Virtual Reality: Strategies for Introducing Tourism in Indonesia

Sari, Dian Permata[1] Widodo, Suprih[2] Dewi, Nitih Indra Komala[3] Hikmawan, Rizki[4]

[1]*Pendidikan sistem dan teknologi informasi, Universitas Pendidikan Indonesia, Jln Veteran No. 8, Purwakarta*
[2]*Pendidikan sistem dan teknologi informasi, Universitas Pendidikan Indonesia, Jln Veteran No. 8, Purwakarta*
[3]*Pendidikan Teknik Arsitektur, Universitas Pendidikan Indonesia, Jln. Setiabudi , Bandung*
[4]*Pendidikan sistem dan teknologi informasi, Universitas Pendidikan Indonesia, Jln Veteran No. 8, Purwakarta.*
Corresponding author: E-mail: dianpermatasari@upi.edu

ABSTRACT

The industrial revolution is a challenge for Indonesia in all aspect, one of them is in the tourism sector. There need a strategy to attract local and international tourism, particularly for the Purwakarta district. The main problem in the promotion strategy today is introducing regional tourism using another form beside text and pictures. This study aims to develop a prototype of virtual reality tourism using the TOGAF 9.1 model architecture with a qualitative method. The virtual tourism user can feel the location as well as the real conditions. This result of this study has defined and analyze the preparations at the initial stages of the development such as activities, scope, stakeholder and business architecture in developing virtual tourism system.
Keywords: prototype, virtual reality, tourism, TOGAF 9.1

1. INTRODUCTION

The end of millennial era mark by one of most recognize human advancement known as industrial revolution 4.0, that digitalizing many sectors of human life, including tourism. The aim of tourism sectors is to introduce whether cultural, customs, or culinary wealth at particular region. In the past, tourism agencies only use rigid text or picture, which are of course can't attract many new customers. This problem can be solved by using the Virtual Reality (VR) technology. VR tourism provide virtual environment that stimulate sensorics senses of vision, sound, even touch. Those advantages offer different experience for tourist, that at some point, will maximize attractiveness of the tourist-site itself. Realizing these, today, many Indonesians companies and government tourism agencies start to seriously dig in to VR tech; but it easier to be said than done. This tech not only rare but also hard to implement so that not all district can afford to facilitate it.

We conduct preliminary investigation at one of Indonesians district at West Java province called Purwakarta. Purwakarta has densely populated industrial district neighbors, such as Karawang and Bekasi, and also not lacking potential of natural tourism, cultural tourism, pilgrimage tourism, and artificial tourism. It is really disappointing fact that Purwakarta still get below average number of tourism rate. Although Purwakarta government trying to implement some digital tech with an introduction to using the website http://purwakarta-tourism.com/ and the android application "Sampurasun", the system still only offers form of text and picture objects, Based on those fact, we try to implement concepts of VR tourism tech at Purwakarta district, West Java, Indonesia. The Method is done by spiral method starting with Data Collection, Requirement, Designing Application to build VR tourism according to TOGAF 9.1 model. We certainly hope, result of this study will help to define and analyze initial stages of development which are activities, scope, stakeholder and business architecture of Indonesians VR tourism system.

