Bookmark Library Web Browsing Tool
Bookmark Brigadiers

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Problem

Sponsor

Mr. Brad Budinger
- School teacher for Havasupai Tribe
- A unique learning environment

Problems with using web in the class
- Coordinating student activity
- Academic research
- Time wasted on non-educational content
- The internet is a dangerous place

Current Practice

Currently using Diigo for:
- Notes and bookmarks on web content
- Sharing between users
- Designed for internet, not classrooms

Shortcomings of current solution:
- Full web access for students
- No individual messaging
- Limited Admin/Teacher controls

Bookmark Library Web Browsing Tool and Web Browser

Key features
- Basic web browser
- Bookmark libraries
- Teacher viewable history
- Notes for web pages
- Whitelist controlled web browsing
- Teacher to user messaging
- Notebook
- Plagiarism checker

Requirements

Functional

- Built for Windows
- Semi-centralized user accounts
- Whitelist controlled browsing
- Webpage specific notes
- Notebook of notes
- Bookmark library
- Browsing history viewable by teachers
- Plagiarism checker

Non-functional

- Usable for elementary age students
  - Browse using Bookmark library with one five-minute lesson
- Management tools usable by teachers after two training sessions
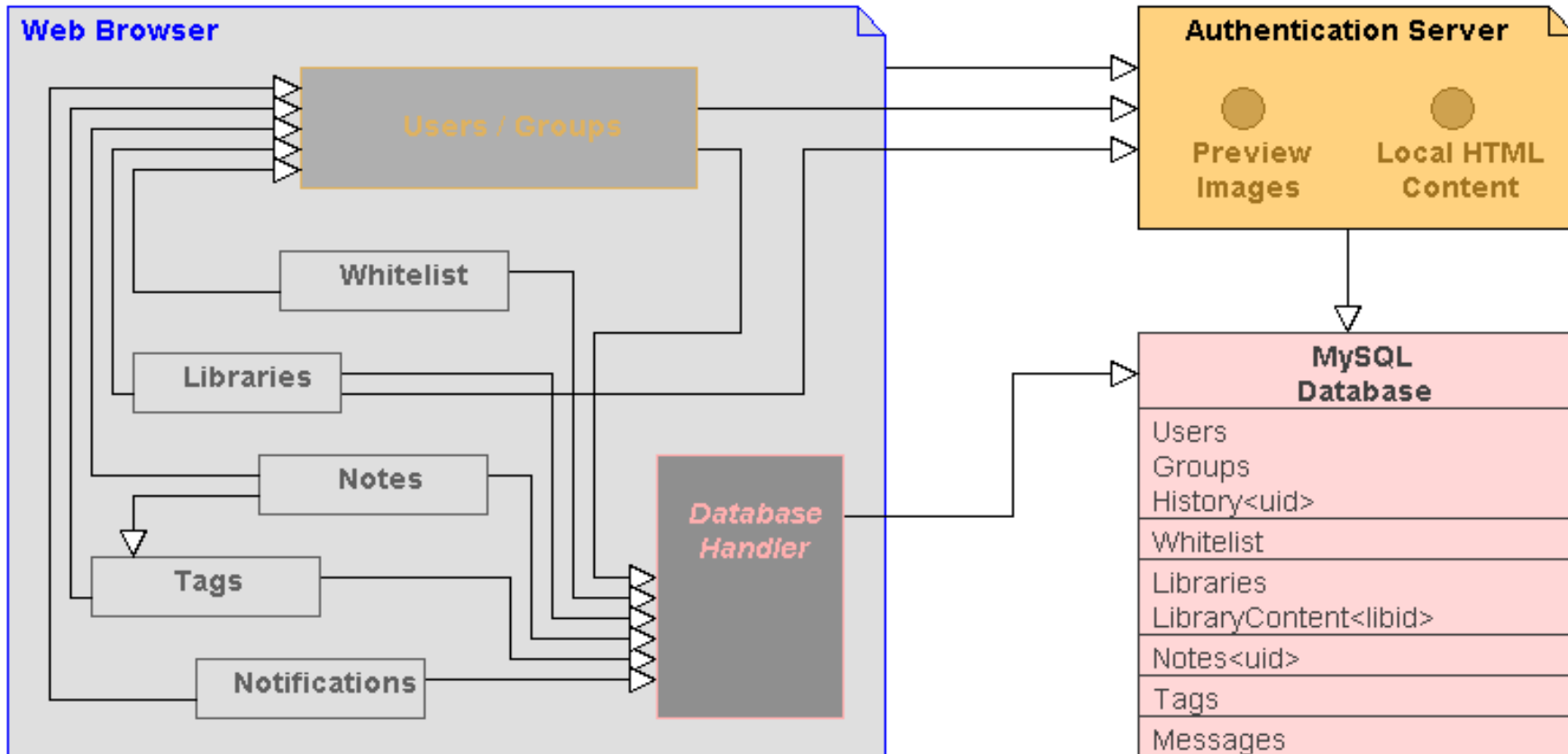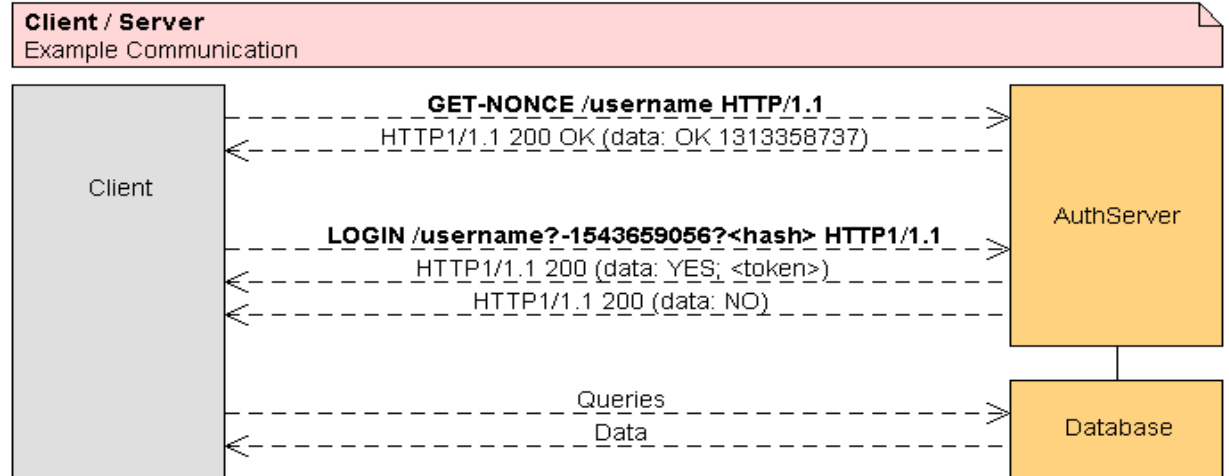
Design Influences

