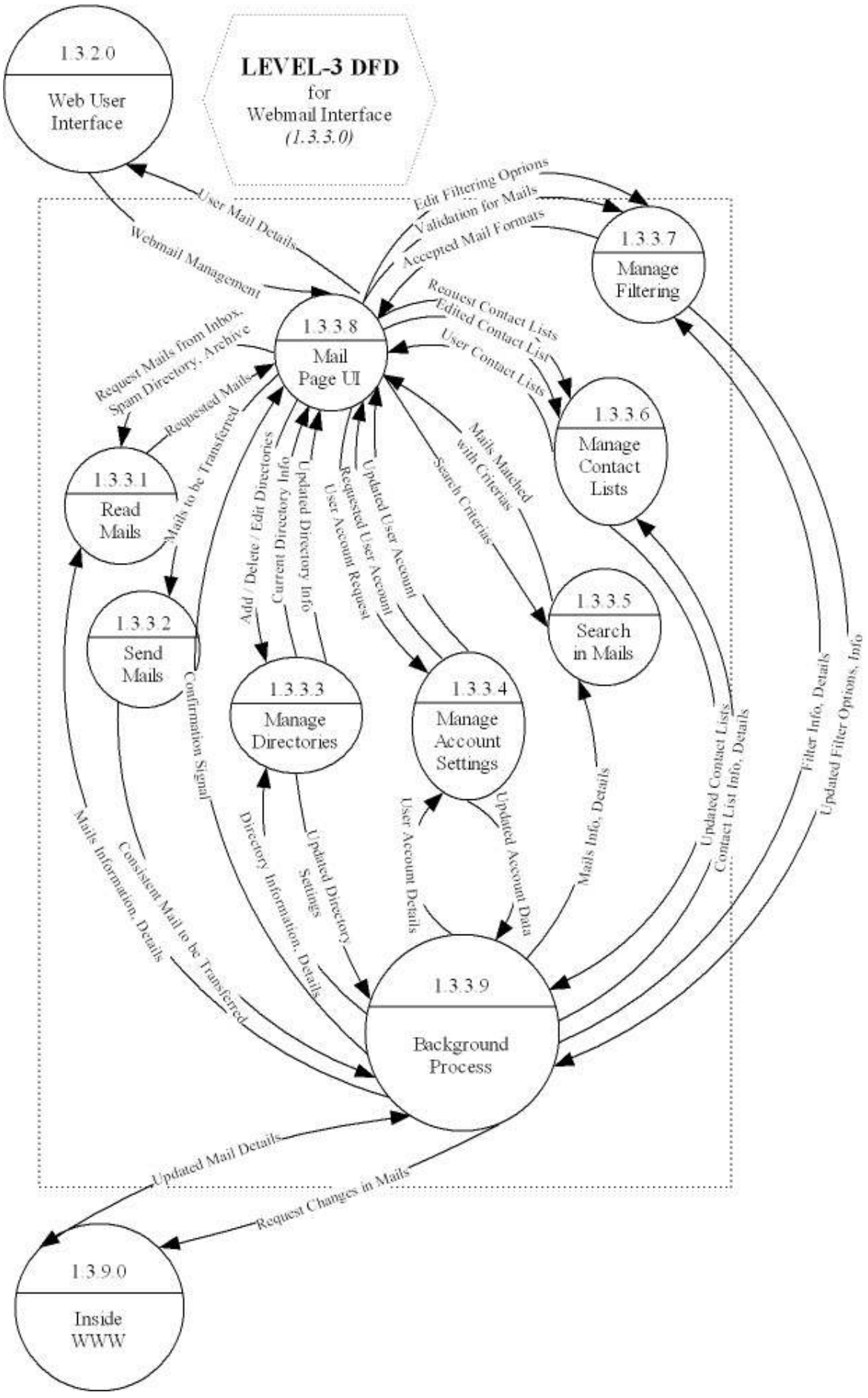
7-4 Data Flow Diagram – Level – 2(WWW)