2. LITERATURE STUDY

2.1 Virtual Reality

VR has been presented in popular media as a medium, such as telephone or television. This new media usually defined in terms of a certain set of technological hardware, including computers, head-mounted monitors, headphones, and motion-sensing gloves. So, the focus of virtual reality is technology, not experience; the VR is collection of machines. [1] Such a concept might be useful for producers of this technology, because it gives them an important marketing tool. Indeed, the term VR was coined in 1989 by Jaron Lanier, chief executive officer of VPL Research, Inc., a manufacturer of gloves, eyeglasses, and other VR products (Krueger, 1991). [2]
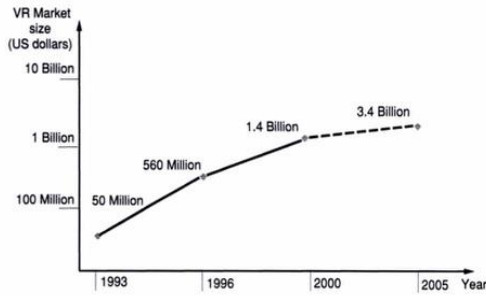
Figure 1 The grow of *virtual reality* in industry 1993: Denovan (1993), Delaney (1997), and Machover (2000)
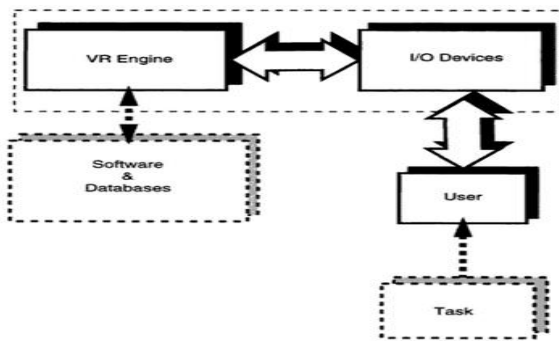
System architecture virtual reality

Figure 2 component clasik system VR. from Burdea and Coiffet (1993)

2.2 Industri 4.0

Industry 4.0. This is an "industrial revolution" (Dombrowski et al., 2014; Spath 2013) which has significant economic implications. Thus, Bauer et al. (2014: 6) for the six sectors of mechanical and manufacturing engineering, electrical engineering, automotive, chemical industry, agriculture and information and communication technology in 2025, the potential for creating additional value of 78 billion euros is only through Industry 4.0 technology (with the same figures also Kempermann 2014: 7). [3] Integration of aspects of the industry 4.0 framework requires eight actions. These actions are (1) standardization, (2) modeling complex systems, (3) providing communication network infrastructure, (4) guaranteeing safety and security, (5) organizational and work design, (6) training of human resources, (7) legal framework certainty and (8) resource efficiency. [4]
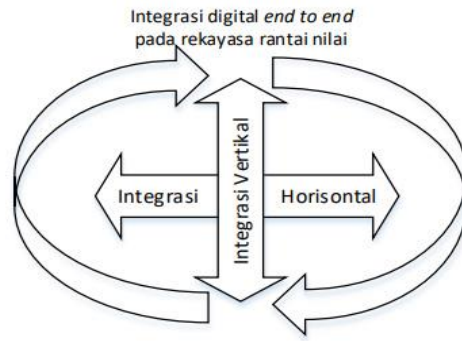

Figure 3 Aspects of Industrial Integration 4.0 (Kagermann et al, 2013)

2.3 TOGAF 9.1

Togaf is an architectural framework. To put it simply, TOGAF is a tool to assist in the reception, production, use and maintenance of architecture. This is based on an iterative process model supported by best practices and a set of existing architecture can be reused. [5]

Figure 4 Architecture Development Method

Based on the steps in architectural modeling using TOGAF, the nine steps that must be taken are:

1. **Preliminary** at this stage defines the preparation of activities required to meet the organizational architecture framework, specifications and principles of the organization.
2. **Phase A:** Architecture Vision At this stage, defining scope, identifying stakeholders, and creating architectural vision.
3. **Phase B**: Business Architecture At this stage develop business architecture to support architectural vision.

Perform baseline identification, target design, and gap analysis in business architecture.

4. **Phase C**: Information Systems Architectures At this stage develop information systems architecture (data and applications) to support business architecture. Perform baseline identification, target design, and gap analysis in information systems architecture.

5. **Phase D**: Technology Architecture At this stage develops technology architecture to support information systems architecture. Perform baseline identification, target design, and gap analysis in technology architecture.