Architectural

- Uses a *client-server* architecture for network communication.

- Uses a *model-view-controller* architecture for user interfaces.

Implementation

- C++
- Qt API for GUIs
- MySQL database
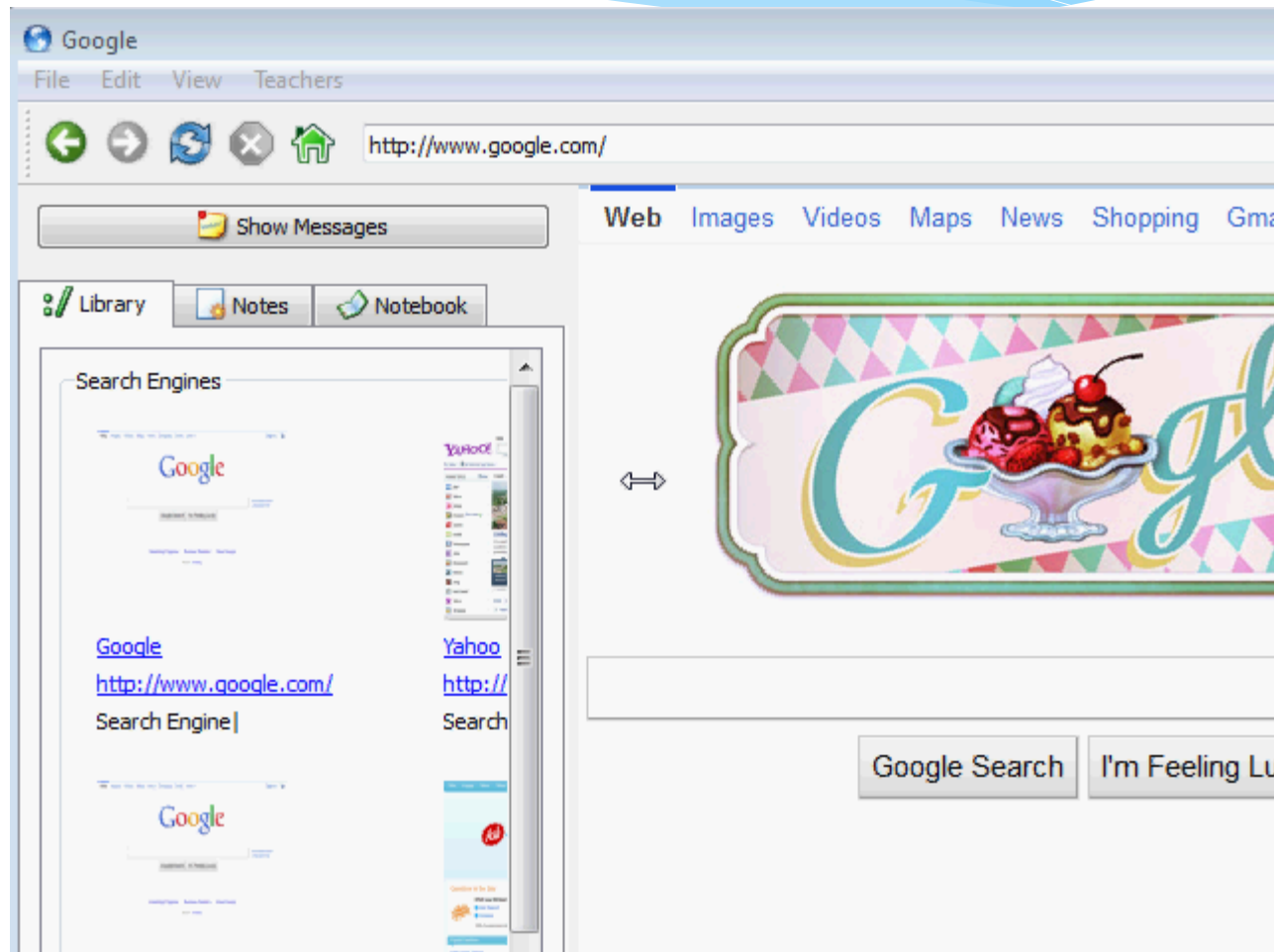- Java webserver

