

Digital Humanities Research on GMS Cultural Heritage

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Topics of the Talk

1. Introduction to KKU and iSchool@KKU,
2. The Emergence of Digital Humanities
3. Digital Humanities Research at KKU

Khon Kaen University (KKU)

- Located in Khon Kaen Province, the heart of Northeast of Thailand
- One of the four regional universities established in 1964 as part of a decentralized development plan for higher education in Thailand



Khon Kaen University (KKU)

- Ranked no. 4-6 in the country (THEs/QS Rankings)
- Student population – 38,000
- Staff population – 11,000
- 26 Faculties/Colleges in all disciplines
- 329 study programs (undergraduate 119, master 138, doctoral 72; health science 111, science & technology 110, humanities & social sciences 108)





Khon Kaen City is located in the center of northeastern Thailand, the region generally known as Isan. The city lies at the intersection of the **GMS East–West** and **North–South Economic Corridors**, making it the transportation and logistics hub in the region. This also makes **KKU** into an **educational hub** of the region.

Development of

iSchool @KKU

1975
LS

1990
LIS

2002
ICM/IS

2019



Degree Programs

iSchool
@KKU

- ❖ Bachelor of Information Science (B.I.S)
- ❖ Master of Information Science (M.I.S)
- ❖ Doctor of Philosophy in Information Studies (PhD in IS)



From our perspective, we see that *DIK* – *Data, Information, and Knowledge* is the centric of information science education. Our responsibilities are to educate information professionals to be able to link the *DIK* from any kinds of resources, in any contexts and environments, to the *People* by using appropriated and advanced *Technology*.

iSchool
@KKU

Therefore, our graduates have been equipped with the knowledge and skills in managing the DIK effectively. The curriculum is interdisciplinary designed by maintaining the principles of data and content management in the fields of library science and integrating the issues of information management which is becoming very important for people and society at all levels.



iSchool @KKU



The Bachelor program in Information Science has been approved by the National Commission of Higher Education of Thailand under the “Project on the Development of New Generation of Graduates for the New Industrial Economy” in 2018. The curriculum is required to take learning and teaching approach using work integrated learning, and university-industry partnership model. The contents are designed in a modular system, including 4 core modules: (1) Information and Knowledge Acquisitions (IKA), (2) Information and Knowledge Organization (IKO), (3) Data and Information Analytics (DIA), and (4) Digital Information Services (DIS); and 3 elective modules.

iSchool @KKU



The graduate study programs are research-oriented. Students in the graduate programs are well equipped with advanced concepts and theories relating to information management that are the core principles for information science research. The areas of research have been focused on the issues of managing and organizing the DIK in various contexts. The topics of research are for example, digital humanities, information for social and organizational development, information and digital literacy, information system and technology, and information behaviors.



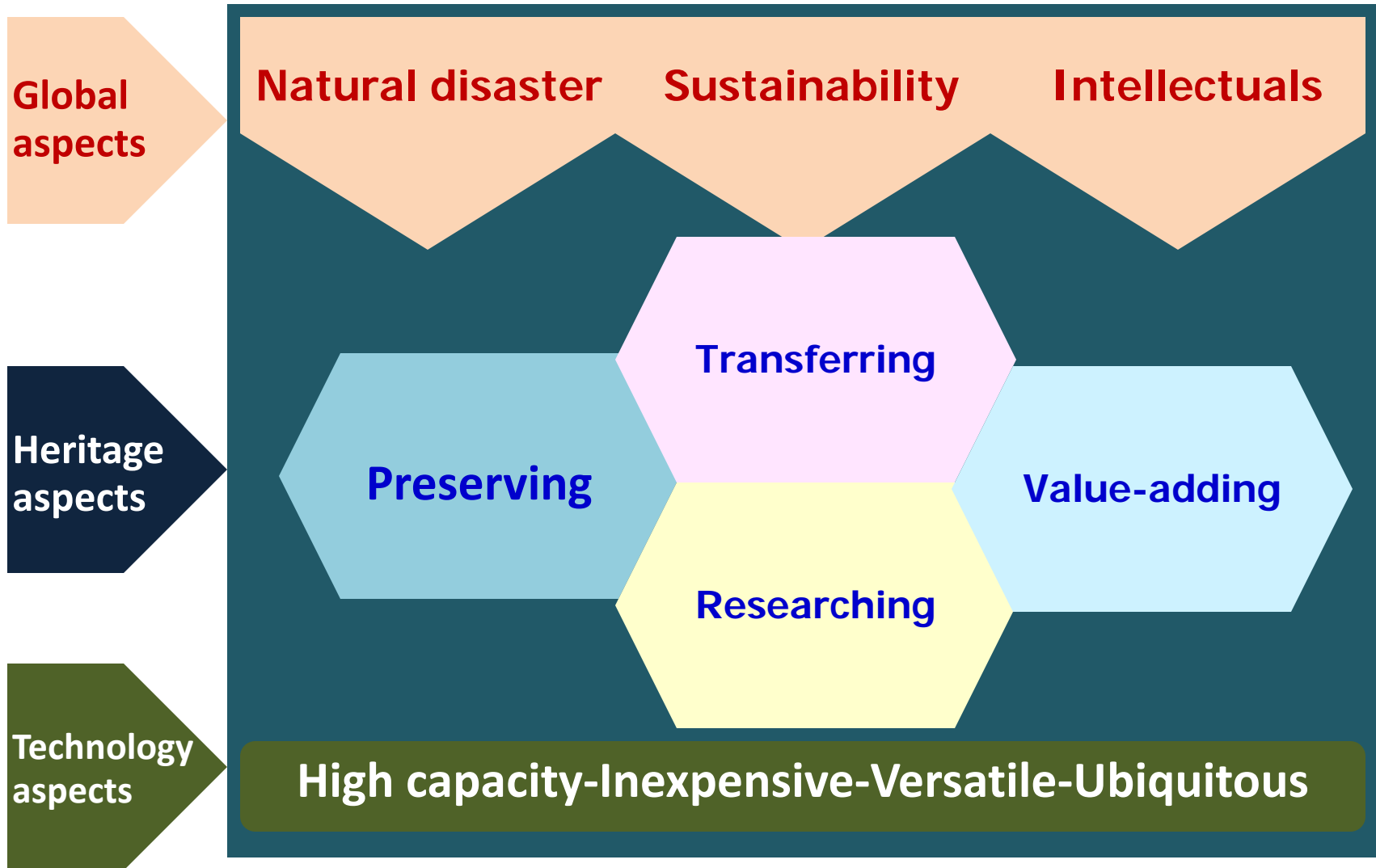
The Emergence of Digital Humanities



Society without Memory is a society without present or future

UNESCO. Memory of the World Programme.

Memory → Digitization



Emergence of DH Research



Digital Humanities (DH) is a research issue emerged from integration between computer science and humanities. It covers research related to compilation and systematization of knowledge and storing of the compiled knowledge in digital formats, both for statements and mixed media. It also explains knowledge in terms of semantic, statistics, and visualization related to interesting topics in the humanities.

Study methodology is incorporated, conventionally such as for history, philosophy, language, art, music, etc.; and by computer-based tools such as for digital archiving, ontology, semantic web, data mining, text analysis, or data visualization.



Emergence of DH Research

DH work responds to needs and necessity in knowledge management in the humanity discipline which is important for the study of humankind accounts that are gradually diminished. The knowledge can be retained in digital formats based on high technology, and can be utilized in research studies or exchanged among humanity researchers and individuals.



Emergence of DH Research



Examples of DH Research Centers

- Digital Humanities Research Center, King's College of London, UK
- Center for Digital Humanities, U College London, UK
- Center for Digital Humanities, UCLA, USA
- Digital Humanities Initiatives, U of Missouri, USA
- Institute for Digital Research in the Humanities, U of Kansas, USA
- Center for Digital Humanities Research, Australian National U, AUS
- Digital Humanities Center for Japanese Arts and Cultures, Ritsumeikan U, Japan
- Digital Humanities Center, National Taiwan U, Taiwan



