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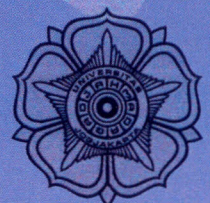
# **CITEE2012**

**Yogyakarta, Indonesia  
July 12, 2012**

**PROCEEDINGS OF  
INTERNATIONAL CONFERENCE ON  
INFORMATION TECHNOLOGY  
AND  
ELECTRICAL ENGINEERING**



DEPARTMENT OF ELECTRICAL ENGINEERING  
AND INFORMATION TECHNOLOGY  
FACULTY OF ENGINEERING  
**GADJAH MADA UNIVERSITY**





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FACULTY OF ENGINEERING  
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## FOREWORD

Welcome to this year's CITEE 2012 in Yogyakarta.

Peace be upon you. First of all, praise to Allah, for blessing us with healthy and ability to come here, in the Conference on Information Technology and Electrical Engineering 2012 (CITEE 2012). If there is some noticeable wisdoms and knowledge must come from Him.

This conference is the fourth annual conference organized by the Department of Electrical Engineering and Information Technology, Faculty of Engineering, Universitas Gadjah Mada. It is expected that CITEE 2012 can serve as a forum for sharing knowledge and advances in the field of Information Technology and Electrical Engineering, especially between academic and industry researchers.

On behalf of the committee members, I would like to say thank you to all of the writers, who come here enthusiastically to share experiences and knowledge. I also would like to say thank you to the keynote speakers for the participation and contribution in this conference.

According to our record, there are 150 papers from 15 countries are being submitted to this conference and after underwent reviewing process there are 78 papers that will be presented. It is a 52% acceptance rate. There are 15 papers in the field of Power Systems, 26 papers in the area of Signals System and Circuits, 11 papers in Communication System and 26 papers in Information Technology. Furthermore, the proceedings of this conference is expected to be used as reference for the academic and practitioner alike.

Finally, I would like to say thank you to all of the committee members, who worked tirelessly to prepare this conference. Special thank to IEEE Computer Society Indonesian Chapter, Department of Electrical Engineering and Information Technology UGM and LPPM UGM for the support, facility and funds.

Thank you and enjoy the conference, CITEE 2012, and the city, Yogyakarta

12 July 2012

Widyawan



## Schedule of CITEE 2012 Yogyakarta, 12 July 2012

- 07.30 – 08.00 Registration  
 08.00 – 08.10 Opening Speech  
 1. Chairman of the Organizing Committee  
 2. Head of Department of Electrical Engineering and Information Technology of Gadjah Mada University

### PLENARY SESSION (at Room 1): Keynote Speech

- 08.10 – 08.50 *The Development Trend of a Next Generation Vehicle and its Propulsion Motor*  
 Professor Jin Hur, Ph.D., University of Ulsan, Korea  
 Moderator: Eka Firmansyah  
 08.50 – 09.30 *Applied VLSI Research in Indonesia*  
 Eko Fajar Nurprasetyo, Ph.D., Xirka Silicon Technology  
 Moderator: Iswandi  
 09.30 – 10.00 **Morning Coffee Break**

### PARALLEL SESSION

- Allocated duration per paper : 20 minutes (max.)  
 • GREEN lamp : 10 minutes (max.) presentation  
 • YELLOW lamp : 10 minutes (max.) discussion  
 • RED lamp : END of allocated duration

No	Time	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6	Room 7
Ses. 1A	Moderator	Adha I.C. (S-Mas #11)	Anindito Y. (I-Jkrt #11)	A. Suhartomo (C-Jkrt #12)	A. Syakur (P-TEIa #13)	Raymond B. (I-Jkrt #21)	Sarjiya (P-TEIb #22)	Gunawan W. (S-Jkrt #21)
	1.	10.00 – 10.20 S-Bndg #11	I-Jkrt #12	C-Srby #12	P-Bntn #11	I-Bndg #21	P-Kpng #21	S-Riau #21
	2.	10.20 – 10.40 S-Srby #12	I-Smrg #12	C-Jkrt #11	P-Pwt #11	I-UGM #21	P-Mlng #21	S-Smrg #21
	3.	10.40 – 11.00 S-Srby #11	I-Bndg #11	C-Srby #11	P-TEIa #11	I-TEIa #21	P-TEIb #21	S-TEIa #22
Ses. 1B	Moderator	Nanang S. (S-Srby #11)	Hariandi M. (I-Bndg #11)	M. Agus Z. (C-Srby #11)	Alief R.M. (P-TEIa #11)	Amien R. (I-TEIa #21)	Bambang S. (P-TEIb #21)	Indra A. (S-TEIa #22)
	4.	11.00 – 11.20 S-MAS #11	I-Jkrt #11	C-Jkrt #12	P-TEIa #13	I-Jkrt #21	P-TEIb #22	S-Jkrt #21
	5.	11.20 – 11.40 S-Bndg #12	I-Smrg #14	C-TEIa #11	P-Pwt #12	I-TEIa #25	P-TEIb #23	S-Srby #21
	6.	11.40 – 12.00 S-Smrg #12	I-Smrg #11	C-TEIb #11	P-Smrg #11	I-TEIa #24	P-TEIa #21	S-TEIa #21
	12.00 – 13.00	Lunch Break						
Ses. 2A	Moderator	Linggo S. (S-Yog #11)	Catur S. (I-Smrg #11)	M. Denny S. (S-Smrg #12)	Supari (P-Smrg #11)	Chairani (I-TEIa #23)	Ridwan W. (P-TEIa #21)	Hari M. (S-TEIa #21)
	7.	13.00 – 13.20 S-Smrg #11	I-Smrg #13	S-Srby #13	C-TEIb #13	I-TEIa #26	C-TEIa #21	S-Yog #21
	8.	13.20 – 13.40 S-Mlng #12	I-UGM #12	S-Pwt #11	C-TEIb #12	I-TEIa #27	S-TEIa #23	S-UGM #22
	9.	13.40 – 14.00 S-Mlng #11	I-UGM #11	S-UGM #11	P-TEIa #12	I-TEIa #28	S-TEIb #21	S-UGM #21
Ses. 2B	Moderator	Aryuanto S. (S-Mlng #11)	Eka K. (I-UGM #11)	Fahri F. (I-Smrg #13)	Arif Jaya (P-TEIa #12)	Zawiyah S. (I-TEIa #28)		
	10.	14.00 – 14.20 S-Yog #11	I-TEIb #11	I-JPN #11	P-IND #11	I-TEIa #23		
	11.	14.20 – 14.40 S-Jkrt #11	I-TEIb #12	I-IND #11	P-IRI #11	I-TEIa #22		
	12.	14.40 – 15.00 S-IND #11	I-THA #11	C-EGY #11	I-ALG #11	C-Bndg #11		

Paper codes (see Table of Contents for the details):

- Number #IX: International (English) papers/presentations, Number #2X: National (Indonesia) papers/presentations
- I, P, S, C : Information, Power, Signal/System/Circuit, Communication

**Certificate of presentation will be available at the room of presentation, immediately after the paper is presented**

Rooms Location:

- