



## User Centered Design (UCD) Method to Design Regional Dance Application Based on Multimedia

Jimmi Hendrik P. Sitorus<sup>1</sup>, Allwine Allwine<sup>2</sup>

<sup>1,2</sup>Teknik Informatika,

<sup>1</sup>AMIK Parbina Nusantara, Jl. Pane No. 34, Pematangsiantar, Indonesia

<sup>2</sup>STMIK Methodist Binjai, Jl. Gatot Subroto No. 255, Binjai, Indonesia

Email : [jimmisitorus@amikparbinanusantara.ac.id](mailto:jimmisitorus@amikparbinanusantara.ac.id), [allwine@stmikmethodistbinjai.ac.id](mailto:allwine@stmikmethodistbinjai.ac.id)

### ARTICLE INFO

### ABSTRACT

#### Article history:

Received: 12/01/2020

Revised: 22/07/2020

Accepted: 01/08/2020

#### Keywords:

Application, Regional Dance,

Multimedia, User Centered

Design

Regional dances are generally less attractive to Indonesian people today. Because regional dance is seen as something that is not interesting, especially for teenagers today. Regional dance seems increasingly marginalized or neglected and very few people who know regional dance from each region itself. Regional Dance Application is a multimedia-based application that can display information on regional dance to the public in the form of images, videos and audio through information media, namely computers. With this application, it is considered to be able to speed up or be efficient in typing short messages, so that the time used in typing messages is not too long. UCD (User Centered Design) is a new paradigm in the development of web-based systems. UCD (User Centered Design) is a term used to describe a design philosophy. The concept of UCD (User Centered Design) is the user as the center of the system development process and the purpose or nature of the context and system environment are all based on user experience

Copyright © 2020 Jurnal Mantik.

All rights reserved.

## 1. Introduction.

Regional dance is one of the valuable assets owned by each region in Indonesia. Indonesian regional dances are the result of intentions and works in a culture. As an archipelago consisting of various cultures, of course Indonesia has a variety of Indonesian regional dances. Indonesian regional dances which are characteristic of every region in Indonesia, as well as cultural identity.

Today, the regional dances are less interest by Indonesian people. Because, regional dance is seen as something unattractive, especially for today's youth. They are even more interested in dance that originated not from Indonesian culture. Therefore regional dances for the future must be continue to be preserved, so that regional dances will develop and be better known by the community.

Multimedia is the use of computers to present and combine text, sound, images, animation, audio and video with tools and connections (links), so the users can navigate, interact, work and communicate. Multimedia is often used in the world of informatics. Apart from the world of informatics, Multimedia is also adopted by the world of games, and also for creating websites.

UCD (User Centered Design) is a new paradigm in the development of web-based systems. It's a term used to describe a design philosophy. The concept of UCD (User Centered Design) is the user as the center of the system development process, and the purpose or nature of the context and system environment are all based on user experience.

## 2. Basic Concept of Multimedia

### 2.1 Multimedia

The term multimedia consists of 2 (two) words, multi and media, multi words means many or more than one, while the word media means a tool or means or tool for communication. Communication is a two-way relationship between something with humans or vice versa human with humans, or even something with certain communication media intermediaries that are made in such a way as to allow for such interactive relationships. So, multimedia is a means or tool or communication device through more than a communication medium to



convey information. While multimedia computers are computer-based communication tools or devices for delivering information. The advantage of multimedia is that it attracts the senses and attracts interest, because it is a combination of vision, sound and movement.

**2.2 Video**

Video is a technology for capturing, recording, processing, transmitting and rearranging moving images. Video used celluloid film, electronic signals, or digital media. Video can also be said as a combination of static images that are read sequentially at a time with a certain speed. The images that are combined are called frames and the speed of reading images is called the frame rate, with one fps.