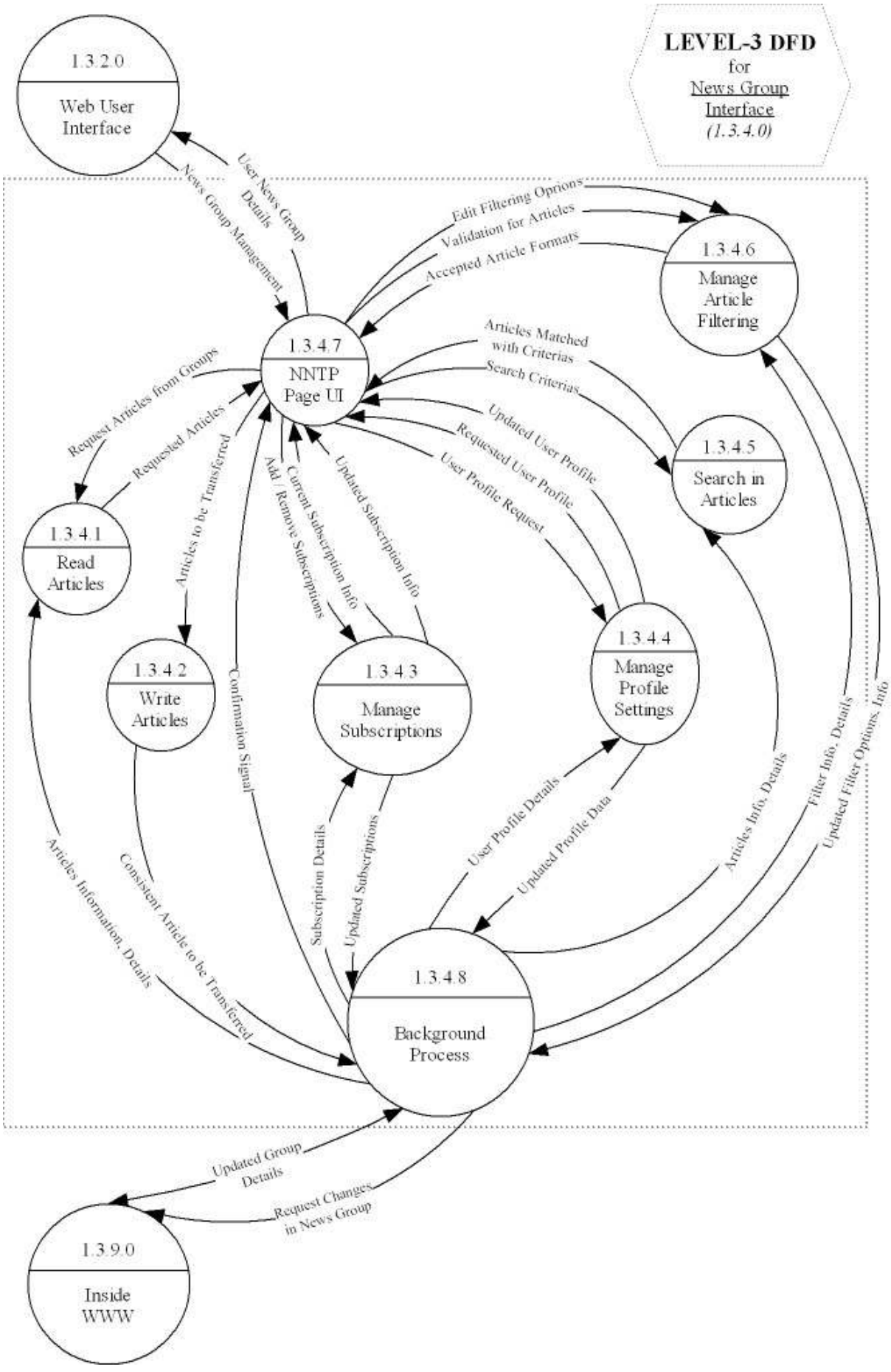
7-5 Data Flow Diagram – Level – 2(The Core)



