Functional Requirements for GLIF Guideline Server

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I. Introduction

Our goal is to create a "next-generation" WWW-based guideline repository. One such guideline repository is the National Guideline Clearinghouse, a collection of 800+ text guidelines (i.e., guideline summaries and links to machine-readable text/HTML, when available) with facilities for:

- Browsing
- Retrieval (Basic and Detailed using a classification)
- Comparison

The general approach will be to leverage the increased structure of GLIF-encoded guidelines and tools written by the Intermed collaboratory for manipulating GLIF-encoded guidelines, to allow users to interact with the repository in a more useful way.

II. Work Plan

We plan four steps which lead up to an implementation of a prototype:

1. Functional Requirements Document (this)
2. Design document
    i. Outlines technologies to be used for implementation
    ii. Outlines key data structures and algorithms to be used
3. Mockup
    i. UI only
4. Implementation of prototype with:
    i. Submission
    ii. Retrieval
        1. by keyword + classification
        2. place holder for eligibility criteria
    iii. Browsing/Viewing
    iv. Place-holders for remaining options

III. Functional Requirements

The functional requirements are based on tasks that one might want a guideline server to perform (Use cases from the user perspective are given at the end of this document). There are two major types of guideline users namely: Guideline retrievers (Use Case 1 in Section IV: need relatively

less functionality) and guideline submitters (Use Case 2 in Section IV: need relatively more functionality).

1. **Submission** of guidelines to the server by guideline authors, may include:

    a. **Create** Document: create a new GLIF guideline – is this something that we want a server to do, or to leave to authoring environment

    b. **Edit** an existing GLIF guideline

        i. Multi-user capabilities to be dictated by Protégé (or other authoring environment) capability

    c. **Submit** the guideline to the server – Use case shown in Figure 2

        i. *Automatically insert guideline into collection* (library administration function) based on classification provided by author/submitter

            1. Future Work

                a. Automatic categorization

                b. Determine interactions between guidelines:

                    i. Is one guideline a subguideline of another guideline?
                    ii. Contradictory advice?
                    iii. Integration of multiple consistent guidelines into a guideline package for delivery

                c. Full-featured version control: perhaps by incorporating CVS

            2. Maintain Status: testing, released (+ ?validated, ?production, ? other possible states)

    d. Have the server (via parser/execution engine) **validate/verify** correctness of the guideline – this may mean different things depending on how extensive we want this functionality to be: 1) verify syntactic correctness, 2) verify completeness (i.e. all alternatives covered, etc.), etc.

    e. May **delete** the guideline, with all references to this from the server

    f. Note: Security issues would need to be considered if this server were to be operational. Alternatives might include:

        i. user level authentication where each user would have (or lack) Read/Write permissions to specific guidelines, Create/Delete privileges, etc.

        ii. password protection for the entire site whereby users, once authenticated, would have unrestricted access to the site

    Because this is a research project, it seems reasonable to implement only simple security (option 2) for the prototype. The production system, if implemented, might have a more extensive security layer.

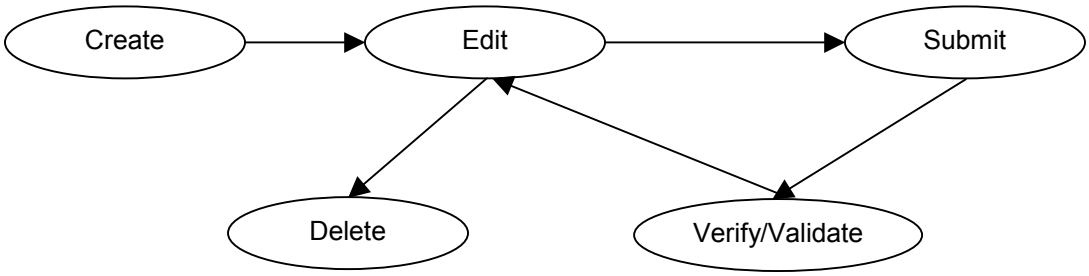


Figure 1: Guideline submission process

2. **Retrieval** of guidelines from the server, may be via:
    a. Classification (currently implemented on NGC using their classification)
        i. Keyword (currently implemented on NGC)
        ii. Eligibility criteria (not currently implemented by NGC)
    b. Once retrieved, may want to download the guideline
        i. Guideline + associated material in an archive (ZIP/TAR)
        ii. Guideline only in GLIF at Level A, A+B
3. **Browsing/Viewing** of guidelines on the server, may be:
    a. Graphically viewing GLIF encoded guidelines
        i. Level A, B
        ii. Functionality defined by authoring tools (Protégé, DSG GLIF editor)
    b. Viewing text version of guideline (if any)
    c. Comparing guidelines to each other by:
        i. Classification: includes multiple axes
        ii. Eligibility criteria
4. **Execution** of guidelines on the server:
    a. *Interactive:* User submitting data → being guided through the guideline logic
    b. *Batch:* Critiquing mode
        i. input: data+guideline name
        ii. output: what was done according to guideline, what was not

c. *EMR:* Appropriate guidelines (i.e. Level C) can be executed by obtaining data from local EMR (note: we are far from this; security concerns will be difficult to overcome)