**3. UCD (User Centered Design)**

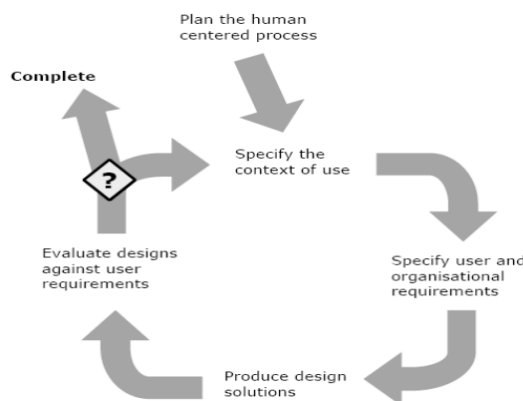
UCD (User Centered Design) is a design philosophy that places the user at the center of a system development process. The difficulty of the user (end user) so far to read and translate the documents in each development can be helped using the UCD (User Centered Design) method. Techniques, methods, tools, procedures and processes that help design interactive systems are built based on user experience. UCD (User Centered Design) is translating human participation and experience into design.

**3.1 UCD (User Centered Design) Process**

According to ISO 13407: 1999 the Human Centered Design Process defines that UCD: "... defines a general process for including humentered activities throughout a development lifecycle ...".

There are four processes in UCD (User Centered Design) namely:

1. Understand and determine user context.
2. Determine the needs of users and organizations.
3. The resulting design solution.
4. Design evaluation of user needs



**Fig 1.** User Centered Design Process

**3.2 Rule in UCD (User Centered Design)**

The rules in the UCD (User Centered Design) method are as follows:

- 1) Perspective  
The user is always right. If there are problems in using the system, then the problem is with the system and not the user.
- 2) Installation  
The user has the right to be able to install and uninstall software tools and system hardware easily without any negative consequences.
- 3) Compliance  
Users have the right to get the system to work exactly as promised.
- 4) Instructions  
Users have the right to be able to use instructions easily, to understand and use the system to achieve the desired goals efficiently and avoid problems.
- 5) Control  
The user has the right to be able to control the system and be able to make the system respond correctly to requests given.
- 6) Feedback  
The user has the right to the system to provide clear, understandable, and accurate information about the tasks performed and the progress achieved.



- 7) Linkages  
Users have the right to get clear information about all the requirements needed by the system to get the best results.
- 8) Limitation  
Users have the right to know the limits of system capabilities.
- 9) Assistance  
The user has the right to be able to communicate with the provision of technology and receive helpful thoughts and responses if needed.
- 10) Usability  
Users must be able to become the masters of software and hardware technology, and not vice versa. The system must be able to be used naturally and that is positive.

## **4. Results and Discussion**

### **4.1 Unified Modeling Language (UML)**

UML (Unified Modeling Language) is a language based on graphics or images to specify, construct, and document an OO (Object-Oriented) software development system. UML itself also provides a standard for writing a blue print system, which includes the concept of business processes, writing classes in specific programming languages, database schemes, and the components needed in software systems.

UML is one of the tools or models for designing object-based software development. UML as a language that provides vocabulary and order of writing words in 'MS Word' for communication purposes. A model language is a language that has a vocabulary and concept of order or writing rules and is physically presented from a system. UML (Unified Modeling Language) is a standard language for the development of a software that can convey how to make and shape models, but does not convey what and when the model should be made which is one of the processes of implementing software development.

UML (Unified Modeling Language) is not only a visual programming language, but can also be directly connected to various programming languages, such as JAVA, C ++, Visual Basic, or even directly connected to an object-oriented database. Likewise regarding documentation can be done such as; requirements, architecture, design, source code, project plans, tests, and prototypes. To be able to understand UML (Unified Modeling Language) requires the conceptual form of a model language, and learn 3 (three) main elements of UML (Unified Modeling Language) such as building blocks, rules that state how building blocks are put together, and some common mechanism (common).

### **4.2 Relationship**

There are 4 types of relationships in the use of UML, including:

1. Dependency, is a semantic relationship between two objects in which an object changes causing the other object to change as well.
2. Association, the relationship between structural objects that are connected between objects. The unity of the connected objects is a special relationship, which describes a structural relationship between all or part of it.
3. Generalizations, is describing special relationships in child or child objects that replace parent or parent objects. In this case, the child object gives its influence in terms of its structure and behavior to the parent object. Draw with an arrow.
4. Realizations, is a semantic relationship between groupings that guarantees a bond between them. This relationship can be realized between the interface and class, as well as between use cases and collaborations.