6. **Phase E**: Opportunities & Solutions At this stage evaluates and selects implementation alternatives, identifies strategic evaluation parameters related to costs, and benefits defining implementation strategies and implementation plans.

7. **Phase F**: Migration Planning At this stage arrange the order of projects based on priorities including an assessment of the dependency, costs, and benefits of the migration project. The priority order will be the basis for project implementation.

8. **Phase G**: Implementation Governance At this stage, compiling recommendations for each project implementation, drawing up an architectural contract and implementing the entire implementation process, establishing an implementing organization for the system implementation process, ensuring the compatibility of the project implementation with the desired architecture.

9. **Phase H**: Architecture Change Management At this stage the process of change management architecture for the new EA that has been completed is implemented, continuously monitoring technological developments and organizational changes and determining whether the next EA development cycle will take place.

10. **Requirements Management** Evaluate the process of management architecture desired through ADM. [6]

3. RESEARCH METHODS

Qualitative research is considered suitable when research is conducted to ascertain problems in the field that are not yet known [7]. There are many qualitative methods which are developed to have in depth and extensive understanding of the issues by means of their textual interpretation and the most common types are interviewing and observation [8].

In this study, we used qualitative approach with spiral method. The method consists of data collection, observation and interviews conducted on tourists, lecturers, staff and students who are on the UPI campus in Purwakarta.

4. RESEARCH DISCUSSION

At this stage of the discussion, we analyzed virtual reality as a form of introduction to tourism strategies. The discussion in this study consists of primary, phase A and phase B in the TOGAF 9.1 model.

4.1 Preliminary **:**this phase includes preparatory activities to develop architecture capabilities including customization of the TOGAF and defining architectural principles

Figure 5 Purwakarta Map's

Purwakarta District Government currently supports tourism and culinary developments in the area. It has four tourism potential which are natural tourism, cultural tourism, pilgrimage tourism, and artificial tourism. In addition to the well-known "Sate Maranggi", several tourist attractions that can be visited are sublime teak, Sribaduga fountain, Kuya Maranggi (water park), Purwakarta cliff hotel which has a height of approximately 900 meters and many more. So that the number of tourists visiting Purwakarta only transit from Jakarta to Bandung and vice versa or deliberately coming to tour the area.

The aim is to build a prototype of virtual reality tourism in Kab. Purwakarta is for one of the supporting media for promotion in the tourism sector of Purwakarta which still uses text and pictures.

The legal basis for making a virtual reality on the development of tourist entry into Law Number 28 of 2014 concerning in Copyright, The concerning computer design, software imitating or making it stated in Law Number 31 of 2000 concerning Industrial Design and Computer Programs is a creation protected as stipulated in Article 40 paragraph (1) letter s of the Copyright Law.

1. **Phase A:** Architecture Vision - this phase is the initiation phase of the architecture development cycle which includes defining the scope, identifying stakeholders, preparing an architectural vision, and submitting an agreement to start architectural development

Table 1 Analisis Virtual Reality Tourisme

INTERNAL / EXTERNAL	STRENGTH	WEAKNESS
OPPORTUNITIES	**Strength** 1. Tourists can feel directly like feeling in a tourist attraction 2. Low cost compared to having to come directly to a tourist attraction 3. Providing education education to tourists who want to travel in the district ofpurpur 4. Provide more experience in travel 5. Be a reference destination for travel 6. Even if you have to spend the budget to have a VR Box tool, you can buy it online at several market places	**Weakness** 1. Although showing real conditions, but real conditions are much more real 2. Cannot be touched directly 3. Health problems if they are used for too long 4. Constrained by the provider if there is a change in bad weather
THREATS	**Opportunities** 1. Increase the development of tourism promotion using technology 2. As a medium for introducing tourism at the school and general level 3. Collaborating with the district government ofpurwakarta in developing tourism	**Threats** 1. Some tourists are lazy to come to tourist attractions 2. Still seem stiff