Emergence of DH Research



DH Associations and Societies

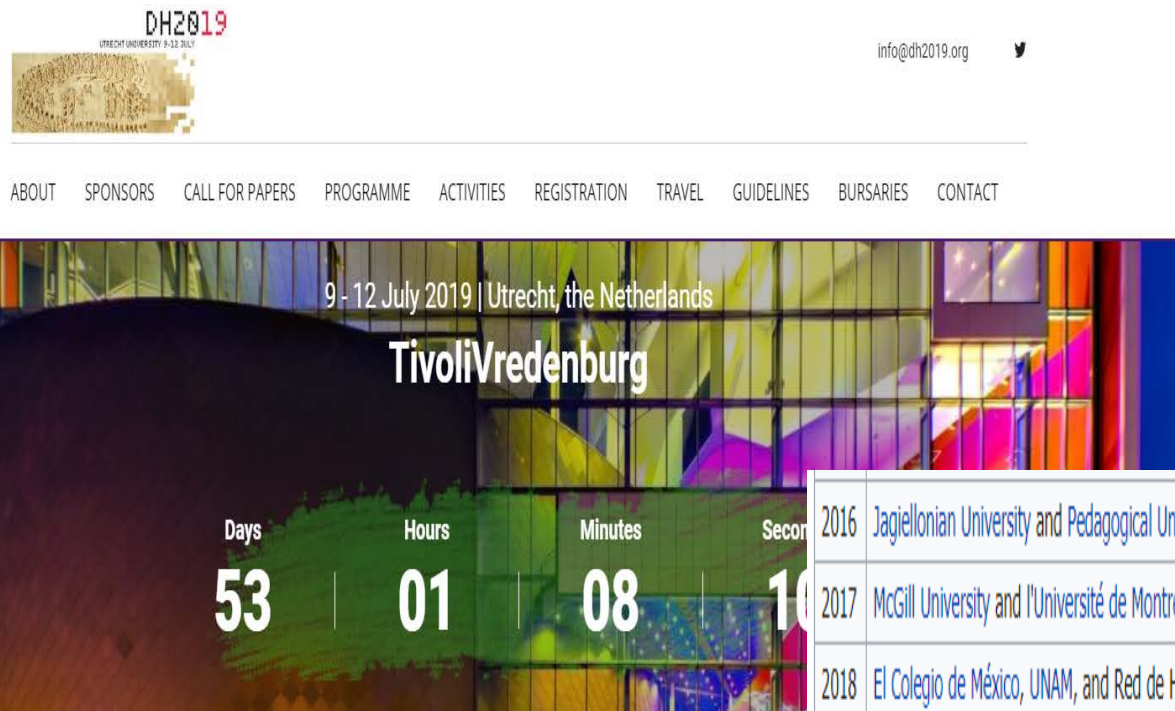
- Alliance of Digital Humanities Organizations (ADHO)
 - The Canadian Society for Digital Humanities
 - The European Association for Digital Humanities (EADH)
 - Australian Association for Digital Humanities (aaDH)
 - Japanese Association for Digital Humanities (JADH)



Emergence of DH Research



The **Digital Humanities conference** is hosted by Alliance of DH Organizations and has been held annually since 1989.



2016	Jagiellonian University and Pedagogical University of Kraków, Poland	website	July 10-16
2017	McGill University and l'Université de Montréal, Canada	website	August 1-4
2018	El Colegio de México, UNAM, and Red de Humanidades Digitales (RedHD), Mexico	website	June 24-July 1
2019	Utrecht University, Netherlands	website	July 9-12
2020	Carleton University and University of Ottawa, Canada		July 22-24
2021	The University of Tokyo, Japan		August 23-28



KKU-DHRG

Digital Humanities Research Group



KKU-DHRG VISION

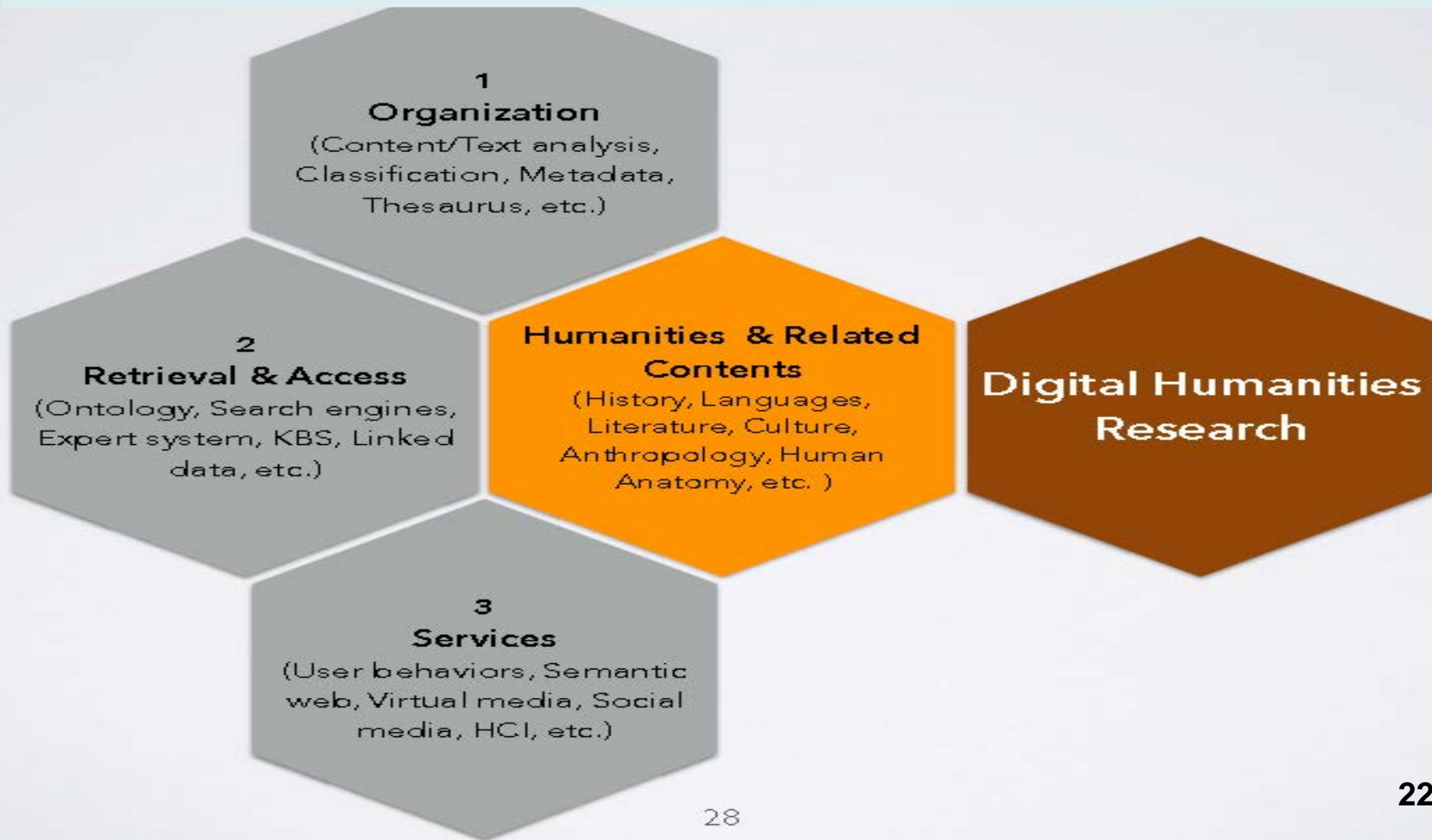
**To be a hub of digital humanities
research and studies of
Southeast Asia**



