

# MQAF: A Medical Question-Answering Framework

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## Abstract

Traditional question-answering programs are difficult to write and require: question analysis, document identification, and text extraction. Thousands of new documents are created daily, making it difficult to determine which has useful data. MQAF facilitates the process by limiting the factors used in the process: a Lexicon (the UMLS), a medical term identifier (MetaMap), a Question Taxonomy, and a Medical Information website that is both evidence-based and kept up-to-date.

## Description

Question-answering in the medical domain is an urgent problem that requires a generalizable solution. It is impossible for physicians to keep up with the thousands of new articles that are published daily. Also, it is difficult to learn the most efficient browsing and searching methods used at different medical information provider's sites. A study by John Ely M.D. et al found that primary care physicians will only spend 2 minutes searching for an answer.

Some question-answering projects are not aimed at answering medical questions, such as those in the

TREC question-answering track. Others are local, such as InfoButtons™ by James J. Cimino, M.D. at Columbia, NY. No one has created a scheme that can be generalized and used by anyone at any location. MQAF is an attempt to solve the problem by offering a framework that anyone can use.

The black boxes are replaceable, comparable to plugins most developers are already familiar with. My prototype uses the UMLS Lexicon, MetaMap API, and the Question Taxonomy described by Ely et al in BMJ 2000. I wrote a Question Parser in Java, a Naïve Bayesian Question Classifier and a Question Selector in MS-SQL. I developed the Answer Mapper in collaboration with Brian Alper M.D., using his DynaMed website as the evidence-based, up-to-date medical information source. Other developers can use different resources and develop different processes.

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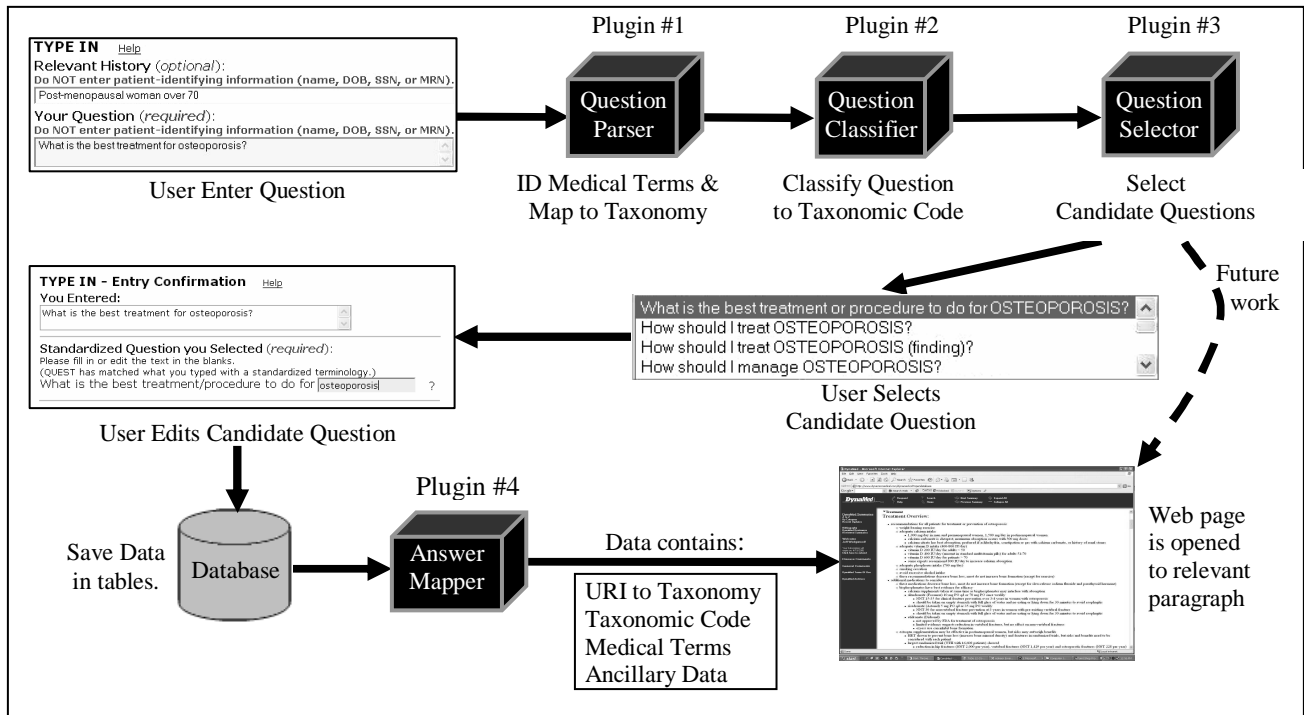


Figure 1 MQAF functions and processes.