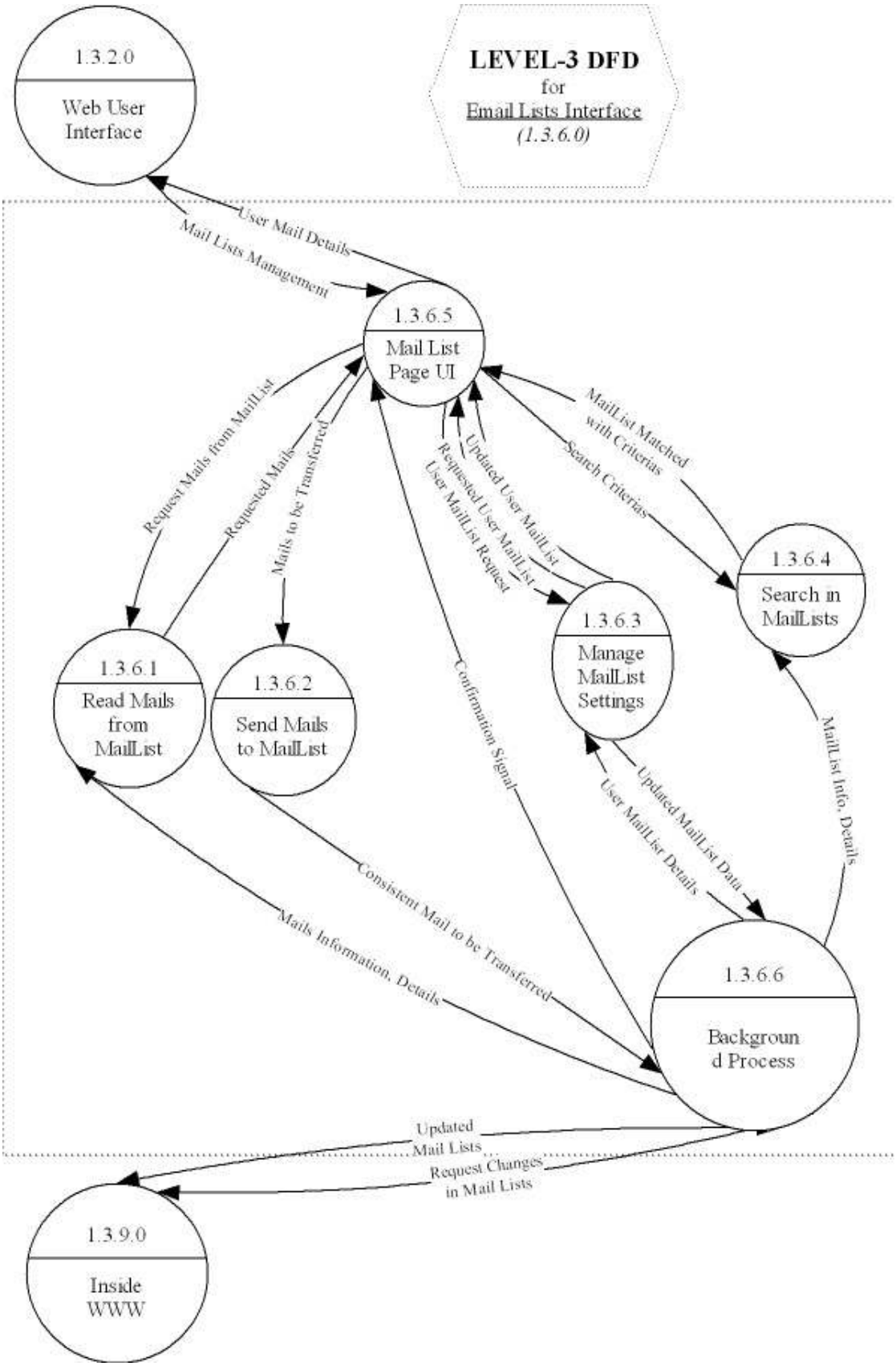
7-6 Data Flow Diagram – Level – 3(Webmail Interface)