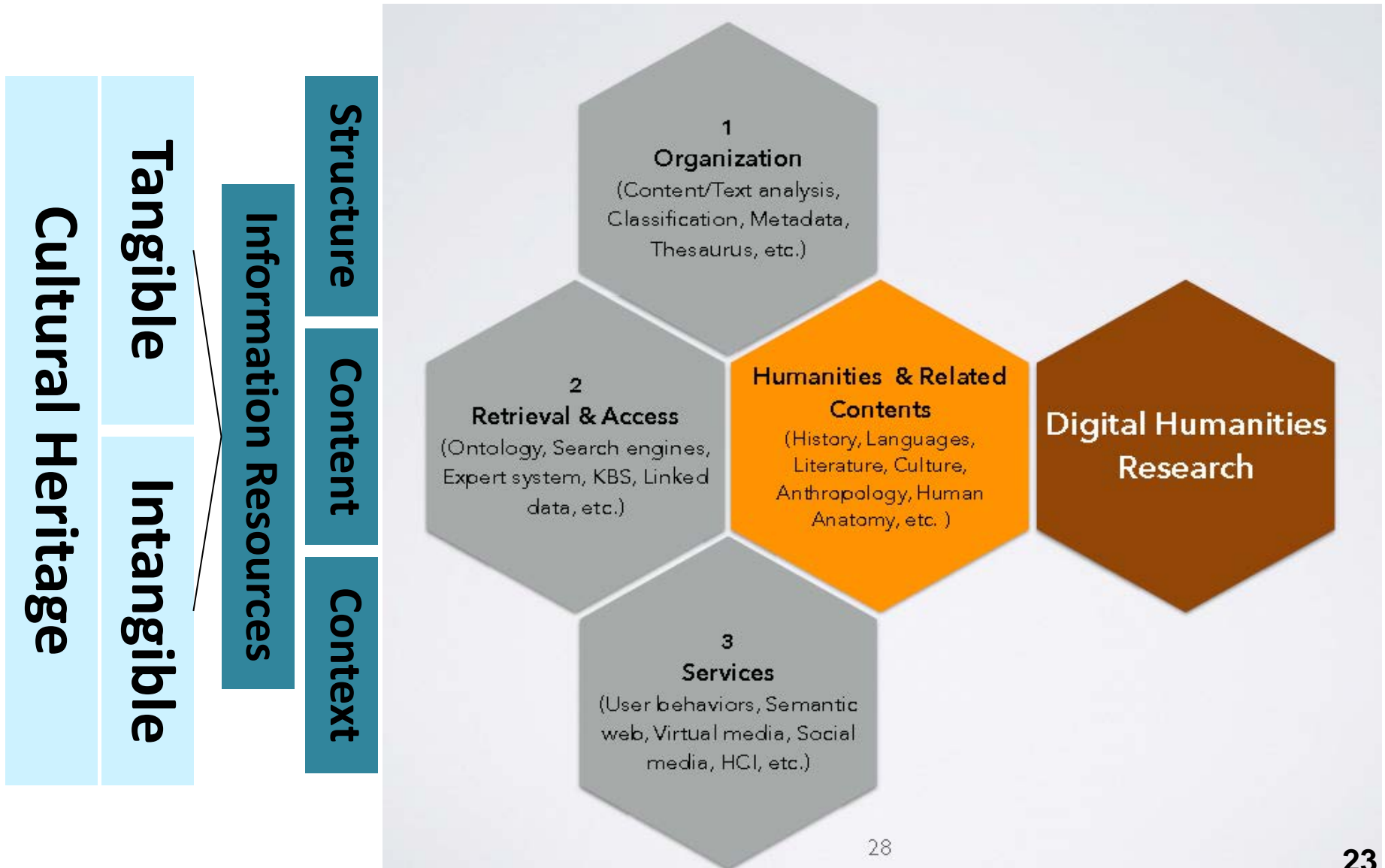
Objectives

- Collect, analyze, synthesize, store, and systematize knowledge contents in humanities which exist in multiple forms. Most of the knowledge is rare, reflects histories, cultures and ways of living. Present storage risks destruction and loss, both from man's naivety and natural disasters.
- Use high technology to manage knowledge contents in the digital format that will provide distance-, time-, and place-unlimited access for all who will in due course enjoy learning through new multiple dimensions.
- Develop multi-disciplinary research work among researchers and academics in the fields of humanities, and information technology and communication so as to create higher innovative research work in humanities.
- Produce work outcomes and reputation in digital humanities research work at the national and worldwide levels.

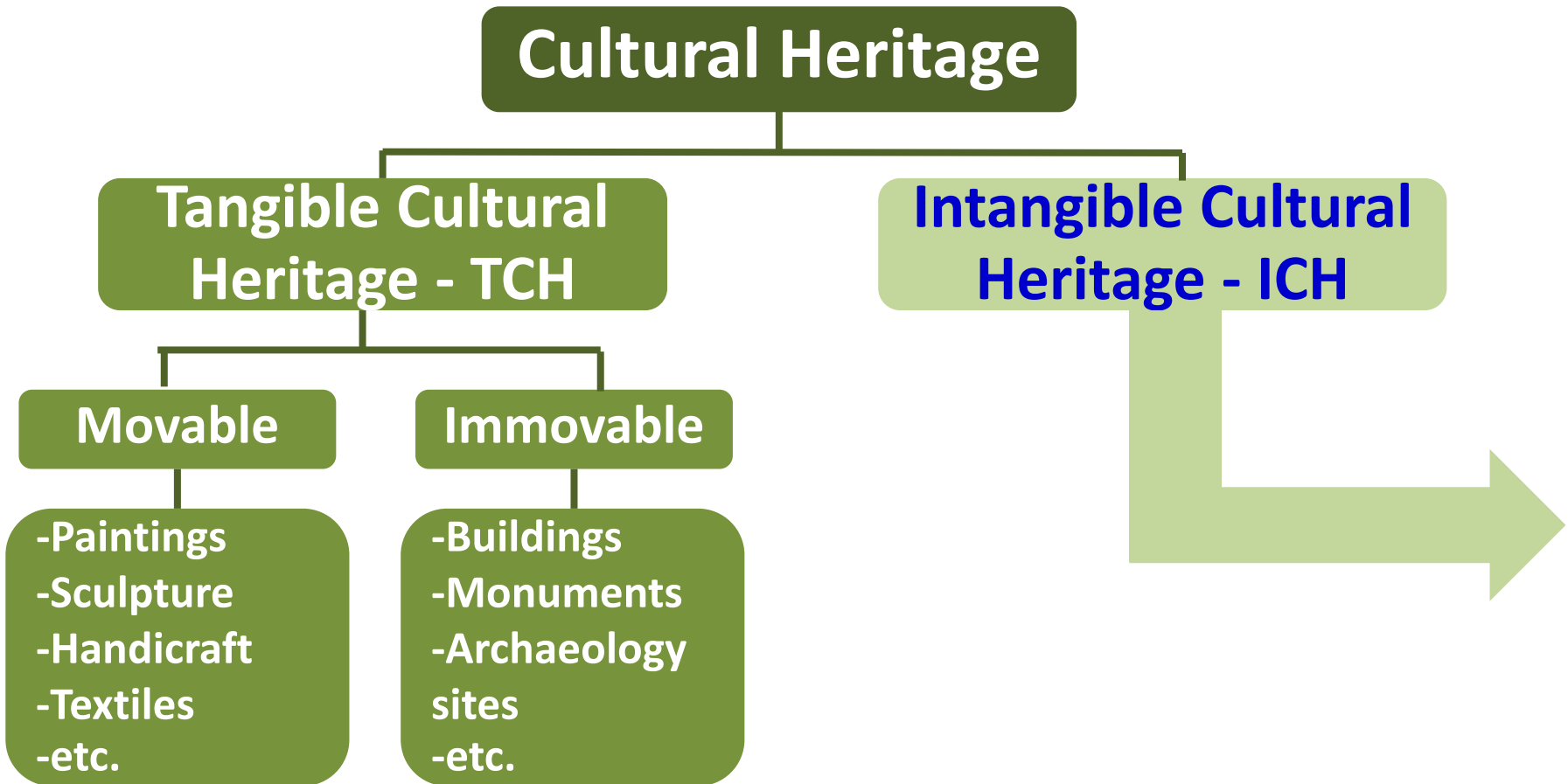
The Research Framework



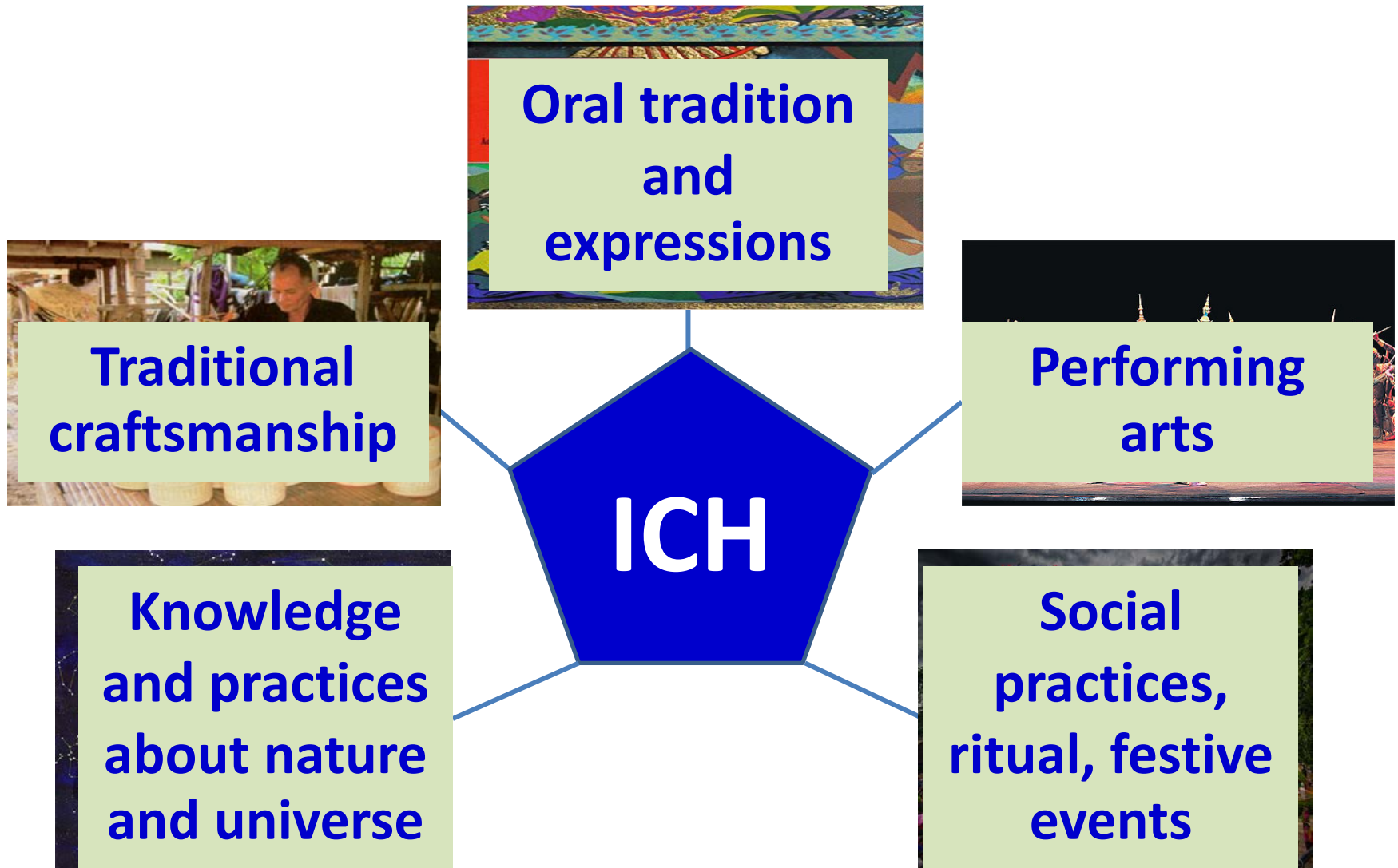
Digital CH Information Research



UNESCO Domain of Cultural Heritage



Intangible Cultural Heritage: ICH



GMS shares several ICH

Naga, a legend animal living under the Mekong river.