Module Relationships

Web Browser

- Basic web browser

- Interacts with other components as needed
  - Loads links as dictated by library and notes
  - Limited by whitelist
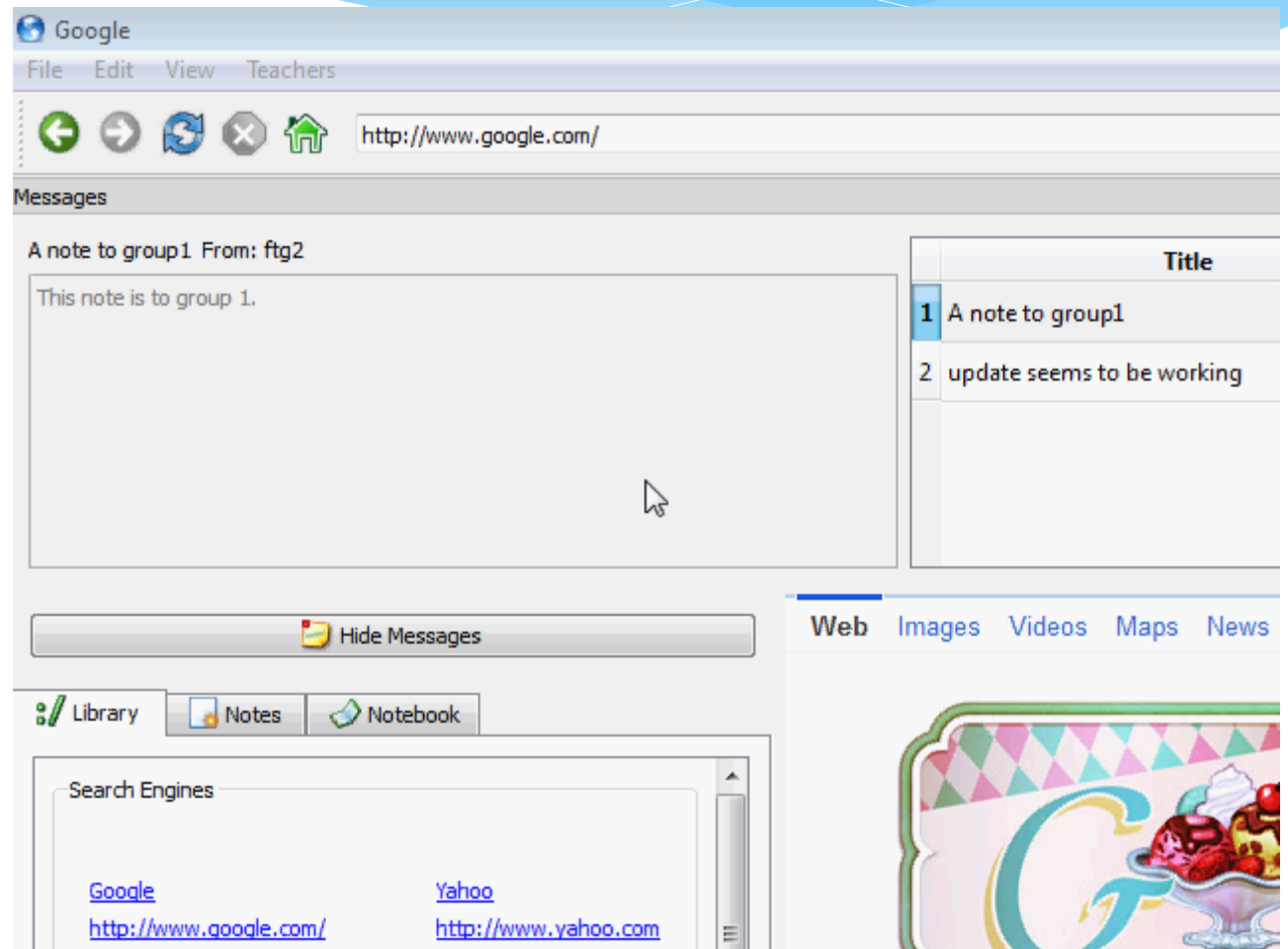
- Supports SSL

- Supports Flash

Users

- Are used to control access to the system.

