

DEVELOPING AN ONTOLOGY OF UMANGLAI CULTURE



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short profile :

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ABSTRACT:

This paper discusses on the potential of establishing Ontology for the rich cultural heritage and traditional knowledge of Manipur with special reference to Umanglai culture. Among the various complicated types of Umanglai cultural heritage, the authors choose Kanglei Haraoba of Meitei community Manipur as an example and apply the CIDOC Conceptual Reference Model to

the construction of the entities and properties of the knowledge ontology of the Kanglei Haraoba,. This study has tried to provide the solution to the construction of the knowledge ontology of the Umanglai cultural heritage and benefits the digital storage, preservation and management of the cultural heritage, which offers a new way of thinking and is of great significance to the preservation and inheritance of intangible cultural heritage of Manipur. Development of a central repository of Manipur's digital cultural heritage materials is the ultimate aim of the present study which would improve the accessibility, resource discovery, preservation and promotion of the state's cultural heritage information by providing a single gateway to culture and heritage information of Manipur. It covers only the grass-roots level work (conceptual) for developing an ontology-based central repository. This paper is purely a research paper based on the PhD research work conducted by the author.

KEYWORDS

CIDOC CRM, Umanglai culture, Central repository, Traditional knowledge, Ontology, Informatinalisation

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1. PRESERVATION OF UMANGLAI CULTURE

We live with our heads held high because of the cultural heritage left behind by our ancestors. But with the advent of modernization, the value of culture seems to fade away from our lives. Even though Manipur can be proud of having a rich cultural heritage, without proper documentation and preservation of the same, the later generations as well as those from other states would find it hard to know the true culture of the state. In fact, failure to document it would gradually lead to extinction of the heritage. It is the responsibility of oneself to involve in the preservation of one's culture. Regarding the tangible and intangible heritages, it is very essential that an individual takes a bigger role to preserve the latter.

Manipur, a little paradise in the North-East India, has a rich cultural heritage, rooted in the ethos of religious, cultural and social customaries of the community since time immemorial. The state has many spectacular contributions to the world culture, special mention may be made of Manipuri dance (Ras Lila), music (Pena), theatre (Shumanglila), martial art (Thang-ta), Umanglai Haraoba and polo, etc. The world famous Encyclopedia Britannica has also proved that polo is originated from Manipur. The Meiteis, the majority of the people of Manipur, today are very much indebted to their forefathers for inheriting such a rich cultural heritage. The Umanglai Haraoba- a ritual festival of sylvan deity (main part of Umanglai culture) is counted as the unique contribution of Meitei to the domain of world culture. The Meitei villages in Assam, Tripura, Bangladesh and Myanmar also, celebrate Umanglai Haraoba. The credit for the Manipuris being able to excel in various games and sports must go to the institution of Lai Haraoba, where a variety of indigenous games are still preserved for posterity. Mukna, KhongKangjei, SagoKangjei, Chenjong-Mangjong, Lamjel, Thang-Ta, Boat Race etc. are parts of Lai Haraoba ceremony. The sporting spirit inherent in our forefathers and ancestors has been handed down from generation to generation through the tradition of Lai Haraoba. Undoubtedly, Manipur becomes the powerhouse of sportspersons in the country.

Lai Haraoba depicts the theories of evolution and creation of life; social, cultural, political and religious aspects of Manipuris; natural, environmental and physical sciences; health, medicine and sports of the indigenous people; literature, dance and music; rites and rituals associated with the Manipuris. Lai Haraoba in itself is a university preserving and imparting knowledge on a variety of subjects. In short, Umanglai Haraoba is the only original source of all the cultures and traditions i.e., the Universe of Knowledge in the Meitei Society. Thus, Lai Haraoba is the only cultural activity in which social, philosophical and religious lives of the Meiteis are depicted very deeply and carefully. With this cultural activity, the continuous thought of the people of this culturally rich land is preserved from the long gone days never decaying and fading. The scientific and philosophical knowledge inherent in the Lai Haraoba needs to be thoroughly studied by the contemporary society. Identity and civilization of the Manipuris are reflected in this festival. Lai Haraoba, the vibrant festival and religious realm, is widely helpful in the socialization and nation making process of the Manipuris. It embodies the elements of common ancestry, integrity and communal harmony among the various communities residing in Manipur.