Digital Humanities Research on Cultural Heritage in GMS

**Cultural
Heritage**

+

**GMS
Focuses on
CLMTV**

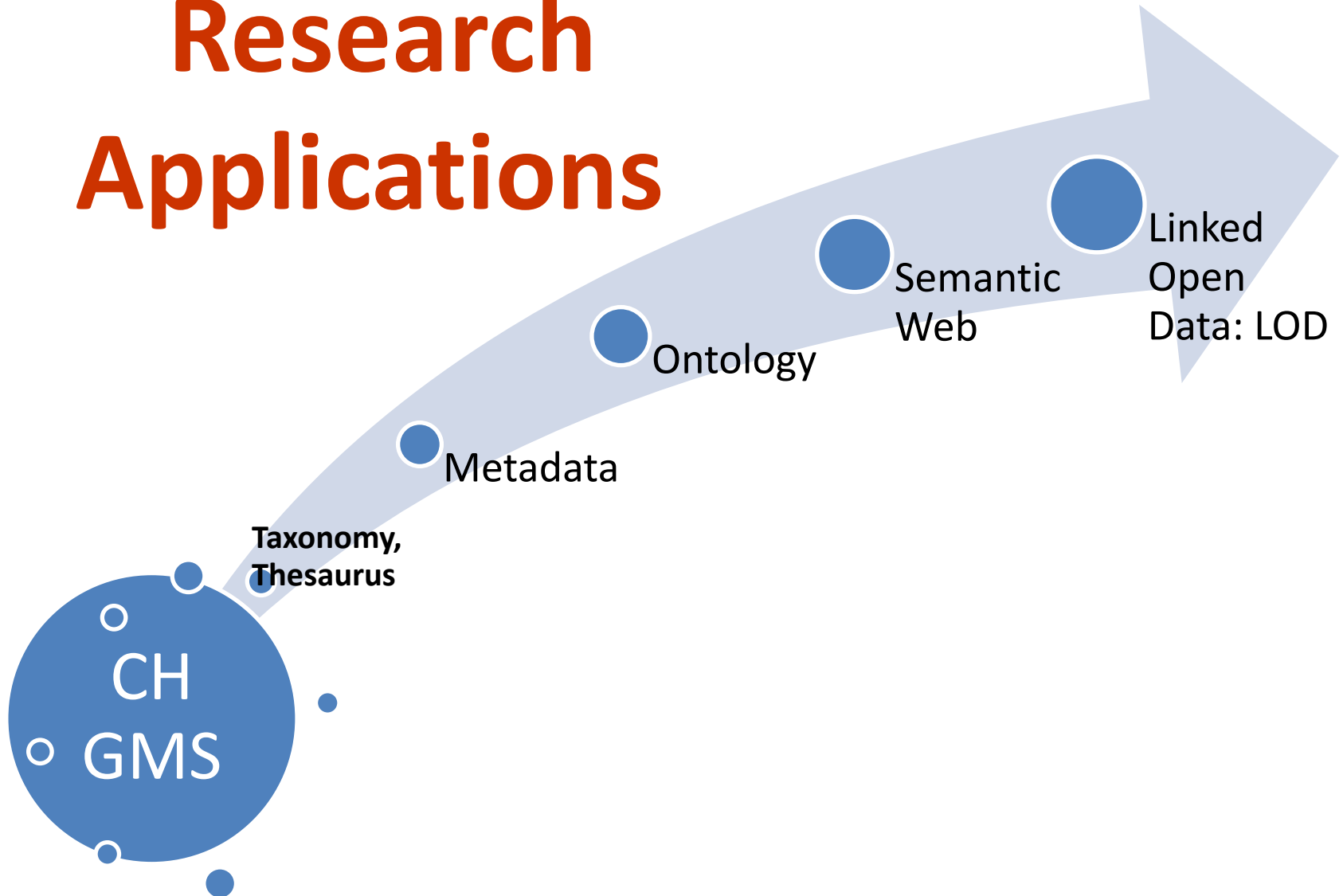
**Knowledge
acquisition**

**Knowledge
organization**

**Knowledge
modeling**

**Knowledge
presentation**

Research Applications



Example of Research Conceptual Framework

Resources for Cultural Knowledge Domain

1. Existing KO

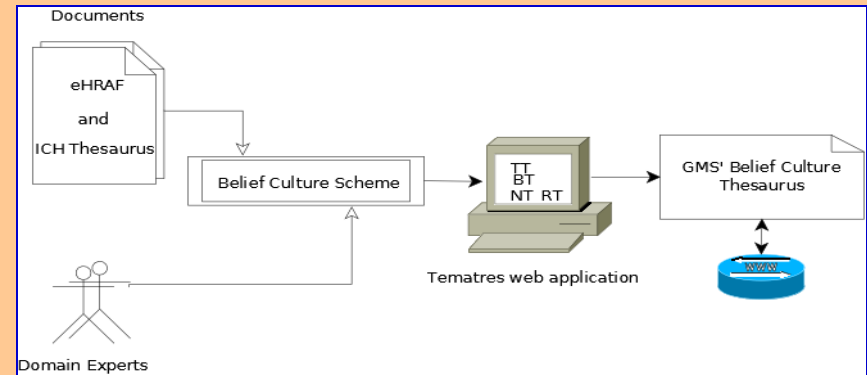
- Intangible Cultural Heritage (UNESCO, 2012)
- Human Relations Area Files, Inc. (eHRAF) (Yale, 2012)

2. Physical, Collections

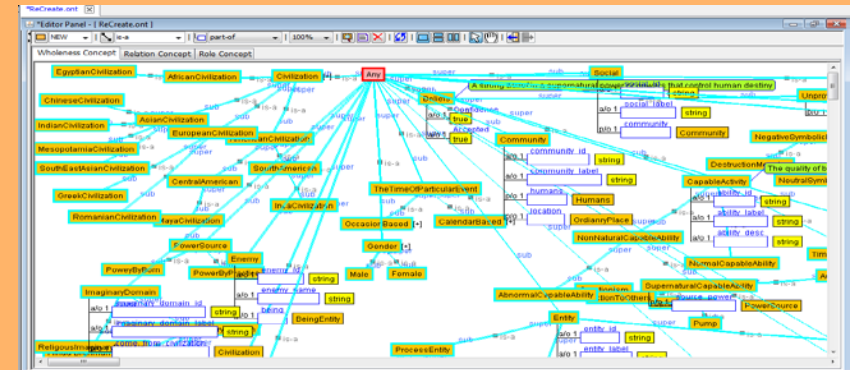
3. Printed & electronic resources

4. Domain experts

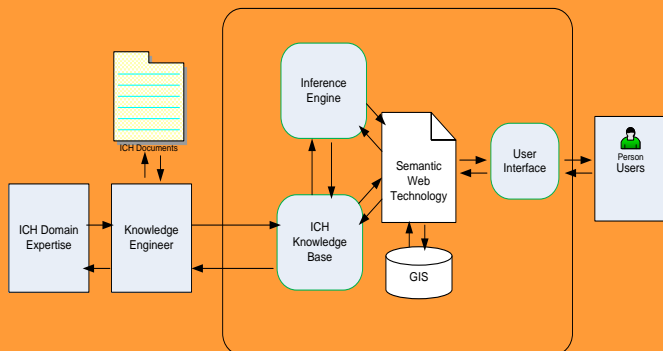
Thesaurus Construction



Ontology Development



Knowledge-based System



Visualization

Research Works of DHRG@KKU



1. Ontology, Taxonomy, Thesaurus

-- Belief culture; Folktales; Imaginary beings; Folk songs; Thai ethnic groups;

2. Metadata

-- Museum objects; Thai inscriptions, Palm leafs

3. Digital archives, 3D Virtual museum

-- Teaching works of HRH Princess Maha Chakri Sirindhorn at CRMA; Ban Chiang Potteries, Human Skulls.