- Can be teachers (admins) or students (users).

- Can be placed into groups.

- Have a persistent history

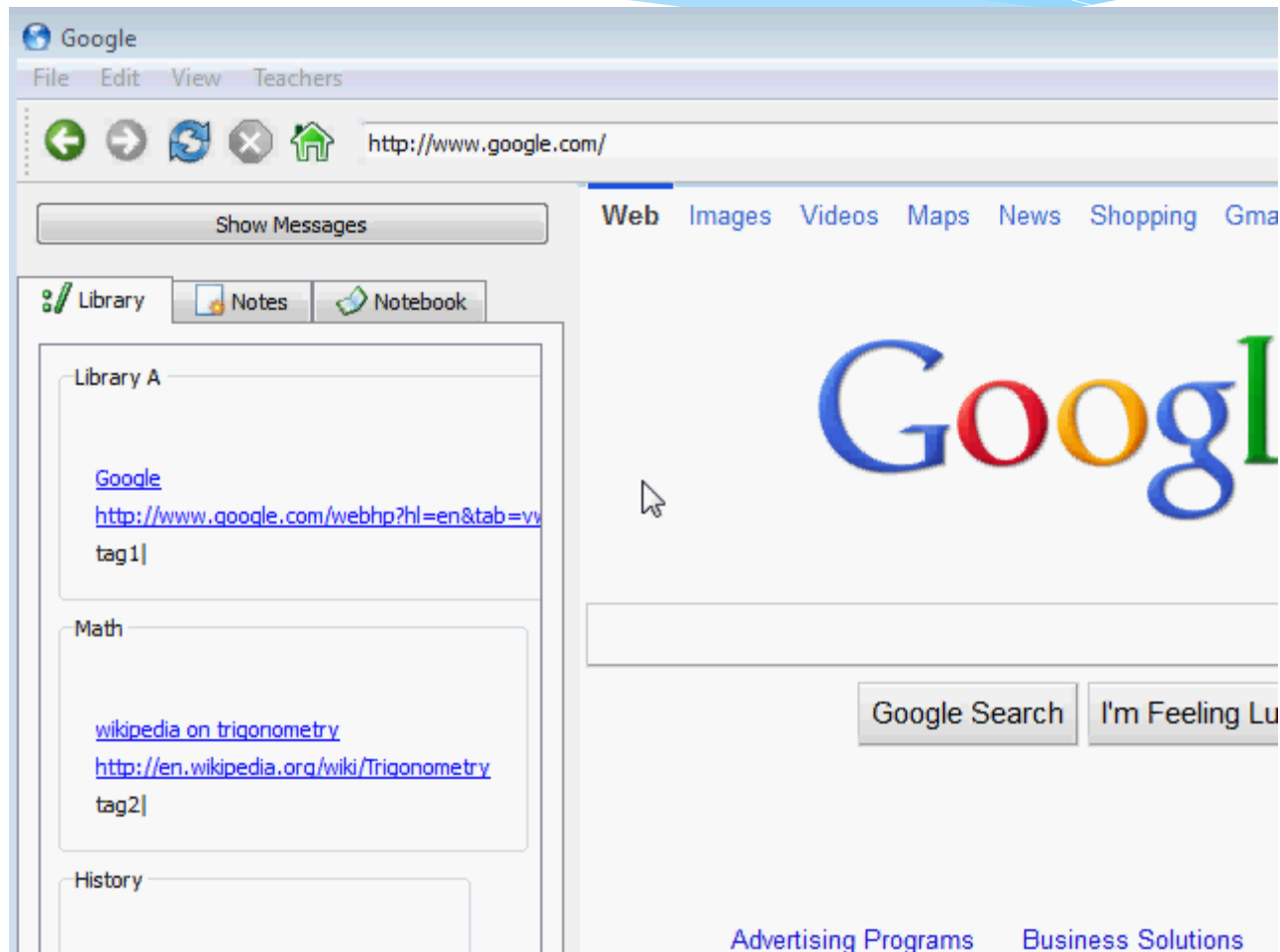- Account information stored centrally

Notifications

- Can be sent by teachers to other users.

- Can be sent to sets of users and groups.