### **4.3 Diagram**




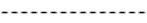
UML (Unified Modeling Language) itself consists of grouping system diagrams according to certain aspects or points of view. Diagrams are those that illustrate the problem or the solution to the problem of a model. UML (Unified Modeling Language) has 9 (nine) diagrams, namely; use-case diagrams, class diagrams, object diagrams, state diagrams, sequence diagrams, collaboration diagrams, activity diagrams, component diagrams, and deployment diagrams.

- a) *Use Case Diagram*, illustrates a group of use cases and actors accompanied by relationships between them. This use cases diagram explains and explains the needs desired by the user, and is very useful in determining the organizational structure and model of a system.
- b) *Class Diagram*, which shows the static structure of the actual class in the system.
- c) *Object Diagram*, which is a variant of the class diagram that shows in more detail the number of objects that initialize the class.

- d) *State Diagram*, which shows all the conditions (states) that can be owned by classes and events that can change these conditions.
- e) *Sequence Diagram*, which shows dynamic collaboration between objects with a sequence of messages between objects.
- f) *Collaboration Diagram*, which shows dynamic collaboration between objects without regard to time aspects.
- g) *Activity Diagram*, which shows the flow sequence of activities.
- h) *Component Diagram*, which shows the physical structure of the source code in the terminology code components. Components that contain information about logical classes can be source code components, binary components or executable components.
- i) *Deployment Diagram*, which shows the physical architecture of the hardware and software on the system.

**4.4 Symbol of UML (Unified Modeling Language)**

**a. Use Case Diagram**

No.	Symbol	Description
1.		<b>Actor</b> Indicates the user who will use the system
2.		<b>Use Case</b> Shows the relationship between actors with and use cases or between use cases
3.		<b>Undirectional Association</b> Shows the relationship between actors with and use cases or between use cases
4.		<b>Ekstensi/Extend</b> The relation of an additional use case to a use case where a use case that is added can stand alone even without that additional use case; similar to the inheritance principle in object-oriented programming an additional case has the same first name as the use case that was added

**Fig 2.** Use Case Diagram

**b. Sequence Diagram**




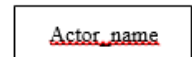

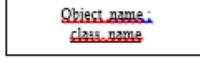

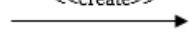
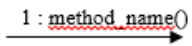
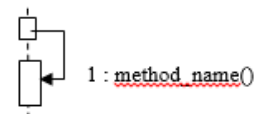
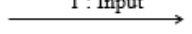
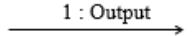
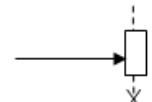
No.	Symbol	Description
1.	Actor  Or  Without Active Time	People, processes or any systems that interact with information systems that will be created outside the information system that will be created themselves, so even though the symbol of an actor is a picture of a person, the actor is not necessarily a person; usually stated at the beginning of the phrase actor name.
2.	Lifeline 	State the life of an object
3.	Object 	States the object that the message is interacting with
4.	Active Time 	States an object in an active and interacting message
5.	Message Create Type <<create>> 	To declare an object to make another object, the direction of the arrow leads to the object made
6.	Message Call Type  	Declaring an object is indeed an operation / method that exists on another object or itself, the direction of the arrow refers to the object that has an
		operation / method, because this calls the operation / method the operation / method that is called must be in the class diagram according to the object that is interacting
7.	Message Send Type 1 : Input 	States that an object is sending data or input or information to another object, the direction of the arrow pointing at the object being sent.
8.	Message Return Type 1 : Output 	Stating that an object that has carried out an operation or method produces a return to a particular object, the direction of the arrow pointing at the object that is receiving returns
9.	Message Destroy Type 	Declare an object to end another object's life, the direction of the arrow leads to the object being terminated. If there is create, then there is destroy

Fig 2. Sequence Diagram

### c. Activity Diagram




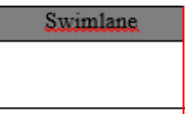


No.	Symbol	Description
1.	 Start	Start Condition Shows the start of an activity diagram
2.	 End	End Condition Shows the end of an activity diagram
3.		Transition Condition Show the conditions between activity
		<i>Swimlane</i> Shows the actors from the activity diagram created
4.		Activity Activities carried out by the system, activities usually begin with a verb
5.		<i>Decision</i> Branch associations where if there is more than one activity choice

Fig 3. Activity Diagram

**d. Regional Dance**

Regional dance is dance that was born from ordinary people as a symbol of joy and joy. Regional dance grows and continues to develop in accordance with the supporting community groups. Regional dance can also be a symbol of various regions in the archipelago. The introduction of a regional dance is not a very easy thing to do, and therefore it takes a long time because a regional dance cannot be made haphazardly. The role of regional dance for the community include being a unifier of various cultures. It is through regional dances that citizens can interact with each other, get along and communicate in order to create better relationships.