Examples of Research Works of KKU-DHRG

Taxonomy of Folktales from the Greater Mekong Sub-region †

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Kulthida Tuamsuk is an associate professor in information science and a chair of the Doctor of Philosophy Program at the Faculty of Humanities and Social Sciences, Khon Kaen University, Thailand. Many of her research works are internationally published in the areas of information management, knowledge organization, knowledge management, information systems, and information services. She is a corresponding author of this article.

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Taxonomy of GMS Folktales

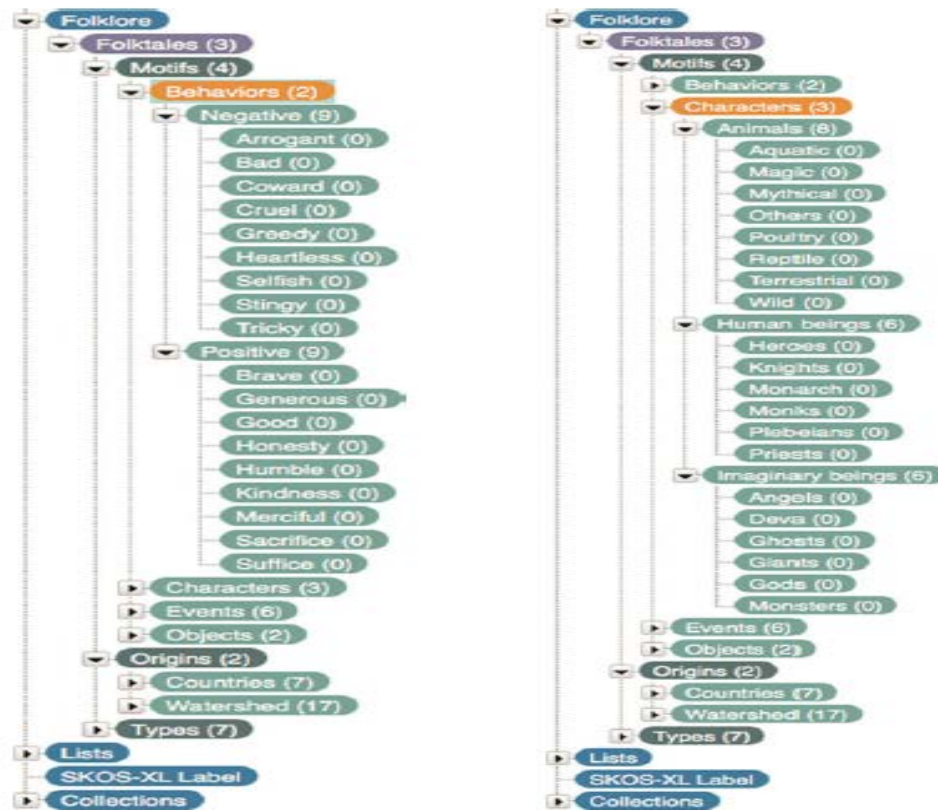


Figure 1. Screen shot of motifs concept in Taxonomy of Folktales in the GMS.

Concept 1	Concept 2	Concept 3
Types	Motifs	Origins (GMS)
Didactic tales	Characters	Countries
Fairy tales	Objects/things	Provinces
Formula tales	Behaviors	Watershed
Jokes	Events	
Legends		
Myths		
Religious tales (Jakata)		

Table 1. Taxonomy of GMS folktales.

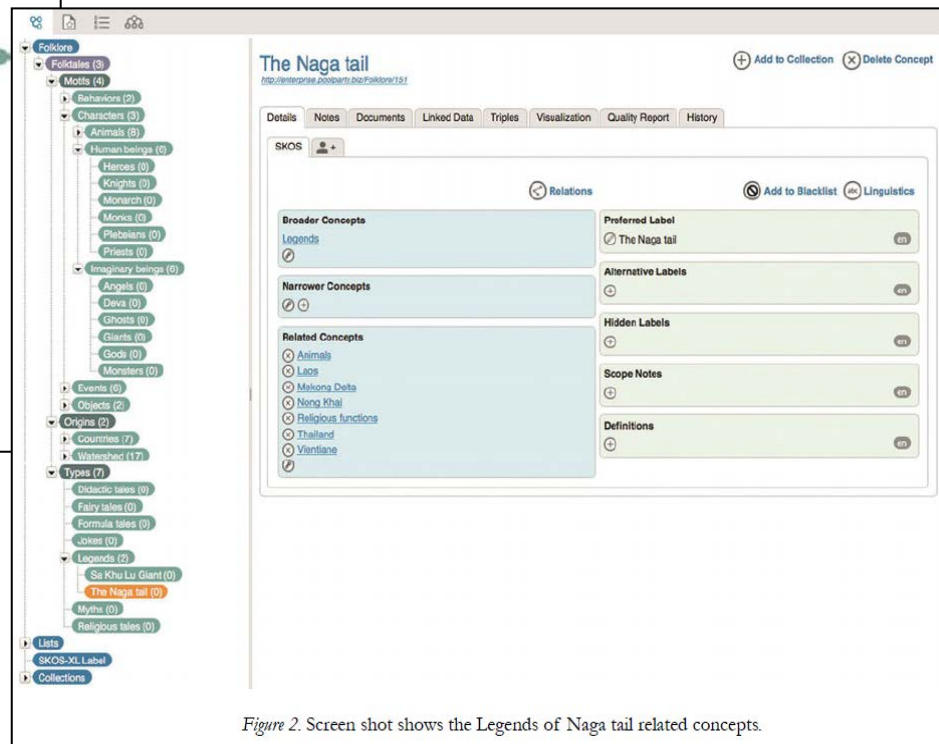


Figure 2. Screen shot shows the Legends of Naga tail related concepts.

Ontology of folktales in the Greater Mekong Subregion

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Abstract: The goal of this research is to use the digital humanities research concept in the folktales study in the Greater Mekong Subregion (GMS). This paper presents the second phase of the research, focusing on developing ontologies of folktales in the GMS. The ontology development comprised two processes: (1) ontology design and development and (2) ontology documentation. In both processes, domain knowledge and ontology of folktales were collected, captured, revised, and evaluated by experts in the field of folktale studies, literary studies, Asian studies, and ontology development. The outcome of this research is domain ontologies for folktales in the GMS. Approximately, 74 concepts of folktales in the GMS have been defined and classified into classes and subclasses, including some necessary scope notes and relationships of the topics. This developed ontology will be useful for the development of a semantic digital library of GMS folktales in the next steps of this research.

Keywords: ontology; folktales; GMS; Greater Mekong Subregion; digital humanities.

Reference to this paper should be made as follows: Tuamsuk, K., Chansanam, W. and Kaewboonma, N. (2018) 'Ontology of Folktales in the Greater Mekong Subregion', *Int. J. Metadata, Semantics and Ontologies*, Vol. 13, No. 1, pp.57–67.

Biographical notes: Kulthida Tuamsuk is an Associate Professor in Information Science and a Chair of the PhD program at the Faculty of Humanities and Social Sciences, Khon Kaen University, Thailand. Many of her works are internationally published in the areas of information management, knowledge organisation, knowledge management, information systems and information services.

Wirapong Chansanam is an Assistant Professor in Information System at the Faculty of Business Administration, Chaiyaphum Rajabhat University, Thailand. His research interest areas include: information system, information science, knowledge-based system, ontology, and digital humanities.