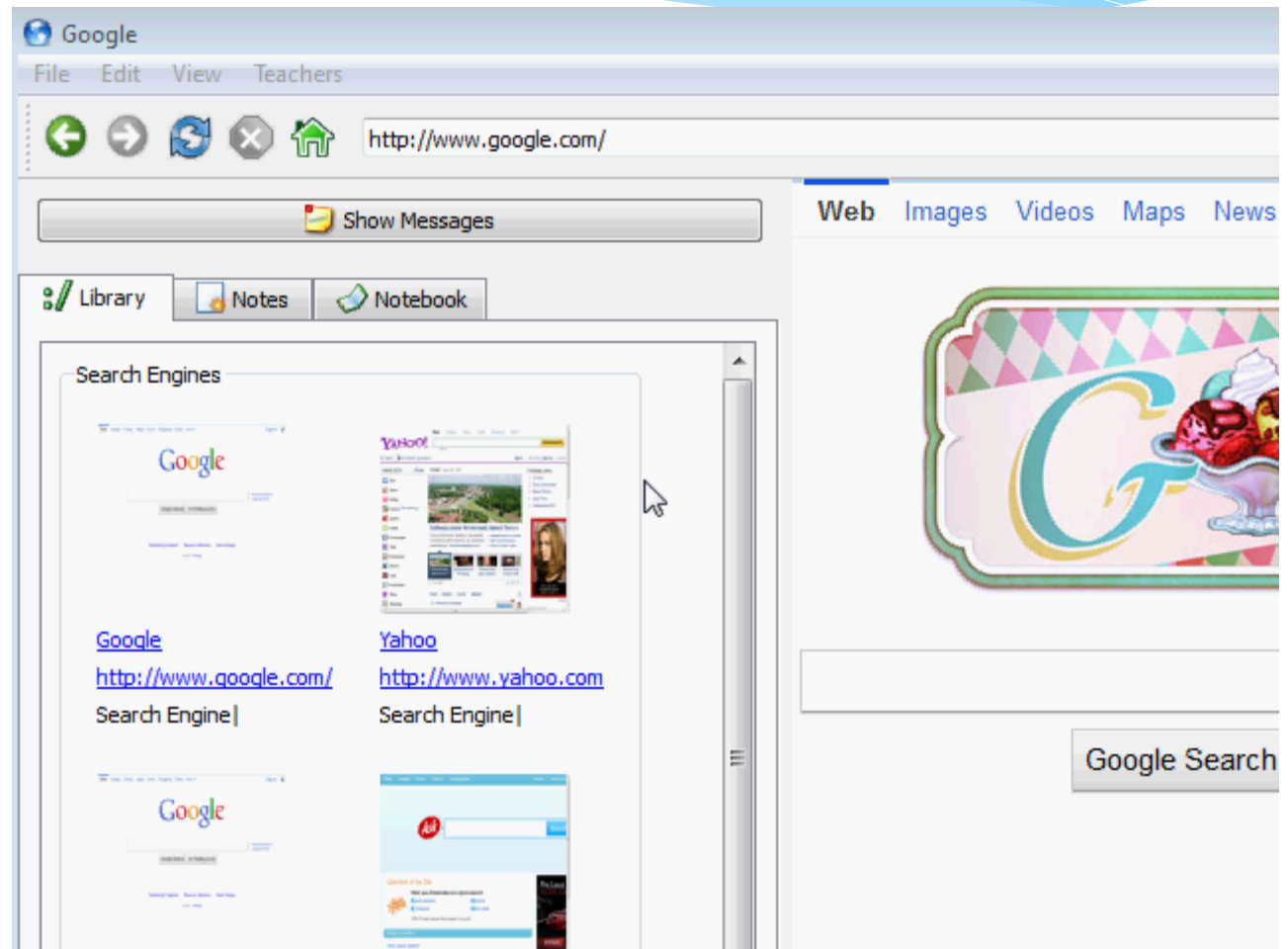- Are automatically displayed when users login.

Whitelist

- Restricts the webpages students are allowed to visit.

    - Allows specific URLs.
    - Allows entire domains.
    - Allows complex matching.

- Does not restrict teachers.