Recognizing the importance of cultural heritage information, UNESCO has taken the responsibility as the sole UN agency with the mandate for promoting the stewardship of the world's cultural resources at all levels. 10th and 11th Five Year Plan of Government of India and National Knowledge Commission even focused on preservation of traditional knowledge which is a medium for

transmission of knowledge from generation to generation. Such type of preservation programme cannot be effectively implemented unless information regarding traditional knowledge is made available to every individual (i.e., authorities, planners, professionals and target groups) at the right time. In this backdrop, there is a need to study various cultural programmes carried out by the Govt. / Non-Govt. agencies and the requirements of the user communities and to develop an effective central repository of traditional knowledge.

Umanglai culture has not got the worldwide recognition and it is still known only by some people in the state. Even in Manipur, the Umanglai is losing its prominence. Among the various factors for this situation, a major reason is lack of sufficient research and proper information support system. Even the study and research activities taking place in the various parts of the state are not properly coordinated. They are carried out in isolation. Most of the traditional knowledge of Umanglai culture remained in oral form and are in danger of dying if they are not documented and preserve properly in a central repository for easy retrieval and global access. A state Implementing Agency with sufficient government backing can unearth of these valuable treasures. Such kind of study is needed to explore the formation of cultural identities and cross-cultural relations in South-East Asian region. [1]

2. DEVELOPING AN ONTOLOGY OF UMANGLAI CULTURE

Development of ontology for Umanglai culture is one of the processes of the construction of a central repository of Umanglai culture which includes collection of information (see Figure 1), organization with a classification scheme, consolidation, digitization and retrieval. In the main Ph.D work, the authors classify traditional knowledge of Umanglai culture with the help of DDC 21st edition. The concept of using ontology-based information retrieval in an institutional repository is not new. The application of the Dewey Decimal System is an interesting approaches in this case study. Such type of classification will also be seed ontology for building Umanglai cultural domain ontology. The ultimate aim for the cultural central repository initiative is to enhance accessibility and to improve preservation. The establishment of such a repository in Manipur will enhance global community's understanding and appreciation of the Manipuri culture and heritage, and thus providing an important reference point for the world to access to information on Manipuri cultural heritage information. There are various reasons as to why we should go for a central repository approach of such traditional knowledge that may include long term preservation of knowledge, easy and wider access to content or simply, centralized organization information and thus make "Global access to local information. [2]