This multimedia-based regional dance application design uses the UCD (User Centered Design) method. The UCD (User Centered Design) method is a new paradigm in the development of web-based systems. This UCD (User Centered Design) method is very suitable for design that places the user as the center of a system development process to be designed. The techniques of procedures and processes that help design interactive systems that are built based on user experience. The user is the person who will use the system. Direct users are usually called end users who use a system designed to accomplish their work. Indirect users are users who use a system designed for other uses such as admin.

**1) Serampang Dua Belas Dance**



Gambar 2. Serampang Dua Belas Dance

Twenty-nine dances come from the Malay tribe. Twelfth dance is also one of the many dances that developed under the Serdang Sultanate in Serdang Bedagai Regency (formerly Deli Serdang Regency). This dance is a type of traditional dance that is played as a social dance that contains messages about the journey of the story of young people in finding a mate, ranging from introduction to entering the stage of marriage.

**2) Tor Tor Tandok Dance**





**Gambar 3.** Tor Tor Tandok Dance

Tor tor tandok dance is a dance for welcoming people who are taller and weddings for ethnic Batak Toba. Ulos, tandok and sarong are properties that they often use in dance. Tandok filled as a place of rice has a meaning that symbolizes the strong sense of kinship. The existence of the tandok in the people of North Tapanuli is no stranger, so this property is an inspiration as an object of dance performance. This dance, describes the habits of the people who love to sort out, but in the tor tor tandok narittik dance, it emphasizes the tor-tor by using properties such as mats as a tradition.

**3) Landek Dance**



**Gambar 4.** Landek Dance

Landek dance is usually used in new homes, weddings, death ceremonies and others in the Batak Karo ethnic group. Landek dance related to rites and religion is usually led by a teacher (shaman). For example, such as Begu Deleng Dance which means it is Ghost Mountain Dance. Since 1960 dance from the land of Karo or even from where I live has increased with the creation of new dance. For example the five-string dance and morah morah dance.

**4) Tor Tor Onang Onang Dance**



**Gambar 5.** Tor Tor Onang Onang Dance

Tor tor onang onang dance comes from the Batak mandailing tribe or angkola. Onang onang tor dance is derived from the fragmentary word onang onang. Onang onang cannot be interpreted literally, but some sources say that the origin of the word onang is host which means "mother". According to information obtained from Prince Ritonga, the story of the onang-onang woman is as follows: Once there was a person who was wandering and was having a hard time. He wanted to go home but the cost was not there, while the longing of his heart could not be contained anymore When the yearning arises, he remembers the person he loves, his mother and lover. To release his longing that he sparked through a song with the word "onang konang". Thus initially the onang-onang was "a spark of a

feeling of longing of the heart for the one he loved, namely his mother and lover". This dance can also be used in marriage ceremonies, entering new homes, and children born

5) **Menapu Kopi Dance**



**Gambar 6.** Menapu Kopi Dance

Dance or "Tatak" in the Pakpak language is a cultural element for the Pakpak ethnic group. Coffee manapu dance or tatak means the dance of picking coffee fruits (coffee is a superior commodity for the Pakpak tribe).

6) **Martumba Dance**



**Gambar 7.** Martumba Dance

Martumba dance is a typical dance of the Sibolga coastal Batak tribe. This Martumba dance is a typical local dance performed by young people when the full moon arrives, but the accompanying music and the Martumba movement that is carried out are the result of new creations. This culture has begun to erode, hopefully through this event Martumba will remain sustainable.