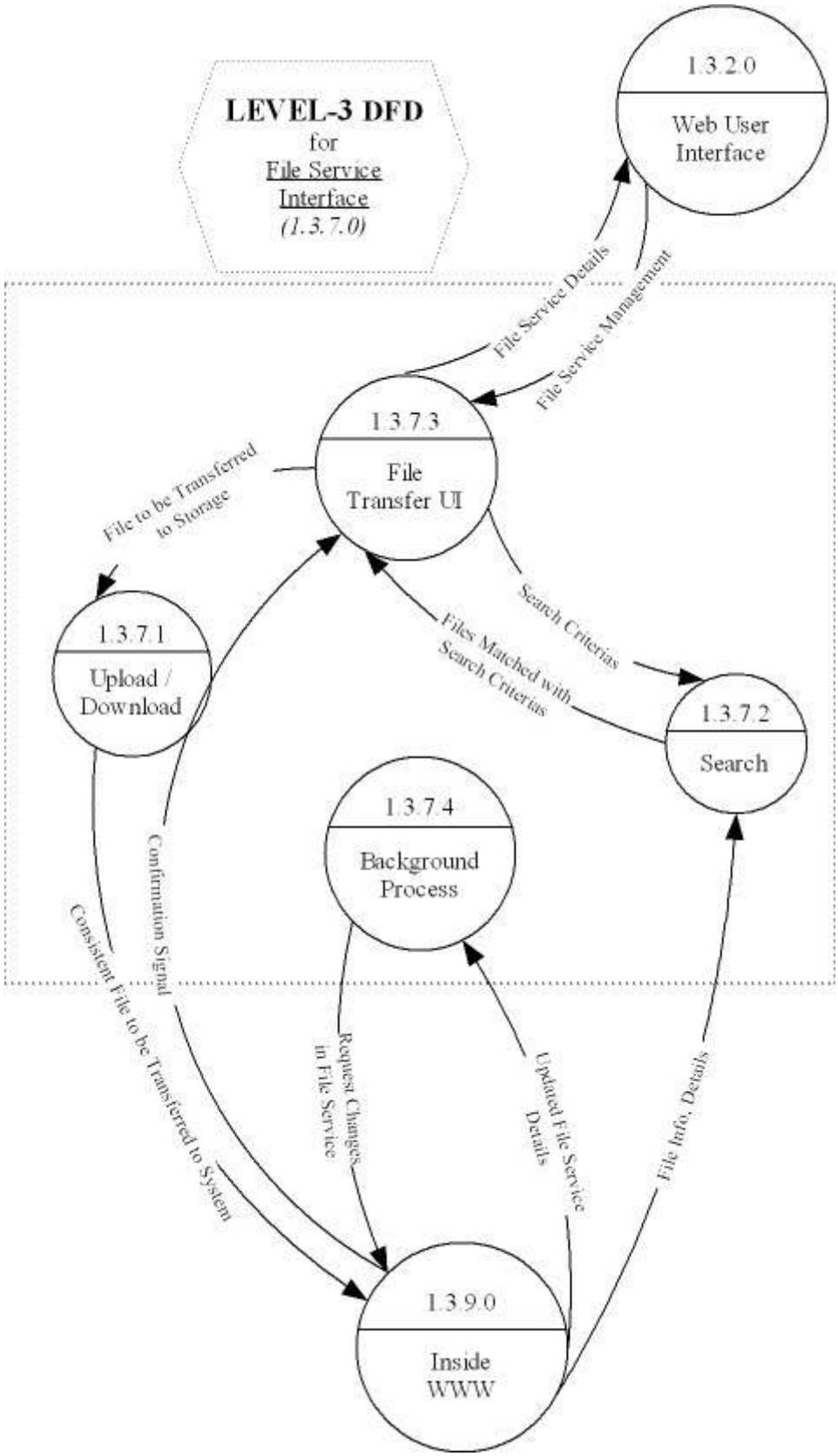
7-7 Data Flow Diagram – Level – 3(News Group Interface)