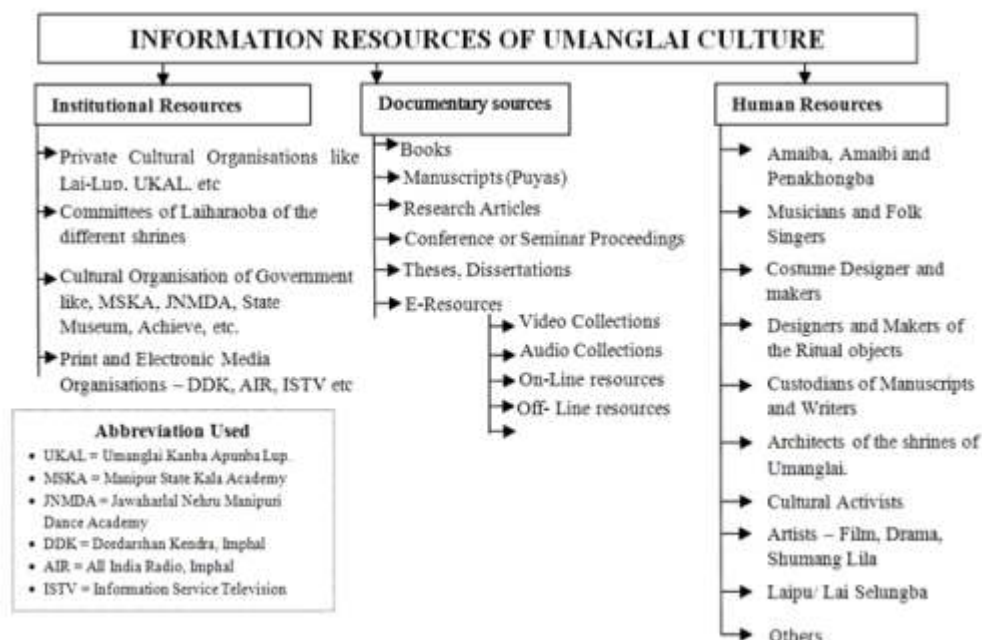


Figure1: Information Resources of Umanglai culture

In this case study, the authors have done the research of constructing knowledge ontology of Umanglai cultural heritage based on CIDOC CRM model. The resources of cultural heritage of Manipur are everywhere. Due to the fact that the cultural heritage is huge in quantity and jumble in its knowledge, it is difficult to construct the whole knowledge ontology of the entire cultural heritage of Manipur. The authors take the Umanglai Haraoba of the Meitei community rich in knowledge as an actual case to construct the knowledge ontology, and designs and constructs the domain ontology of the Umanglai Haraoba of the Umangai cultural heritage. So there is still a long way to go to construct the ontology of the entire cultural heritage gradually later on. The present study is of some significance to the preservation and inheritance of the rich cultural heritage of Manipur. If it can construct the knowledge ontology database for all the cultural heritages in the future through a series of tools based on the database so as to reach the goal of providing an effective way for the informationalization of the means of preservation and management of intangible cultural heritage of the state, it will contribute a lot to the development of the informationalization of the cultural heritage of Manipur.

The CIDOC CRM emerged from the CIDOC Documentation Standards Group in the International Committee for Documentation of the International Council of Museums. Initially, until 1994, the work focused on developing an entity-relationship model for museum information, however, in 1996, the approach shifted to object-oriented modeling methodologies, resulting in the first "CIDOC Conceptual Reference Model (CRM)" in 1999. The process of standardizing the CIDOC CRM began in 2000 and was completed in 2006 with its acceptance as the ISO 21127 standard. The overall aim of the CIDOC CRM is to provide a reference model and information standard that museums, and other cultural heritage institutions, can use to describe their collections, and related business entities, to improve information sharing. The CIDOC Conceptual Reference Model (CRM) provides definitions and a formal structure for describing the implicit and explicit concepts and relationships used in cultural heritage documentation.

[3] The CIDOC CRM is intended to promote a shared understanding of cultural heritage information by providing a common and extensible semantic framework that any cultural heritage information can be mapped to. It is intended to be a common language for domain experts and implementers to formulate requirements for information systems and to serve as a guide for good practice of conceptual modeling. In this way, it can provide the "semantic glue" needed to mediate between different sources of cultural heritage information, such as that published by museums, libraries and archives.

The CIDOC CRM provides an extensible ontology for concepts and information in cultural heritage and museum documentation. The "CIDOC object-oriented CRM is a domain ontology, but includes its own version of an upper ontology. It is the international standard (ISO 21127:2006) for the controlled exchange of cultural heritage information. Archives, libraries, museums, and other cultural institutions are encouraged to use the CIDOC CRM to enhance accessibility to museum-related information and knowledge. The overall aim of the CIDOC CRM is to provide a reference model and information standard that museums, and other cultural heritage institutions, can use to describe their collections, and related business entities, to improve information sharing. [4]

In the present study, the CIDOC Conceptual Reference Model as an ontology which allows for creating global networks of related knowledge will offer an alternative solution to the challenge of providing meaningful integrated access to heterogeneous cultural heritage information of Manipur. It will facilitate the controlled exchange of the information between various memory institutions like archives, libraries and museums. The usage of shared knowledge model, the CIDOC CRM ontology will enhance accessibility to cultural heritage information of Manipur and provides an important information standard and reference model for Semantic Web initiatives. [5]

3. THE CONSTRUCTION OF THE ONTOLOGY OF UMANGLAI CULTURAL HERITAGE FACE TO ACTUAL CASES-BASED ON CIDOC CRM MODEL

The present study (under progress) sets goals to work in different stages, and finally forms the technical route of constructing the ontology of the cultural heritage with the preparation stage, construction stage, and storage stage. Among which, the client demand analysis is done in the preparation stage to determine the aims and scopes of the ontology application. Based on knowing the client's demand; the corpus will be collected in combination with related information inquiries in the network, and field visit. In the construction stage, the corpus is analyzed quantitatively to determine the concepts, definitions, categories, classes, properties, and relations of the ontology construction. In the last stage of the semantic storage of the cultural heritage, the already constructed domain ontology of the cultural heritage is input into the database, so that, the goal of realizing the goal of digital storage and preservation of the data of the ontology of the cultural heritage is achieved. [6]