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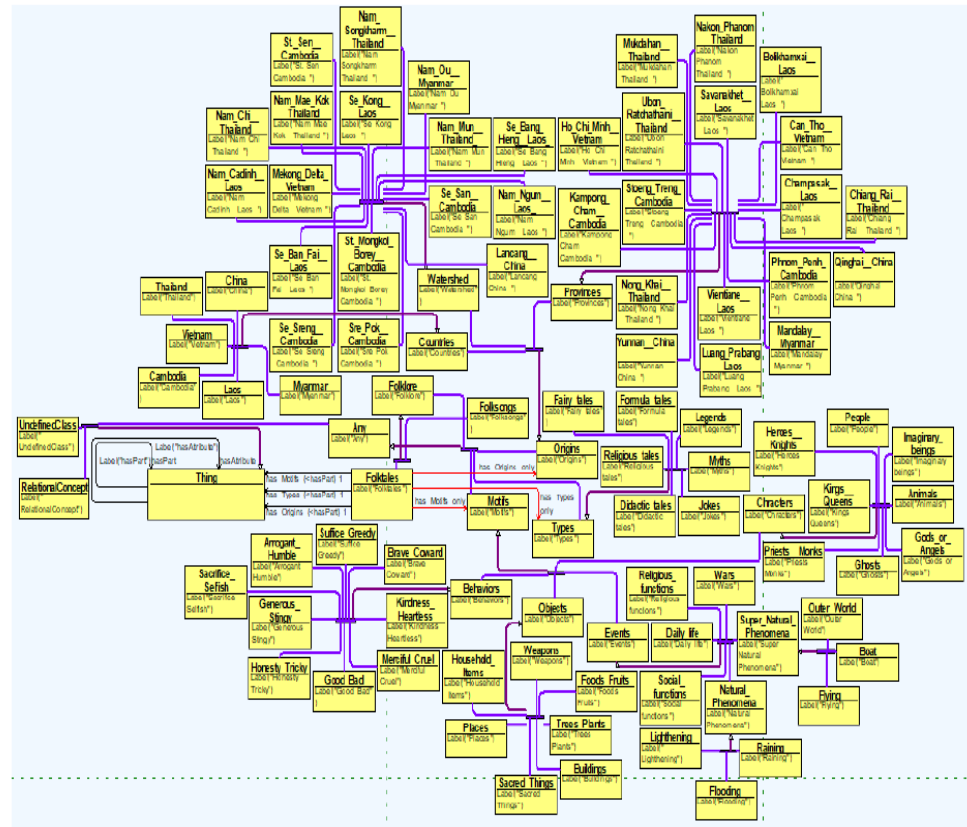
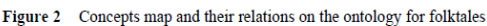
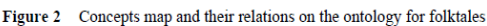


Figure 3 Diagram overview of the folktale ontology



Knowledge Classification on Ethnic Groups in Thailand

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ABSTRACT

This research aimed to analyze and develop a scope of knowledge and structure with respect to ethnic groups in Thailand. The research was conducted on the basis of the knowledge organization concept and principles of classification. This was a quality research that used content analysis method. It consisted of three processes: (1) identification of the scope of knowledge; (2) the development of knowledge classification and structure; and (3) evaluation and confirmation of the knowledge structure by experts. The research results provided the knowledge scope and structure of the ethnic groups in Thailand which comprises of 12 classes, 51 sub-classes, and 65 divisions. This knowledge structure can be used for ontology development or used as guidelines for subject headings and search terms in the information system.

ARTICLE HISTORY

Received September 2016

Revised November 2016

Accepted December 2016

KEYWORDS

Knowledge organization;
knowledge classification;
ethnic groups classification;
ethnic groups ontology;
Thailand

Introduction

Because Thailand is situated in the heart of the Southeast Asia, the place where most of the people are of different ethnic groups and languages, knowledge of the ethnic groups in Thailand is a requisite for the country's security and the peace of all its citizens. These people also mingle with the result that Thailand is a country with a multiplicity of ethnicities. Thus, understanding of or research studies on ethnic multiplicity is important and will result in knowledge in various fields such as economics, politics, sociology, cultural studies, subsistence, beliefs, languages, etc. The knowledge will also lead to solutions for various conflicts that arise from both large and small ethnic groups in the country, and this will be useful for determining a means for sustainable national development.^{1,2} Thailand sees the importance of this and hence founded the Office of Ethnic Group Affairs under the Department of Social Development and Welfare, Ministry of Social Development and Human Security. The Office is assigned responsibility for monitoring different policies related to ethnic groups with an awareness of the importance of the ethnic groups residing in the country. As such, understanding, solidarity, and peaceful

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Color versions of one or more of the figures in the article can be found online at www.tandfonline.com/wccq.

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Table 1. The scope of knowledge classification on ethnic groups in Thailand.

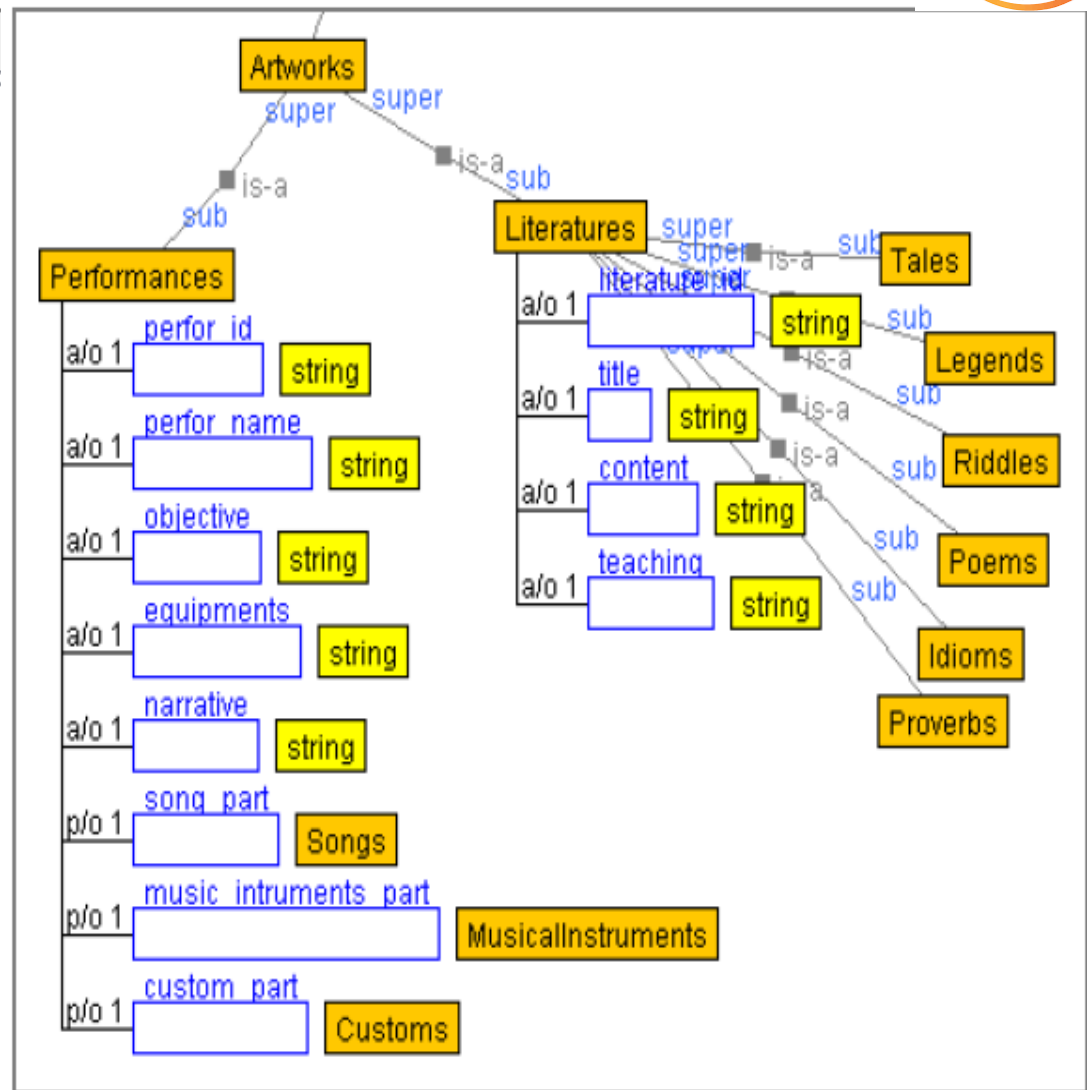
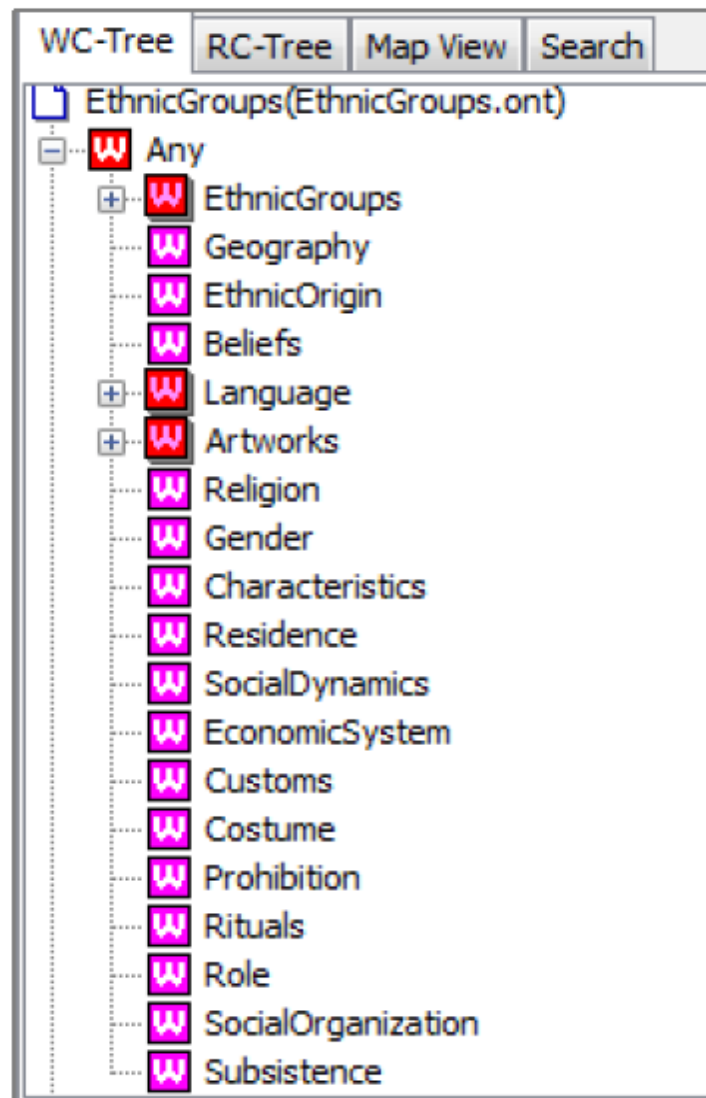
Class	Scope
1. Ethnic group name	The name of the ethnic group which is the name the group uses to call themselves and ethnonyms, including the meaning of the name
2. History	The history and background of the ethnic group before immigration into Thailand, including important places on the migration route and ethnic conflicts
3. Religion and beliefs	The religions and beliefs of the ethnic group, including what is concerned with the religion and beliefs that influence their subsistence; for example, beliefs in house construction, beliefs about health, etc
4. Customs and rituals	The customs and rituals inherited and continuously practiced by the ethnic group including activities that demonstrate their identity and outstanding characteristics
5. Demography and residence	The size of the population living in Thailand; their characters; the provinces they live in at present; housing characteristics, both form and now; and necessary household and outside-household utensils
6. Dress	The daily dress, as well as attire for the ethnic group's important rituals
7. Subsistence	The ethnic group's subsistence, which includes food, treatment of diseases, cultivation, husbandry, and wisdom
8. Social organization	The social organization of the ethnic group including the family, politics and governing, and prohibitions
9. Economic system	The production system, land tenure, labor, trade, and incomes of the ethnic group
10. Languages	The spoken language of the ethnic group, or the spoken language used by their ancestors, including other spoken languages the ethnic group can use, and any extinct language
11. Art works and entertainment	The creativity, works, and presentation of outstanding art works and entertainment of the ethnic group
12. Social dynamics	Their relationship with other ethnic groups, maintenance of their ethnic identity, social and cultural adjustment, and impact from development that brings about cultural changes