5. **Support for GLIF Community**

a. *Bulletin Board System* for users to discuss/comment on guidelines

b. *Rating* or even *collaborative filtering* of guidlelines (e.g., users who downloaded this guideline also downloaded X,Y…)

c. GLIF Site (Glif.org)

i. Tool(s) download and documentation

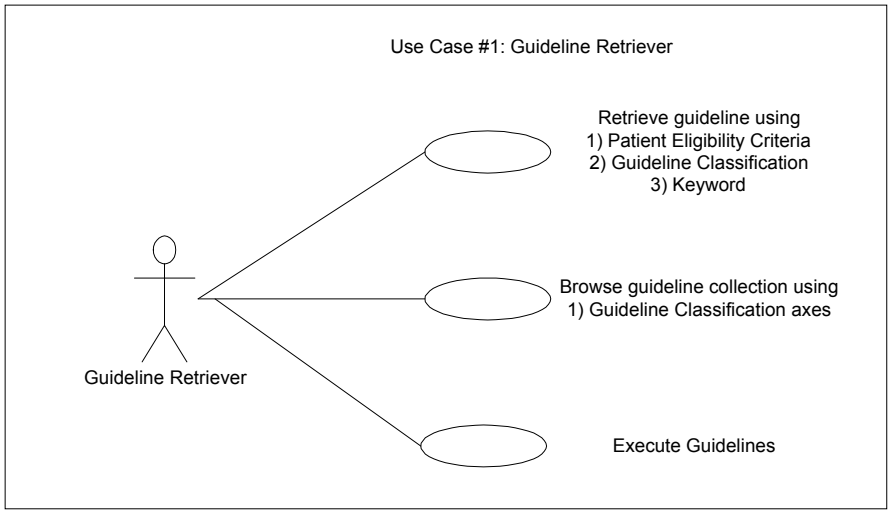
1. Authoring environment
2. Validator/Execution engine

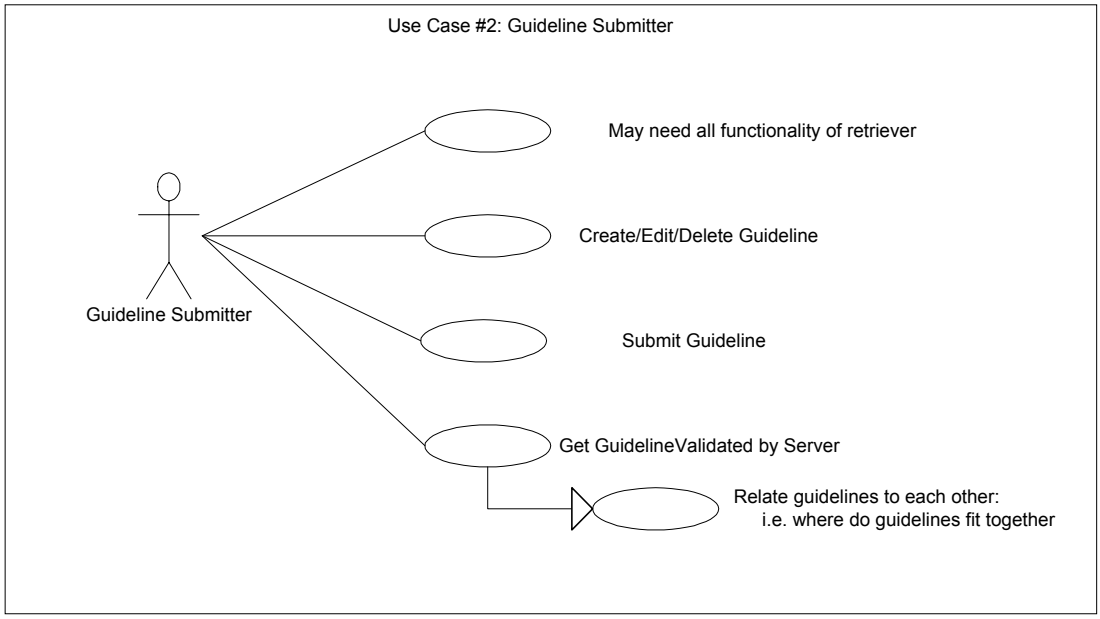
ii. GLIF documentation

iii. GLIF development area to foster community process

6. **Server Help and Documentation**

IV. Use Cases


Use Case #1: Guideline Retriever
Retrieve guideline using
1) Patient Eligibility Criteria
2) Guideline Classification
3) Keyword
Browse guideline collection using
1) Guideline Classification axes
Execute Guidelines
Guideline Retriever


Use Case #2: Guideline Submitter
May need all functionality of retriever
Create/Edit/Delete Guideline
Submit Guideline
Get GuidelineValidated by Server
Relate guidelines to each other:
i.e. where do guidelines fit together
Guideline Submitter