- Keep access statistics (currently unimplemented)
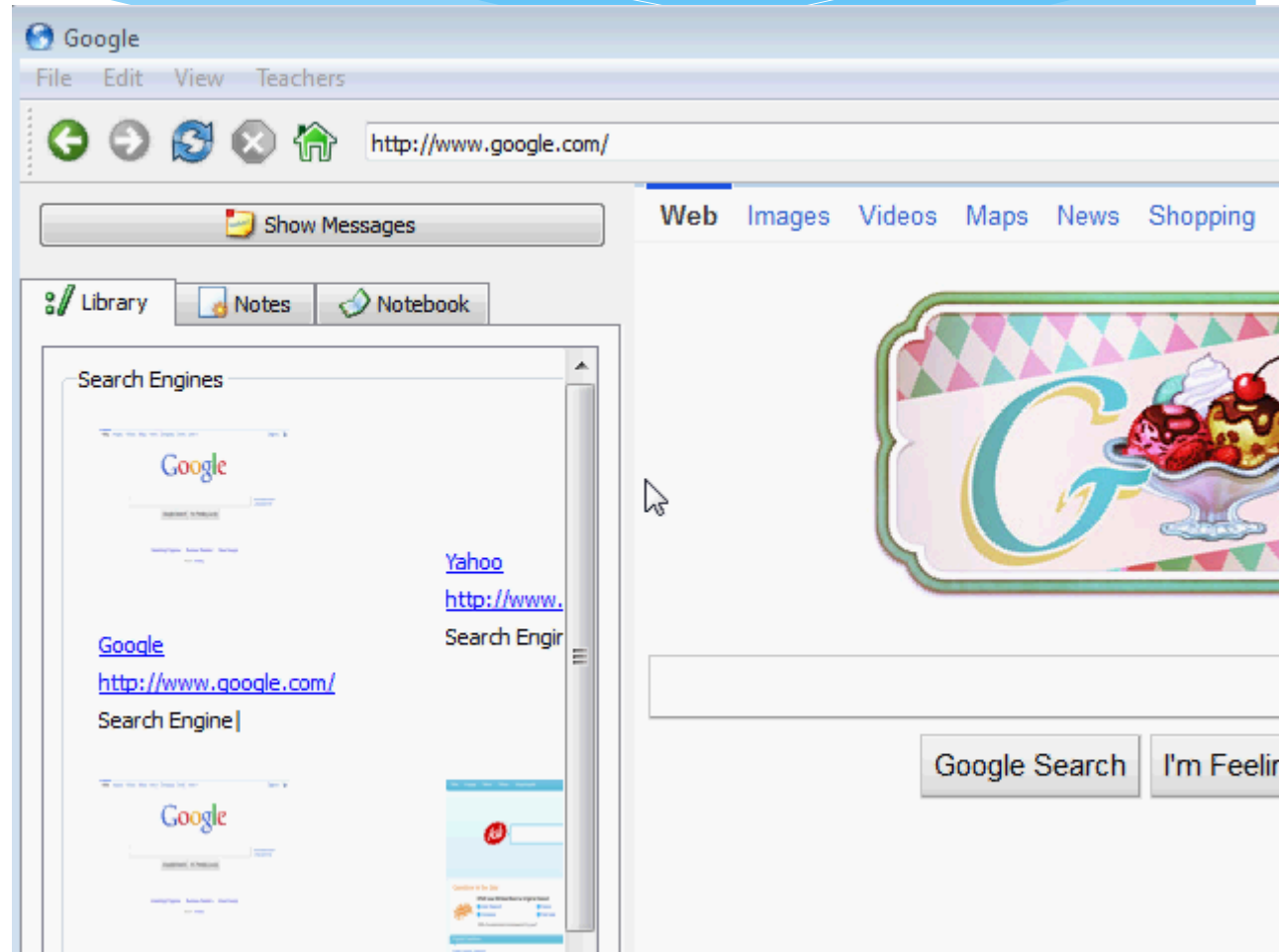
- Whitelist manager

Libraries

- Are created by teachers and displayed to students.

- Group similar sites together.

- Use groups to filter display.

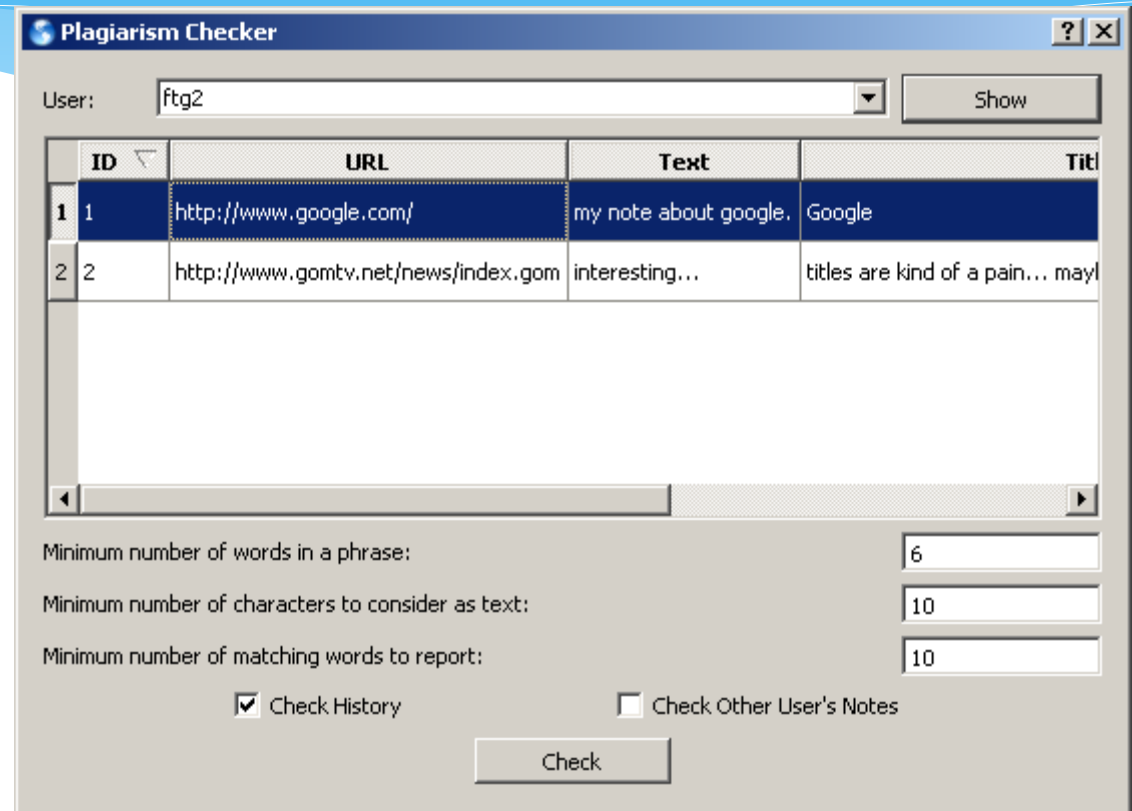- Use thumbnails to show links.

