Chapter V

CONCLUSION

This study has developed a Thai Herbal Medicine Ontology that conceptualizes the formal domain knowledge of herbal medicine in order to support the consultation services provided by Thai Traditional Medicine Information Service (TTM-IS) regarding information search and retrieval. The Thai Herbal Medicine Ontology (THMO) has been developed, featuring the practices and theories of Thai traditional medicine as well as Thai folk remedies. It is intended to be a reference model of Thai traditional medicine knowledge. This semantic search application can assist the work of healthcare professionals at TTM-IS with respect to information search by means of a concept-based search system.

Contributions of the study

This study hopes the development of this ontology-based search system would o make significant contribution to the advancement and utilization of Thai herbal medicine in a few ways. First, it has constructed a taxonomy of concepts that would greatly enhance knowledge and understanding of Thai traditional medicine and provide a valuable tool for search systems in this field. The utilization of ontology techniques to identify key concepts and relationships among concepts in Thai herbal medicine has created an explicit form of this domain knowledge. The ontology, which has been validated and tested for credibility, conformability,

transferability and reusability, holds potential for building upon or linking to related ontologies in the future.

Second, this study has developed a MySQL-based database of Thai herbal medicine. When integrated with the ontology, this database has created a knowledge base in the RDF (Resource Description Framework) format, using OAM, an ontology mapping tool.

Third, this study has adopted the OAM semantic search application template in order to create a semantic search system with a user interface that will be a prototype for other ontology-based search systems on Thai traditional medicine and herbal remedies. .

Limitations of the study

1. The Sematic Ontology Search (SOS) is a prototype of search system developed to demonstrate the usefulness of an ontology of Thai herbal medicine ontology in support information search on the subject. . Although, the concept-based search can retrieve precise and coverage answers for the end user. the search process may still be too complicated for general users compared to search engine such as Google or Yahoo with which they can just type keywords for a search. By contrast, to be able to use SOS effectively, the user must understand which concepts represent the key words about which they want to know. Therefore, any users of this search system should be trained in the ontology schema and system function to attain accurate search results. The user interface which is available and used to develop the sematic search system in this study is designed for general purposes rather than for specified fields of knowledge such

as Thai herbal medicine. Consequently, information display of search results such as formulation ingredients, indications or clinical warnings are not user-friendly as it is difficult to read and not attractive. This expected to be improved in the new version of semantic ontology search.

2. To make this study manageable, information in the database is representative rather than comprehensive. It covers only 133 plants and 23 formulations. A vast amount of data must be added in the database in the future if TTM-IS are to take full advantage of this search system.

3. Large volume of data may slow down the search speed of the current version of SOS. The efficiency of search with THMO would benefit from improvements in its next version.

Future development

To further develop THMO into a truly comprehensive application, the ontology of Thai herbal medicine needs to be expanded in its depth and breadth. For example, to increase the depth, the hierarchy of health problems should be extended by adding more subclasses conceptualized from a much wider range of illnesses and diseases. . This, however, is contingent upon a systematic classification of diseases according to Thai traditional medical theories, which is not yet available. Therefore, high priority should be given to research to build such a taxonomy of diseases.

While a larger number of experts in herbal medicine should be involved to refine the ontology, the participation of experts from other related fields, specifically

Thai traditional medicine would broaden its scope, establishing links between THMO and other domains of knowledge such as medical knowledge, plant pharmacology, plant phytochemistry or ethno-botany. Furthermore, it could be branched out into other useful information systems such as a herbal medicine literature search system, a recommendation system and decision support applications.

Finally, further development of THMO should concern terminology standardization and evaluation of its efficiency as an informational retrieval model in terms of precision, recall and/or F-measure.