7) **Tor Tor Somba Dance**



**Gambar 8.** Tor Tor Somba Dance

There is some information that says that the Tor Tor Somba Dance is a dance that symbolizes the development of the Batak ethnic civilization in the past, precisely the fusion of culture between Mandailing culture and Simalungun culture. This can indeed be proven, especially the Batak sub-ethnic culture that is one with the other Batak sub-ethnic cultures are interconnected and have many similarities.

But there is also some information that states that the tor tor somba dance is an original dance originating from the simalungun area without mixing culture with mandailing culture which is a sub-ethnic Batak who created the tor tor dance.

### 8) Moyo Dance (Eagle Dance)



**Gambar 9.** Moyo Dance ( Eagle Dance)

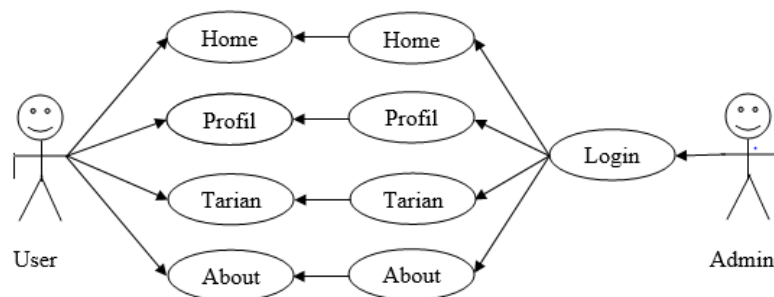
Moyo dance comes from the tribe ofias. Moyo dance or also called Elang dance which continues to flap its wings gently without tireless, conquering something meaningful for each other and himself. Moyo dance or eagle dance symbolizes tenacity and enthusiasm together in realizing something that is aspired.

#### e. Designing UML (Unified Modeling Language)

- Use Case Diagram (UCD)

Use Case Diagram is a series of steps that are interconnected either automatically or manually, with the aim of completing a single business activity. Use Case Diagram is a pattern of interaction between systems and actors in the application domain. Use Case Diagrams illustrate the interaction between use case actors in the system. Where, actors can be people, equipment, or other systems that interact with the system being built.

The Use Case Diagram form in the design of multimedia-based regional dance applications are as follows:



**Fig 4.** Use Case Diagram (UCD)

- Activity Diagram

Activity Diagrams are techniques for describing procedural logic, business processes, and workflows. In some ways, this diagram is similar to a flow chart, but the principle difference between this diagram and the flow diagram notation is that it supports parallel behavior.

Activity diagrams allow anyone who does the process to choose to do it. In other words, the diagram only mentions the basic set of rules that we must follow, the following is an activity diagram of the design of a multimedia-based regional dance application both from the activity diagram to the user and admin as follows.