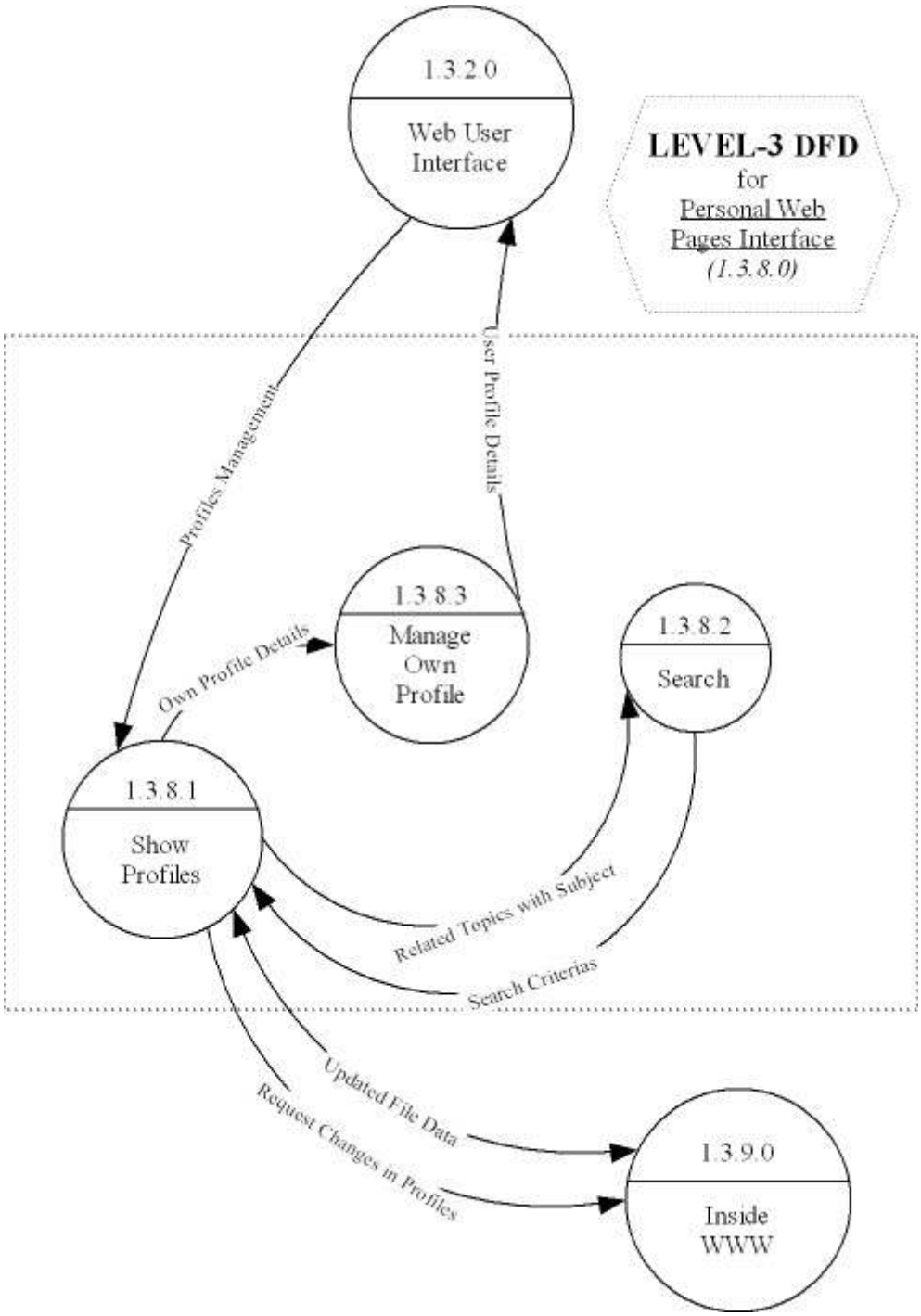
7-8 Data Flow Diagram – Level –3(Email Lists Interface)



7-9 Data Flow Diagram – Level – 3(File Service Interface)