3.1. Choice of Domain Construction—KangleiHaraoba of Meitei Community

Umanglai cultural heritage is of great variety and quantity, multifarious in knowledge, so it is difficult to construct directly the whole ontology of the complete knowledge of the cultural heritage. As one of the most important representatives of the Umanglai cultural heritage, Umanglai Haraoba is classified as Kanglei, Kakching, Moirang and ChakpaHaraoba. It is quite representative of choosing a type of UmanglaiHaraoba to probe into the tentative construction of the domain ontology. Therefore,

Kanglei Haraoba has been chosen the construction of the ontology. It is celebrated in the core Meitei area in the central portion of the Imphal valley. This is around Kangla (ancient palace of Manipur), where the main deity is Pakhangba, the Supreme ancestor of the royal clan/ NingthoujaSalai. Rituals of KangleiHaraoba for which raw data are collected are given in Figure 3 and the basic components of Umanglai culture is shown in Figure 4.

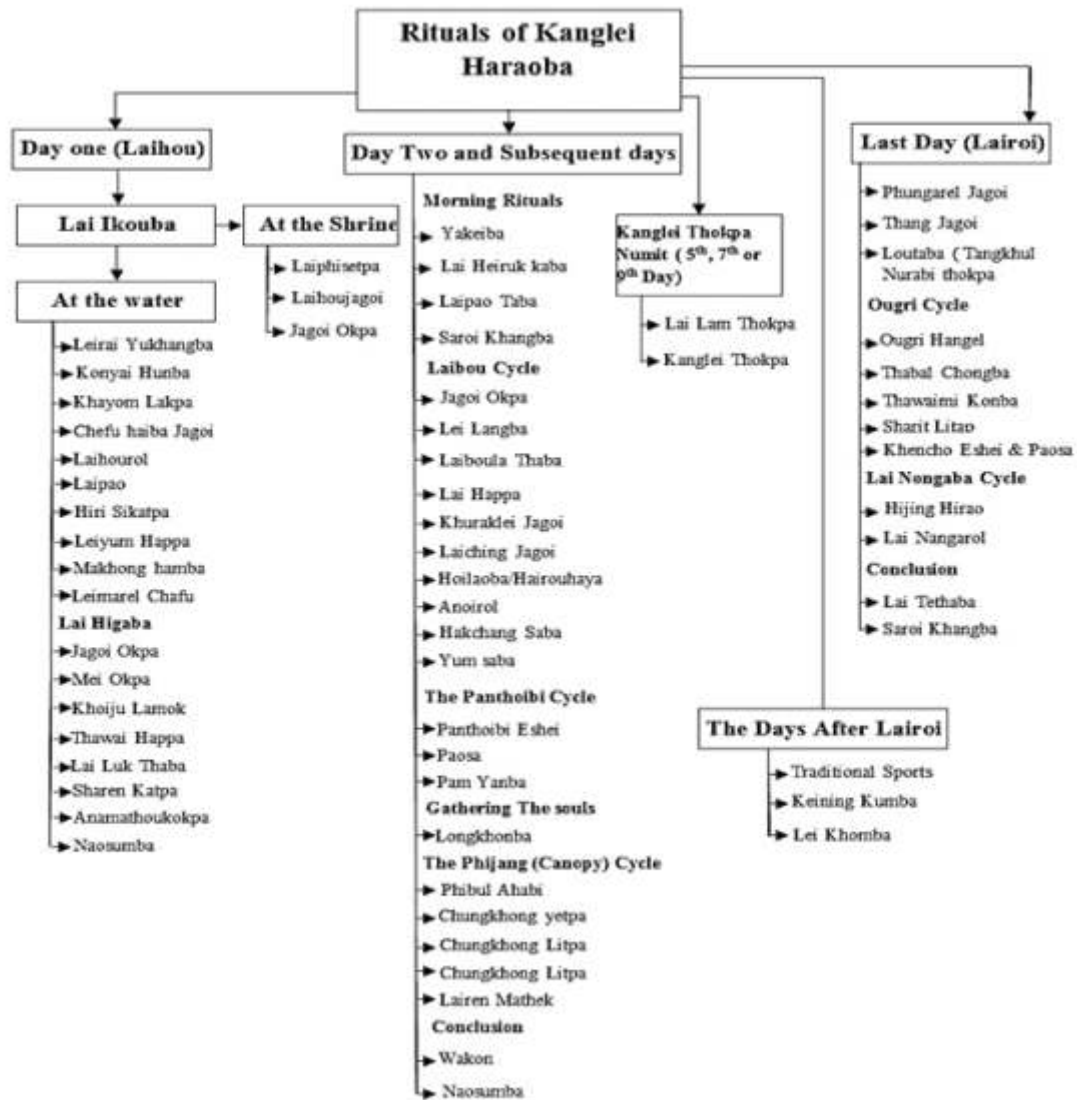


Figure 3:Rituals of KangleiHaraoba for which raw data are collected

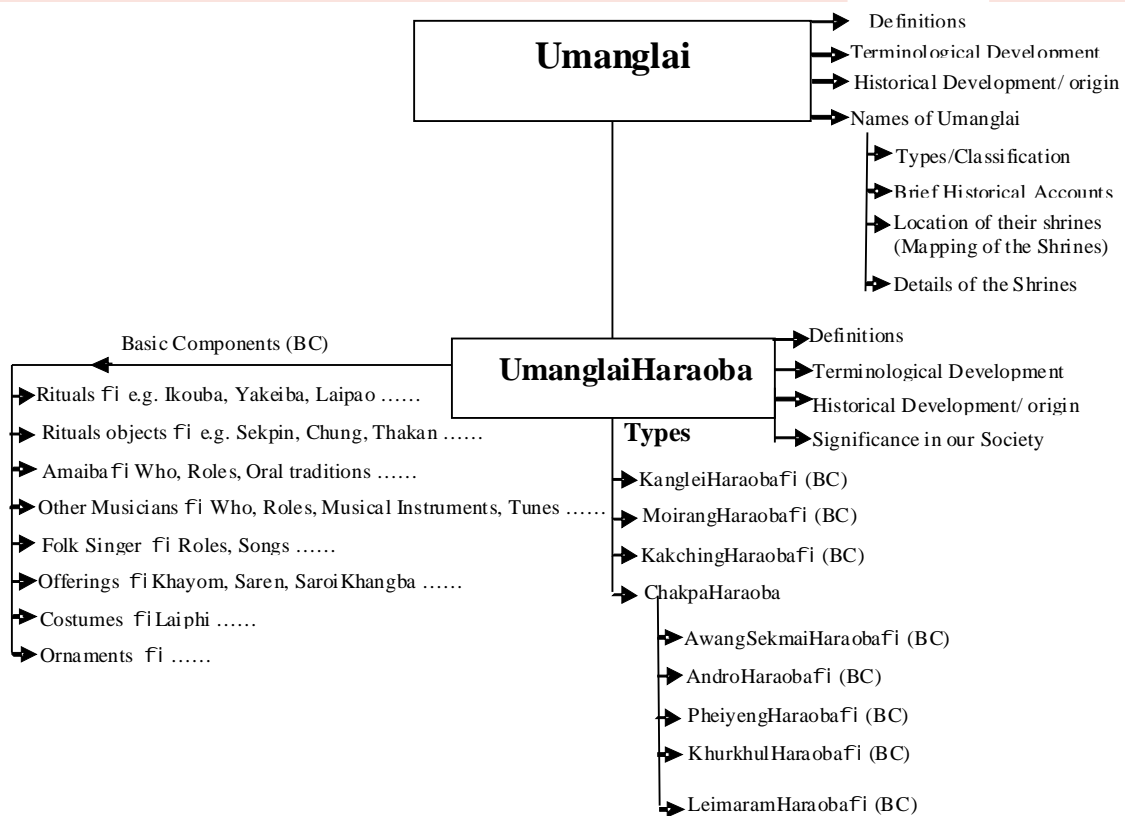


Figure 4: The chart showing basic components of Umanglai culture

3.2. Demand Analysis

Before the construction of ontology, to determine the application aim of the domain ontology is very important. (See Figure 5.)