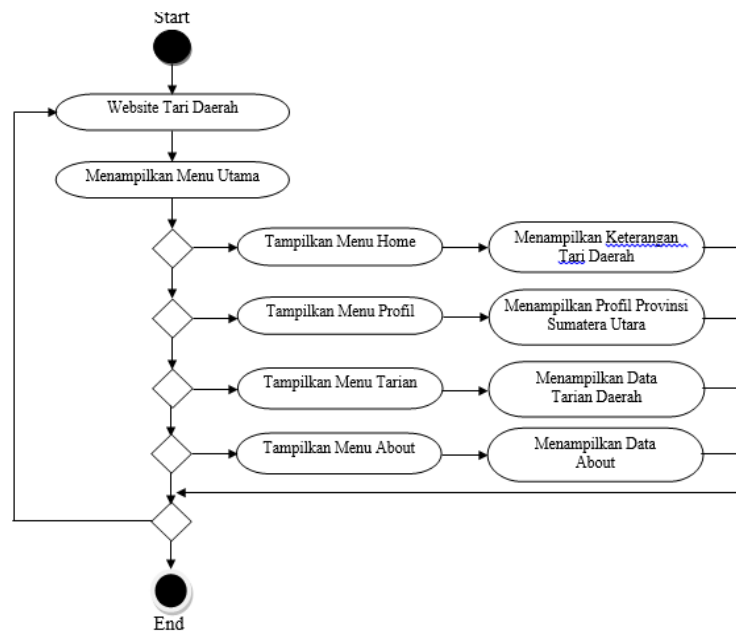


Fig 5. Activity Diagram

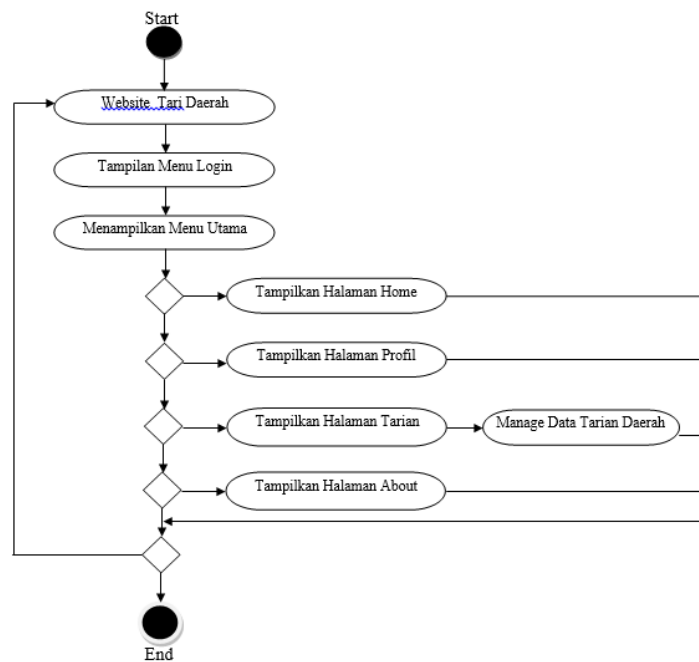


Fig 6. Activity Diagram

**f. Implentation**

- Login Form Layout

Login menu design is a design used for admins that contains a username and password. The appearance of the login menu is as follows:





Gambar 10. Login Form Layout

- Main Form Layout  
Main Form is used to links in all designs and is the initial appearance when the program is run. The main page design consists of three menus namely the home menu, **Profile**, **Dance**, and **About**. The main page display is as follows:



Gambar 11. Main Form Layout

- Home Menu Layout  
Home Menu Layout contains information about the introduction of multimedia-based regional dance. The appearance of the home menu page is as follows:



Gambar 12. Home Menu Layout

- Profile Menu Layout  
The profile Menu Layout contains information about historical information and profiles from the province of North Sumatra. The appearance of the profile menu page is as follows:



Gambar 13. Profil Menu Layout

- Dance Menu Layout  
The dance menu Layout contains information about regional dances in Indonesia, especially in the province of North Sumatra. The appearance of the dance menu page is as follows:



Gambar 14. Dance Menu Layout

- The Malay Dance Page Layout  
Malay Dance Page Layout, contains information about the culture that is in the Malay tribe along with the name of the dance. The appearance of the Malay Malay menu page is as follows:



Gambar 15. The Malay Dance Page Layout

## 5. Conclusion

Based on the results of the design that has been done by the author on a multimedia-based regional dance website with the UCD (User Centered Design) method, it can be drawn some conclusions from the research that has been carried out above include the following:

- 1) The application of the UCD (User Centered Design) method on multimedia-based regional dance websites can help users in using the regional dance application because menus have been provided to

be used in the application of the UCD (User Centered Design) section, namely the search menu (search), download images, download videos, download files.

2. The system used by the UCD (User Centered Design) method is applied to multimedia-based regional dance applications to make it easier for users to view videos and dance information without being limited by time and distance.

## **6. References**

- [1] Armadyah Amborowati, "Perancangan Sistem Pameran Online Menggunakan Metode User Centered Design (UCD)," *STMIK AMIKOM*, 2012.
- [2] Nafisah Syifaun, "Grafika Komputer". *Yogyakarta: Graha Ilmu*, 2003
- [3] Widhiarso, Wijang and Jessianti, Jessianti and Sutini, Sutini, "Metode UCD (User Centered Design) Untuk Rancangan Kios Informasi Studi Kasus : Rumah Sakit Bersalin XYZ". @Igoritma, Vol. 3 No. 3. pp. 6-10. 2007.
- [4] Rossa, A.S, M. Shalahudin, "Rekayasa Perangkat Lunak", Bandung: Informatika, 2013.
- [5] Prof.Dr.Jogiyanto HM, MBA, Akt, "Analisis & Desain", Andi Offset, Yogyakarta, p.9, 2005