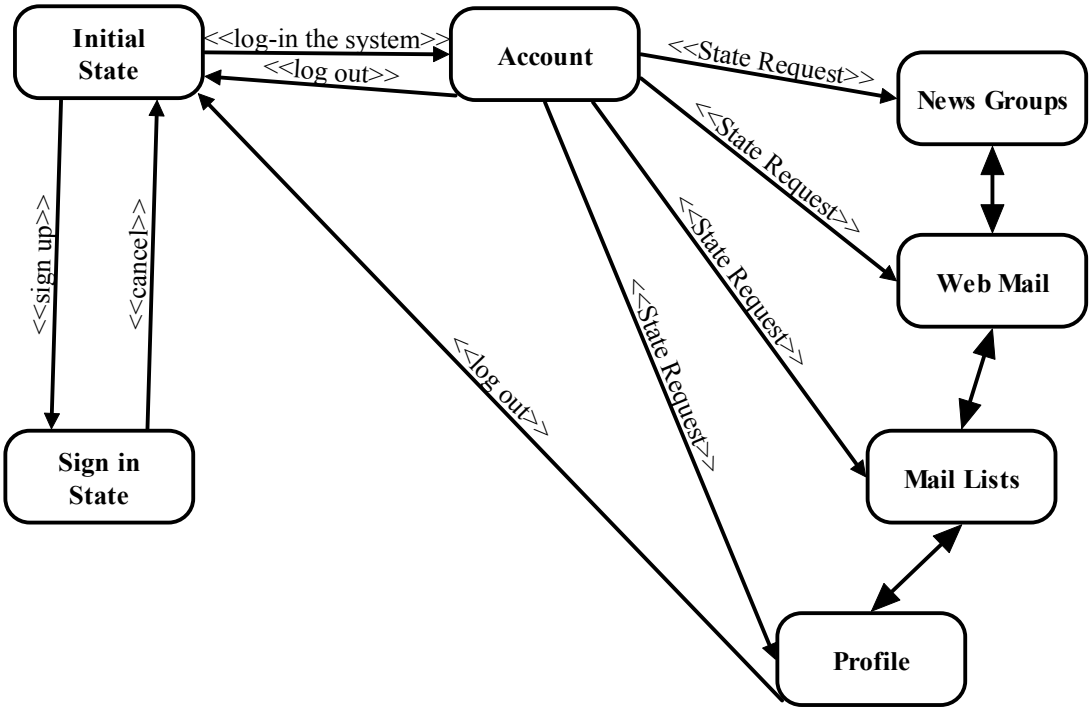


7-10 Data Flow Diagram – Level – 3(Personal Web Pages Interface)



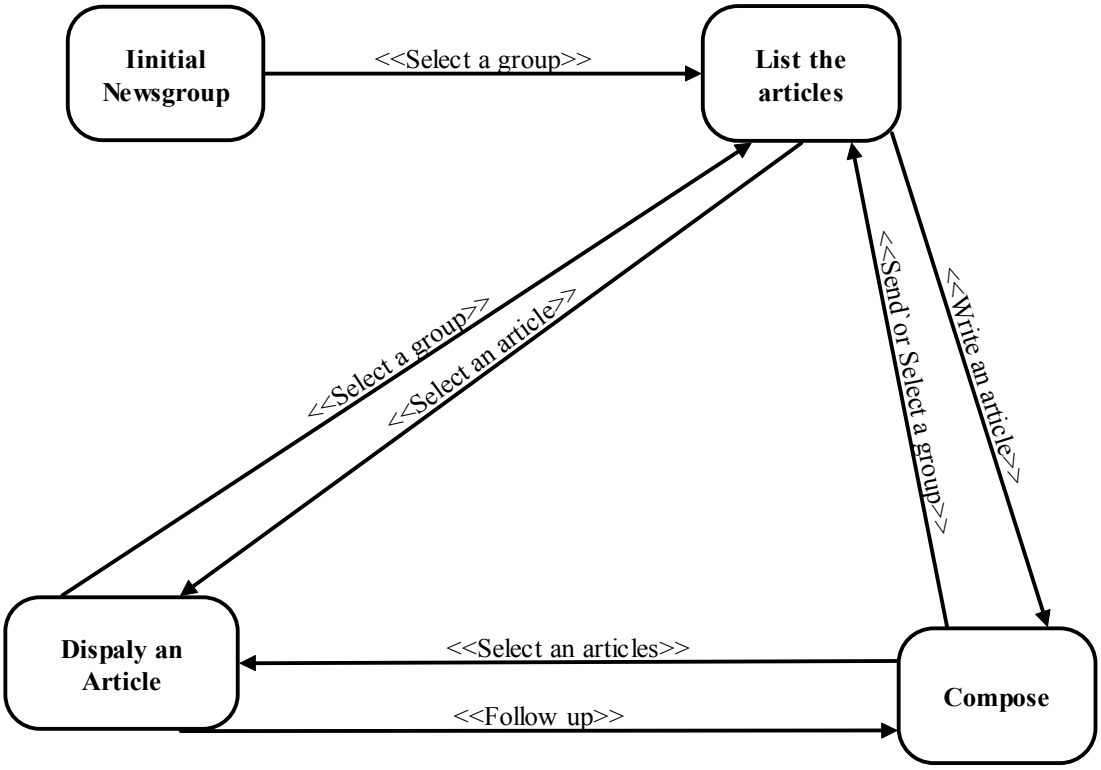
8 - BEHAVIORAL MODELING – State Transition Diagram

8-1. LEVEL 0: General States of System:



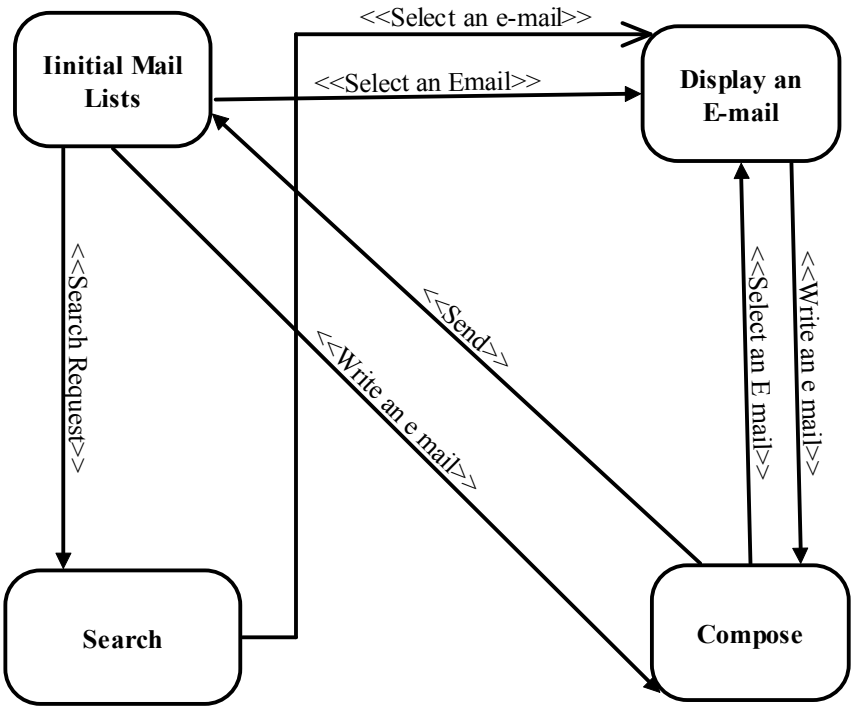
This diagram is related to Web interface. First of all, user is in the initial state when he browse log-in page, then he signs in and he is directed to his account. In this state, he can choose one of the states listed above. It is possible to change his state to any state. A new user can sign up in initial state.

8-2. LEVEL 1: States of News Groups Interface:



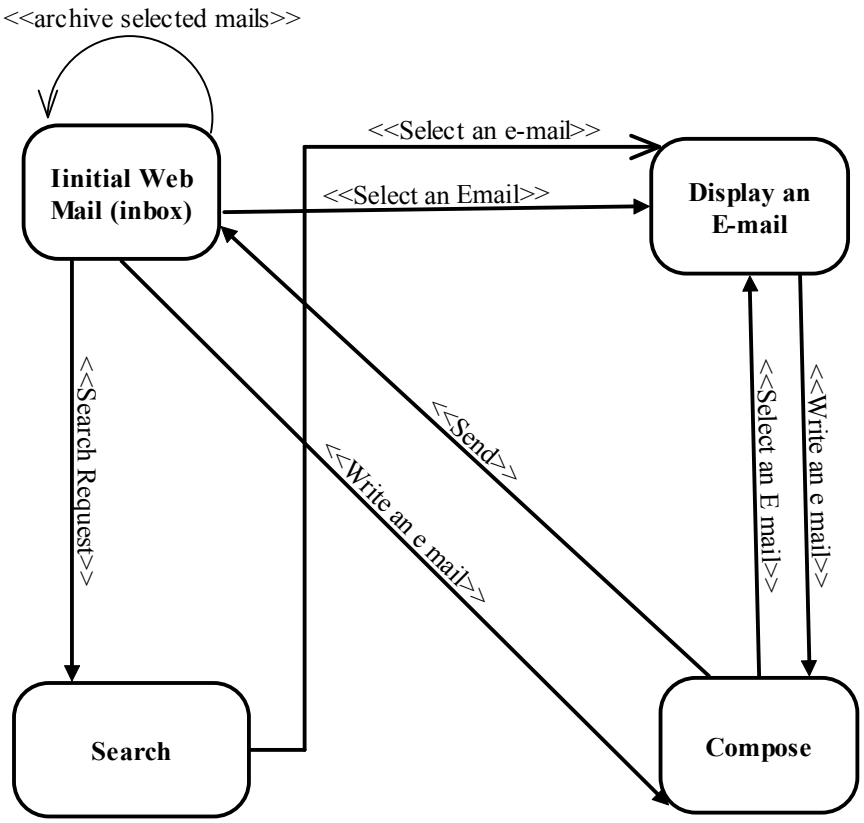
This is the states of News Groups Interface on WWW. User can list the groups which he subscribed and see articles of the group selected from the list.
After that, he is able to compose an article to an already opened thread or a new thread.