Notes

- Synced with browsing
- Url specific
- Can be shared within groups
- Always visible to teachers
- Use tags for organization
- Tags created by teachers

Plagiarism checker

- Using Copyfind tool from University of Virginia.

- Dialog set up in program to integrate tool.

- Notes and history source exported for tool.

- Results are html docs of similarities to display.

- Custom settings:
  - Minimum number of words in a phrase
  - Minimum number of characters to consider
  - Minimum number of matching words

Notebook
(current unimplemented)

Tool for finding notes
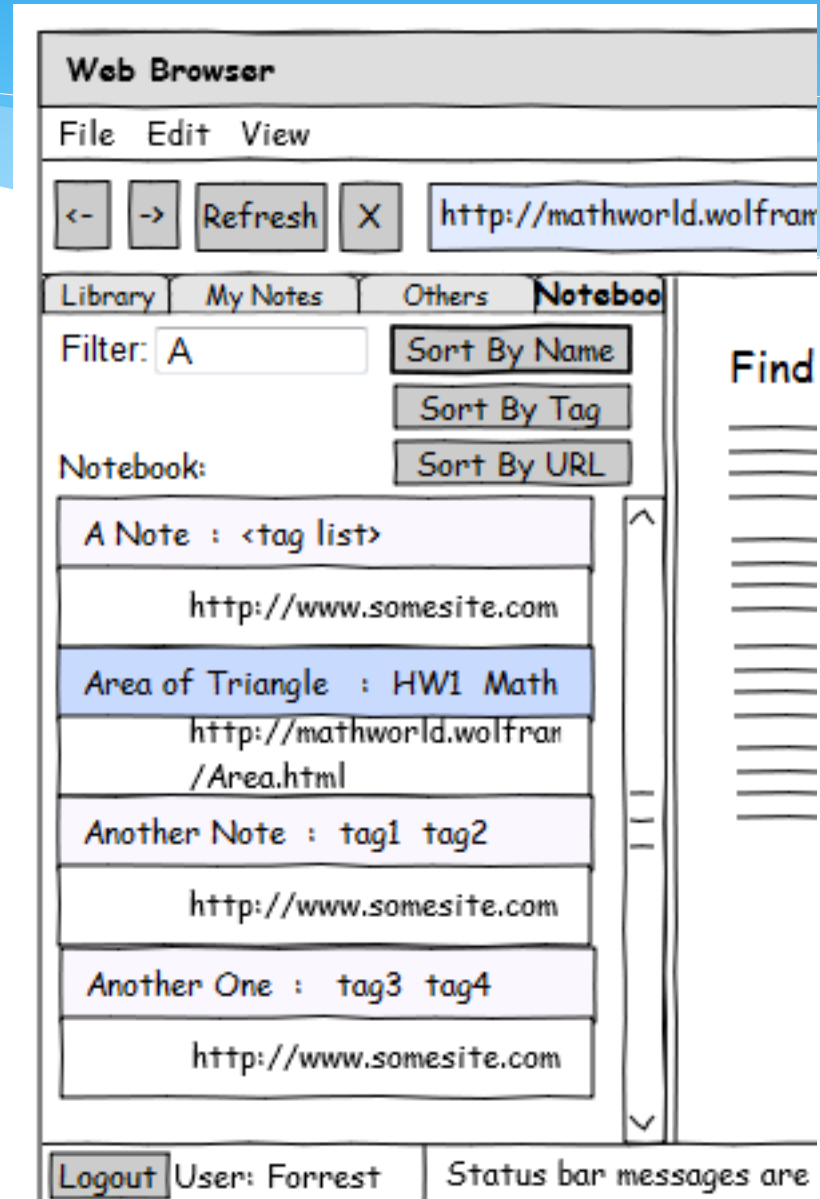
Search by
- Title

Sort by
- Title
- Url
- Creation date

Filter by
- Tag

Open note on click

Server Components

Authentication Server:

- Checks login attempts against the database.
  - Passwords are hashed.
  - Passwords are protected in transit using a nonce.

- Serves library preview images and other local content.

MySQL Server:

- Holds tables that contain all system data.