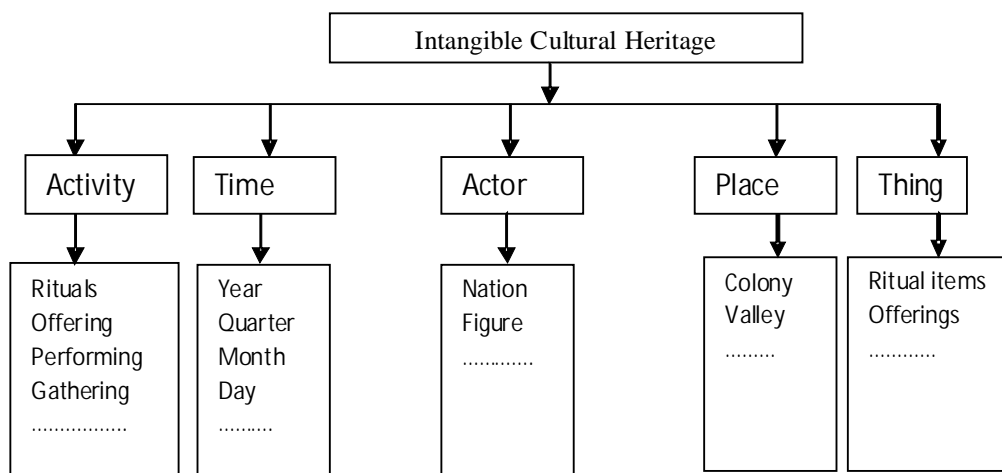


Figure 5. The Chart of Demand Analysis of the Information of Umanglai Cultural Heritage

Demand analysis is of great significance to limit the scope of the construction of the domain ontology, and strengthen the focus of the domain ontology, so as to further reduce the complication in the process of construction, shorten the period of the ontology construction, and reduce the cost of the ontology construction. The goal of the study is to construct such 5- dimension ontology of the cultural heritage as actionable information, time information, actor information, place information, and thing information, making the resources of intangible cultural heritage be recorded and describe wholly by data, and laying the common foundation for later all-round construction of the ontology of the cultural heritage.

3.3 The Construction of Domain Knowledge Hierarchy System

According to the features and the hierarchy of the knowledge of Umanglai cultural heritage, the author analyzes KangleiHaraobain details from such five aspects as activity, time, actor, place, and thing with every category, including several subcategories, and every category and its subcategories forming a tree-shape hierarchical structure. (See Figure 6)