8-3. LEVEL 1: States of Mail Lists Interface:



This is the states of mail lists interface. Here it is assumed that user selected a mail-list in the list of his subscribed mail-lists and in the initial state e-mails of this mail-list are listed in the interface. Then, he can display one of these e-mails and compose a reply or forwards it. Additionally, it possible to make a detailed search of e-mails by sender or mail body.

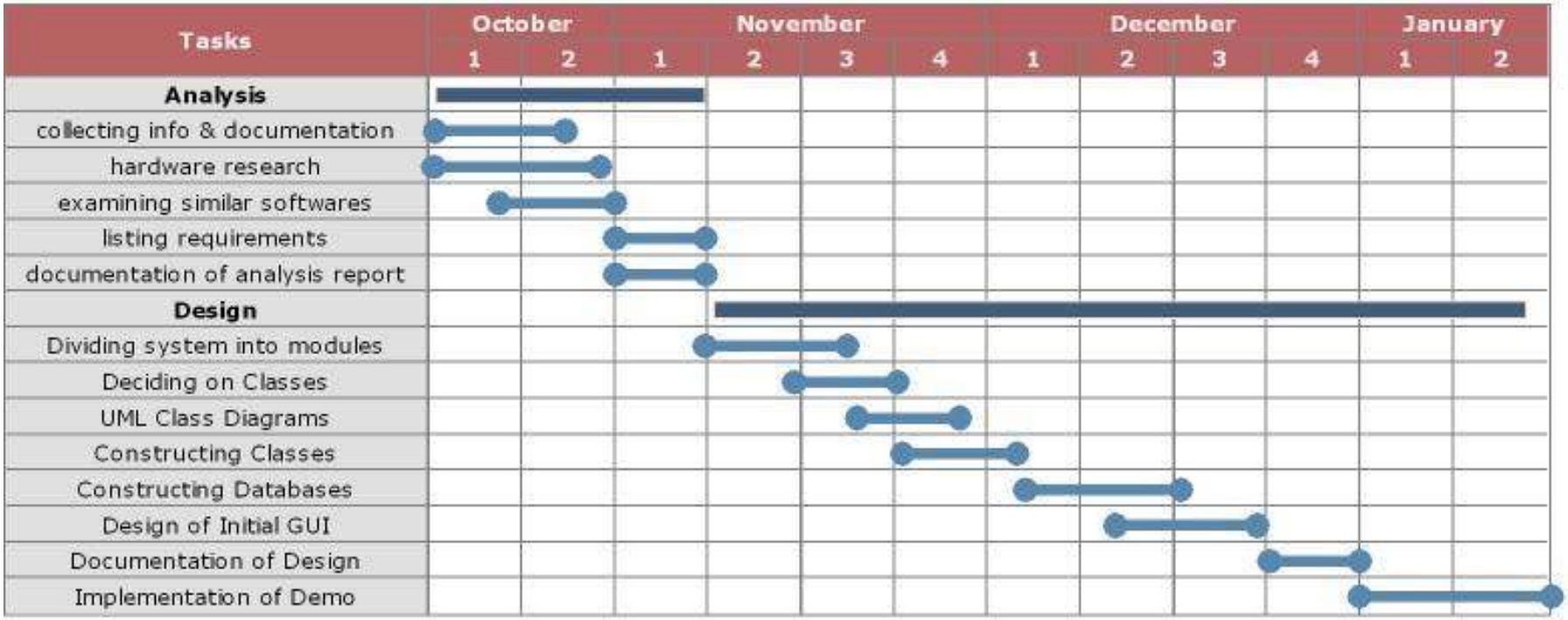
8-4. LEVEL 1: States of Webmail Interface:



This is a classic webmail service for the user. Here he can list the e-mails in a directory (inbox, sent mails etc.), display an e-mail, reply or forward it. Again, a detailed search option is available.

9- GANNT CHART:

SCHEDULE OF ANALYSIS & DESIGN PROCESS OF XCHANGER



Key Dates	
14 Oct	Start of Analysis
6 Nov	End of Analysis
10 Nov	Start of Design
3 Nov	Release of Initial Design Report
15 Jan	**Release of Final Design Report**
23 Jan	**Prototype Demo**
23 Jan	**End of Design**