Classification of Thai Ethnic Groups

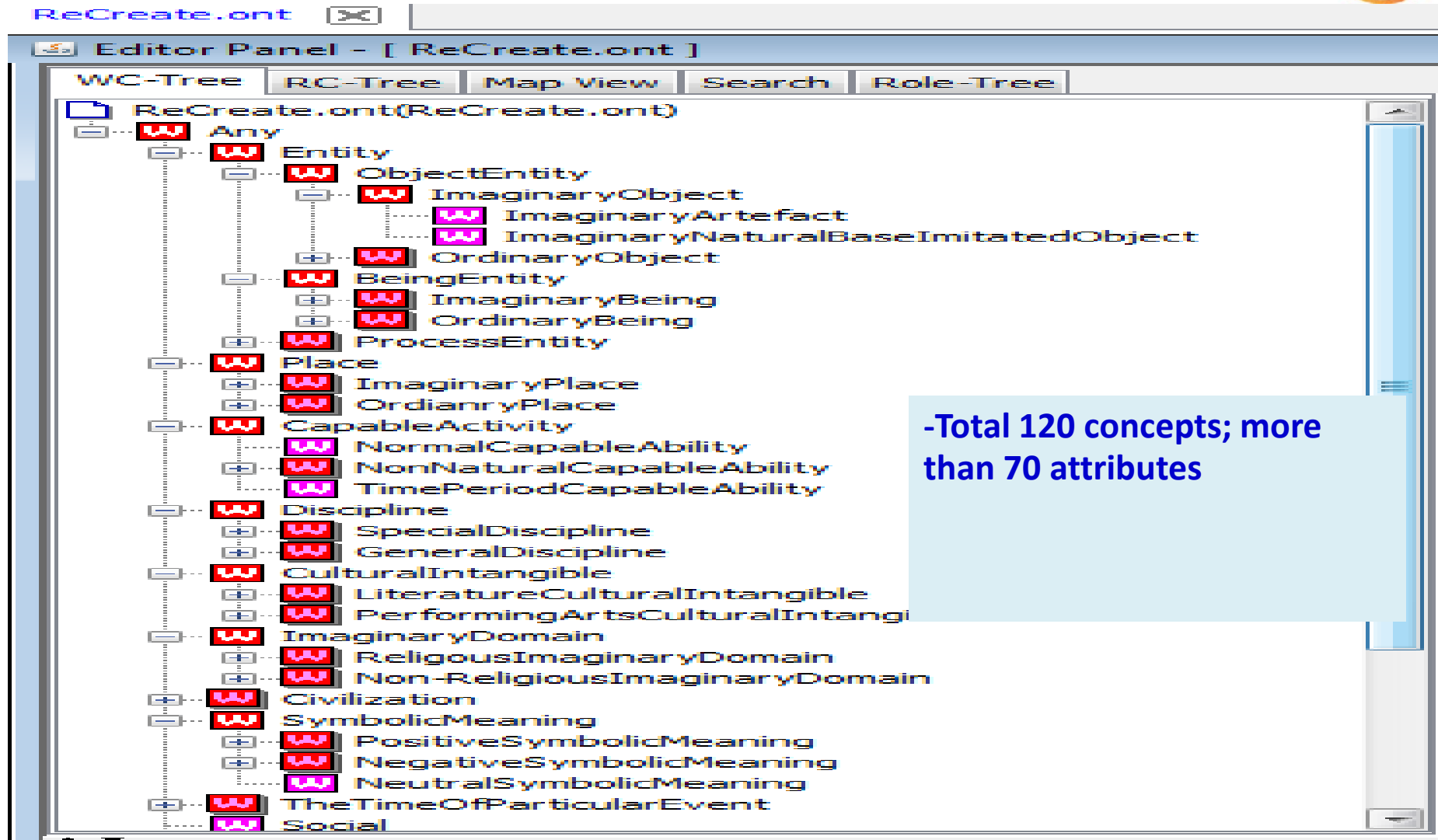
Table 2. Knowledge structure of ethnic groups in Thailand classified by knowledge classes, sub-classes, and divisions.

Class 1 Ethnic group name	
1.1	Self-name
1.2	Official name
1.3	Ethnonyms
Class 2 History	
2.1	Ethnic origin
2.2	Domicile
2.3	Immigration into Thailand
2.4	Myths/legends
Class 3 Religion and beliefs	
3.1	Religion
3.1.1	Religion practiced
3.2	Beliefs
3.2.1	Amulet, talisman, omen
3.2.2	Phantoms/Angels
3.2.3	Holy things
3.2.4	House building
3.2.5	Health and welfare
3.2.6	Nature and natural resources
Class 4 Customs and rituals	
4.1	Customs and rituals at individual level
4.2	Customs and rituals in family
4.3	Customs and rituals at community level
4.4	Social manners/Social etiquettes
Class 5 Demography and residence	
5.1	Population number
5.2	Characteristic
5.3	Provinces where they live
5.4	Topography
5.5	Household characteristics
Class 6 Dress	
6.1	Everyday dress
6.1.1	Children
6.1.2	Men
6.1.3	Women
6.2	Ceremonial dress
6.2.1	Children
6.2.2	Men
6.2.3	Women

Ontology of Thai Ethnic Groups



Ontology of Belief Culture



-Total 120 concepts; more than 70 attributes



Research Works of DHRG@KKU



computer-cpru.com/timemap/examples/belief/belief.html

แอป Bookmarks Suggested Sites Google Web Slice Gallery PANTIP.COM : P906... www.hiphopdancer... ออกรถระบบ Compaq Presario C... HP Support Assistant

Digital Humanities Research Group Data Management Examples: The Semantic Visualization of the Knowledge on Belief Culture in the GMS: Case Study of Naga

Knowledge on Belief

Here is the [Naga JSON data file](#).

Search:

Meaning

- 2
- 3 ความเจริญ
- 1 ความสำเร็จ
- 6 ความสุข
- 2 คัมภีร์
- 1 ทศสม

Imaginary Beings

- 1 นาค
- 12 พญานาค
- 1 พระยานาค
- 1 รุขงค์
- 1 มังกร
- 1 ลวง

Discipline

- 10
- 1 ประเพณีและเรื่องขานานาค

Literature

- 1 ขุนทิ้ง ขุนเทือง
- 1 จิมแปยชาดก
- 1 เจ้าพ่อศรีสุทโธ
- 1 สำนานกาลเกิดแม่น้ำโขง
- 1 สำนานพระเจ้าตนหลวง
- 1 สำนานพระพมพมบัวบก

LOCATIONS • IMAGINARY DOMAINS • DETAILS

15 Items

KBS for Belief Culture

Belief Culture Knowledge-based systems : Semantic web and GIS Integration

The GMS' Belief Culture Knowledge-based Systems

A strong belief in a supernatural power or powers that control human destiny. A vague idea in which some confidence is placed. Any cognitive content held as true. Powered by [KKU](#) and [NECTEC](#).