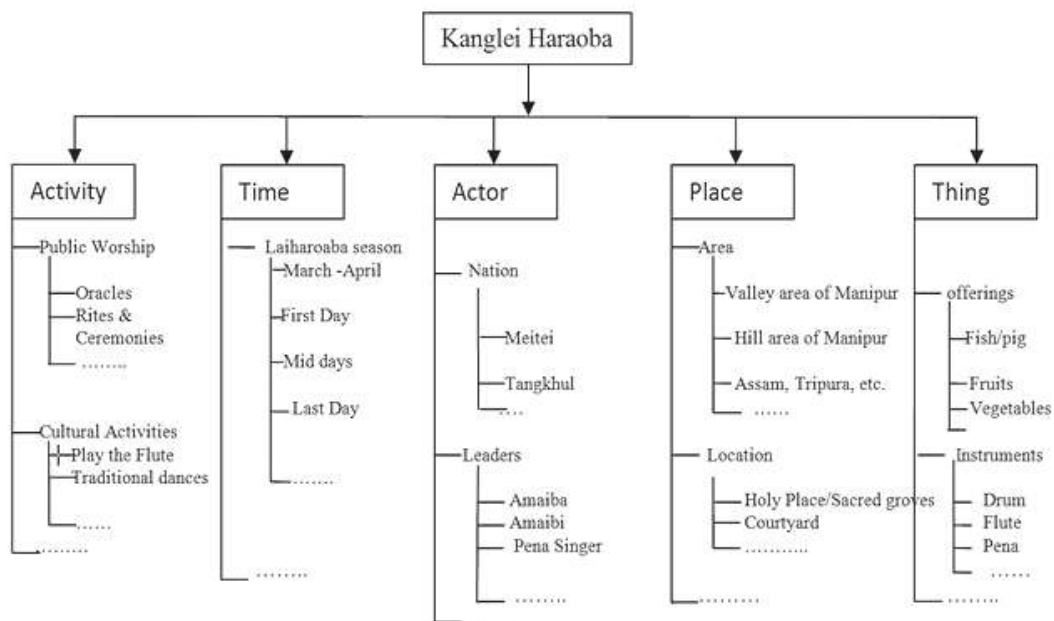


Figure 6. The Chart of the Knowledge Hierarchy system of KangleiHaraoba

3.4 The Definition of Kernel Concepts

The definition of the kernel concepts must be determined first before defining the entities in the construction of the ontology of intangible cultural heritage according to CIDOC CRM model. The author chooses the kernel concepts needed to construct the ontology and listed the relevant definitions concerning the definition of CIDOC CRM model of the International Documentation Committee. (Table 1).

Table 1. Definition of Kernel Concepts

Terminology	Definition
Class	A class is a category of items that share one or more common traits serving as criteria to identify the items belonging to the class.
Property	A property serves to define a relationship of a specific kind between two classes.
Domain	The domain is the class for which a property is formally defined. A property must have exactly one domain.
Range	The range is the class that comprises all potential values of a property.
Instance	An instance of a class is a real world item that fulfils the criteria of the intension of the class.

3.5 Defining Entities and Property Relations

The entity is something distinguishable and independent in itself, namely class in CIDOC CRM. CIDOC CRM will define the domain of cultural heritage in different entities. Since the hierarchical structures of different entities are different, the main entities need to be defined first before defining the suitable the entities of the domain of intangible cultural heritage, and then to extend other entities according to the main entities. Knowledge of intangible cultural heritage can be classified into five big categories: Activity, Temporal, Place, Actor, and Thing. According to the specification of the CIDOC CRM, the knowledge concepts on the top layer will be mapped correspondingly to such entities as Event, Time-Span, Place, Actor, Physical Thing, and Conceptual Object. Based on the definition rules of the CIDOC CRM, the entities of the KangleiHaraoba domain are mainly centered around activities and events, which will be classified as five categories as Temporal Entity, Time-Span, Place, Actor and Thing.

The entity construction system will not fully provide all the needed information of the reply system, so after these entities and hierarchies are defined; their properties need describing. According to the extraction of knowledge of the KangleiHaraoba and the construction of the hierarchy system, the study of defining the entities and the property relations of the KangleiHaraoba will be done based on the CIDOC CRM. CIDOC CRM will be applied to constructing the ontology of the interrelationship of then entities of the KangleiHaraobaconcerning the entities and properties.

3.6. The Storage of Database

The purpose of the study of establishing database is to manage the already constructed domain ontology data, and to structure storing the knowledge of domain ontology. The newly established form will define the fields in the data form bases on CIDOC CRM. Every form of the database each will have a

preservation number (ID), Property ID, Property Name, Entity-Domain, and their CRM entities and Entity-Range, and the information fields of CRM.

4. RECOMMENDATIONS AND CONCLUSION

A central repository of Manipuri digital cultural heritage materials would improve the accessibility, resource discovery, preservation and promotion of the state's cultural heritage information by providing a single gateway to Manipuri culture and heritage information. The findings of this initial study suggest that cultural heritage institutions in Manipur share some common views pertaining to the various aspects of digitization and documentation initiatives. These common goals, interest, and concerns are pertinent in materializing the idea of establishing a state digital cultural heritage repository centre for Manipur.

The research is of some significance to the preservation and inheritance of tangible and intangible cultural heritage of Manipur. If it can construct the knowledge ontology database for all cultural heritages in the future through a series of tools based on the database so as to reach the goal of providing an effective way for the informationalization of the means of preservation and management of the cultural heritage, it will contribute a lot to the development of the informationalization of the cultural heritage. This study has provided the solution to the construction of the knowledge ontology of the cultural heritage and benefits the digital storage, preservation and management of the cultural heritage, which offers a new way of thinking and is of great significance to the preservation and inheritance of the cultural heritage. Such type of ontology- based central repository will be useful for the Cultural University of Manipur which is going to establish very soon.

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