Past Challenges

- Choosing languages and tools
  - Firefox browser extension vs Stand-alone application
    - Languages:
      - Xul/Javascript, Xpcom components
                vs
      - C++ and Qt API

- Database connection from Qt to MySQL
  - Eventually solved with ODBC

- Implementation details for Shared Notes
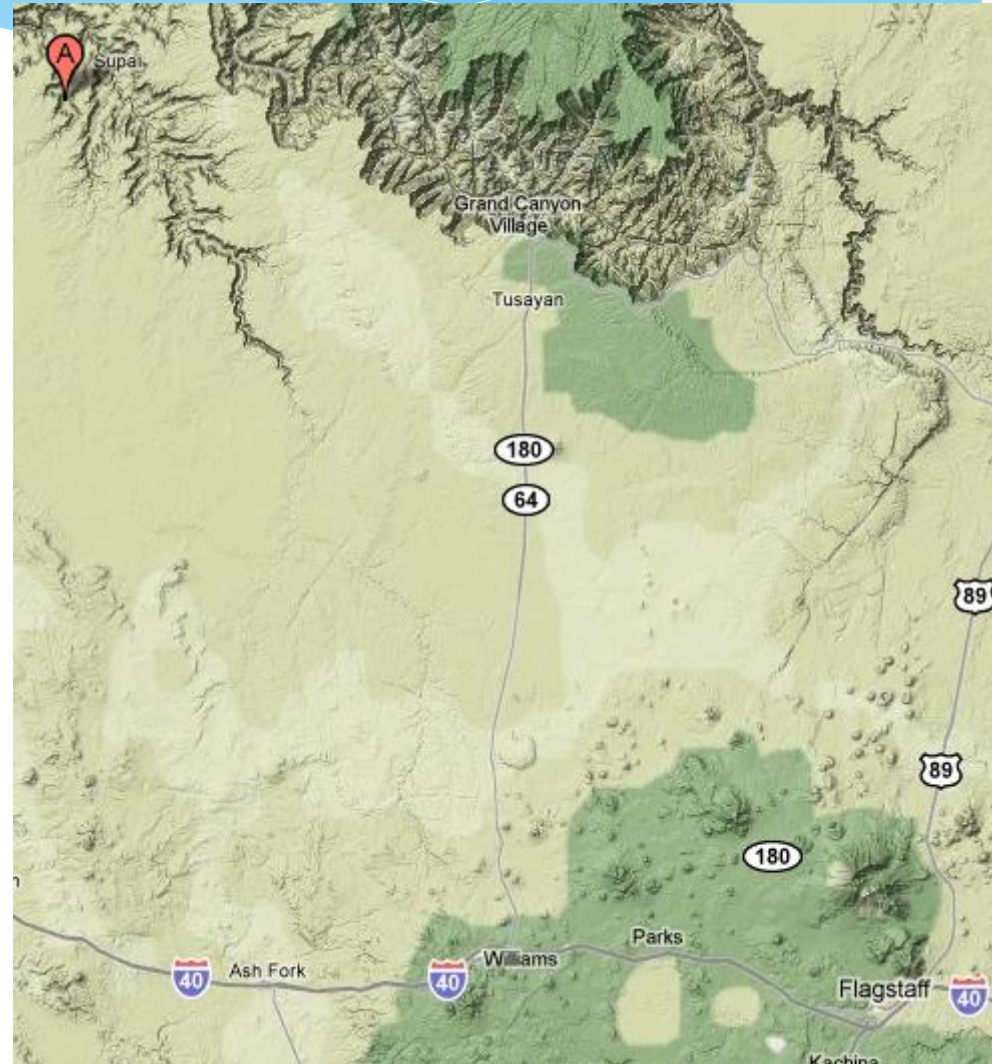 - Comments were canceled due to potential for abuse.

Current Challenges

Deployment
- No direct access
- Client must setup server
- Client setup/install application

Limited time for
- Revisions requested by client
- Code improvements
- Testing

Schedule

Task	Start	End	% Complete	2/14	3/7	3/14	3/21	3/28	4/4	4/11
Design Specification	2/14/2011	2/23/2011	100.0							
Qt prototyping	2/14/2011	2/23/2011	100.0							
WebBrowser component	2/22/2011	3/14/2011	100.0							
Server setup	2/22/2011	3/1/2011	100.0							
Authentication server	2/16/2011	2/25/2011	100.0							
Whitelist component	2/25/2011	3/10/2011	100.0							
Sidebar/Notetab component	2/25/2011	4/5/2011	95.0							
Database handler	2/25/2011	4/7/2011	90.0							
Windows Installer	3/25/2011	4/5/2011	100.0							
Tag Display/Management	3/3/2011	3/11/2011	100.0							
Browser History	3/17/2011	3/28/2011	100.0							
Bookmark Library	3/10/2011	4/7/2011	100.0							
Message/Notification system	3/17/2011	4/7/2011	100.0							
Plagiarism checker	3/17/2011	4/15/2011	75.0							
Presentation 2	3/20/2011	4/5/2011	100.0							
Notebook component	4/4/2011	4/15/2011	10.0							

Tasks not visible on this graph:
- Deployment
- Testing
- Poster
- Dry run presentation
- Final Presentation
- Final Report

Conclusion

Educational tool needed to improve efficiency of internet use
- Limit available web pages for targeted browsing
- Allow for saving and sharing of notes and links
- Plagiarism checker
- Usable by many ages and educational requirements

Currently
- Only Notebook component missing
- Making improvements to UI
- Deploying current beta to client