Then identify the stakeholders who play a role in virtual reality research as an introduction to tourism strategies in Kab. Purwakarta.
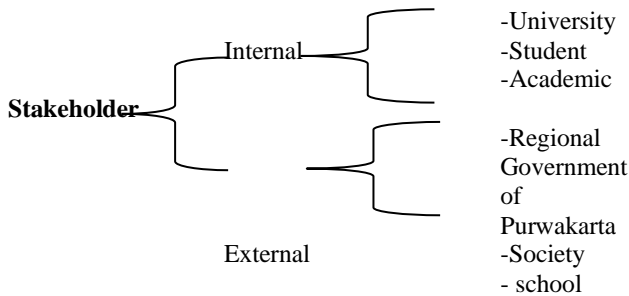

Figure 6 Stakeholders in VR architecture

The vision and mission of the introduction of tourism strategies in the district. Purwakarta with virtual reality include:

Vision:
Strategies Introducing Travel Destinations With virtual reality

Mission:

a. The introduction of Purwakarta tourist documentation uses virtual reality for local and non-local tourists

b. As a form of education as additional knowledge to tourists The purpose of the determination of the vision and mission is as a reference that all must submit to the vision and mission that has been mutually agreed upon by both external parties and parties in this design.

3. **Phase B:** Business Architecture At this stage develop business architecture to support architectural vision. Perform baseline identification, target design, and gap analysis in business architecture. In the phase of business architecture is a picture of business processes that already exist and will be built.

Table 2 Business Architecture

No	Problem	Now Architecture	Method	Expected Architecture
1.	Pengenalan destinasi wisata	Technological tourism already exists but is limited to offering text, video and images.	Virtual Reality Tourism: Strategies to Introduce Travel Destinations Using Togaf 9.1	Tourists can enter the video of the trip being shown. They are made as if they are in the same dimensions as the travel video.
2.	Aligning vision and mission and improving business processes	Development of tourism technology.	Development of application and technology promotion.	Can align the vision and mission of the business process in accordance with the TOGAF stages.
3	Information	Not to evenly spread information on tourist destinations in Purwakarta district	- Tourists must visit the location. Promotion still uses word of mouth because it is constrained by existing information technology.	Can spread the strategy of promoting tourist destinations by using virtual reality technology.

5. CONCLUSION

In this study, only discuss in preliminary, phase A: Architecture vision and Phase B: Business Architecture on the TOGAF 9.1 model. So it is necessary to develop in the next phases in helping to build virtual reality: Strategies in introducing tourism.

REFERENCES

[1] Burdea, G.C. and Coiffet, P., 2003. *Virtual reality technology*.John Wiley & Sons.

[2] Josey, A., 2016. *TOGAF® Version 9.1-A Pocket Guide*. Van Haren.

[3] Lengkong, O., Kusen, V. and Dauhan, C.B., 2017.

[4] Perancangan Aplikasi Virtual Reality Pengenalan Tempat Wisata di Sulawesi Utara Berbasis Android. *E-Proceedings KNS&I STIKOM Bali*, pp.575-580

[5] Minssen, H., 2017. Industrie 4.0. In *Fortsetzung folgt* (pp. 117-135). Springer VS, Wiesbaden.

[6] Prasetyo, H., 2018. Industri 4.0: Telaah Klasifikasi aspek dan arah perkembangan riset. *J@ ti Undip: Jurnal Teknik Industri*, *1*(1), pp.17-26

[7] Steuer, J. (1992). *Defining virtual reality: Dimensions*

[8] *determining telepresence*. *Journal of communication*, *42*(4), 73-93.

[9] Corbin, J., & Stauss, A. (2008). Basics of Qualitative

[10] Research (3rd ed.): Techniques and Procedures for Developing Grounded Theory Thousand Oaks.

[11] Jamshed, S. (2014). Qualitative research method-interviewing and observation. *Journal of basic and clinical pharmacy*, *5*(4), 87.