DisciplineID	BeingEntity	ObjectEntity	Discipline	Literature
dis01	พญานาค	instance_of_ObjectEntity_unique_id_tang07	พิธีกรรมโหลเรือไฟ	วังไฟพญานาค
dis04	พญานาค	instance_of_ObjectEntity_unique_id_tang08	พิธีกรรมเทศกาลบุญวิ่งไฟ	ผาแดงนางไอ่
dis06	พญานาค	instance_of_ObjectEntity_unique_id_tang39	พิธีกรรมบุญกอลงทอด สดสงน้ำ	ตำนานการเกิดแม่ป้าโขง
dis07	พระยานคร	-	พิธีกรรมกล่อมลูก	พระทองนางนาค
dis08	นาค	instance_of_ObjectEntity		
dis12	พญานาค	-		
dis14	นาค	-		

Look for

 has_literature LiteratureCulturalIntangible

ObjectEntityID	Cultural_Intangible	LinkToMap	Picture	ObjectEntity
tang47	พืชนาค	instance_of_Place_unique_id_loc33		พืชนาค

-RDF format (text, image, map)
-Semantic search (text search, option search)

Knowledge about ObjectEntity

CulturalIntangible : ผาแดงนางไอ่

Picture :



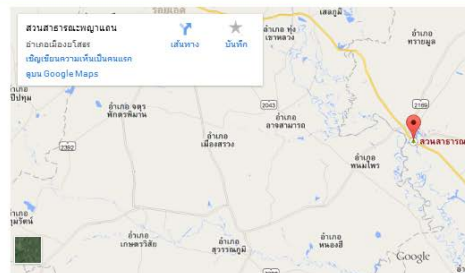
ObjectEntity : วังไฟ

Location : [instance_of_Place_unique_id_loc03](#)

ObjectEntityID : tang08

Knowledge about Place

Link :



Location : ฮีต

LocationID : loc03

Digital Collection of Ban Chiang Pottery



ภาชนะดินเผาลายเขียนสี

เลขลำดับ (Serial Number)

เลขวัตถุ (Registration Number)

เลขอ้างอิง (Date of Reference Number)

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ภาชนะดินเผาลายเขียนสี

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หน้าหลัก

เกี่ยวกับบ้านเชียง

พิพิธภัณฑ์เสมือนจริง

ลำดับเวลาเครื่องดินเผาบ้านเชียง

Digital Collection

★ เครื่องดินเผา
ชั้นเอกสมัยต้น

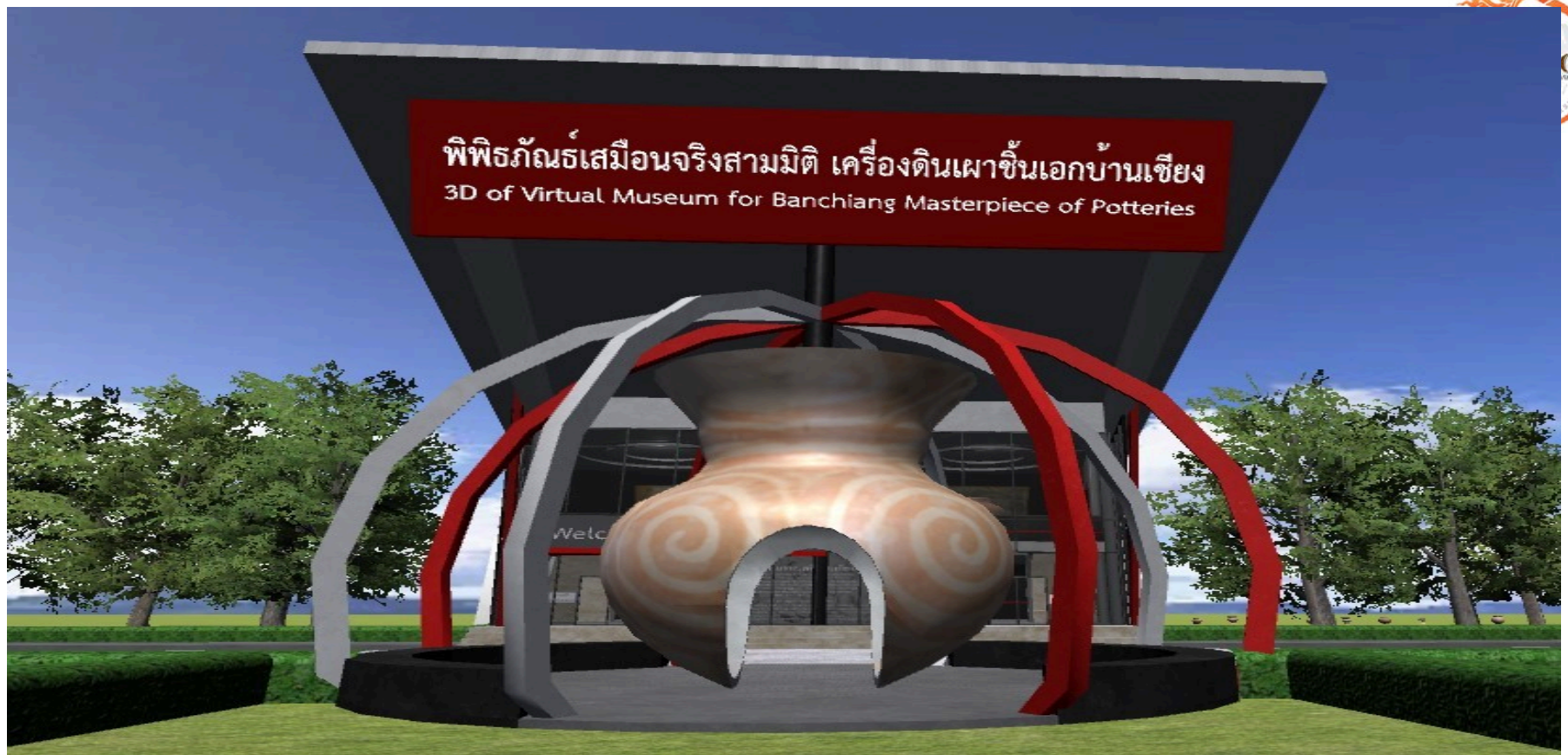
★ เครื่องดินเผา
ชั้นเอกสมัยกลาง

★ เครื่องดินเผา
ชั้นเอกสมัยปลาย

ลักษณะเครื่องดินเผา
บ้านเชียงสมัยปลาย

มิติทางศิลปะสังคม
และวัฒนธรรม

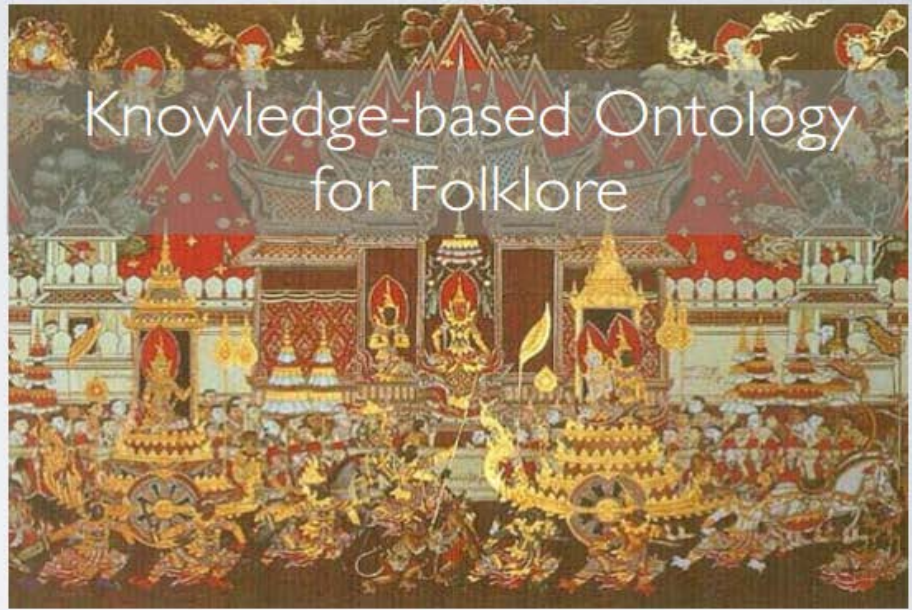
ข้อมูลเครื่องดินเผา
บ้านเชียงสมัยปลาย



Semantic Digital Library
of Thai Local history



Knowledge-based Ontology
for Folklore



3D Virtual Museum
of Human anatomy



Thank You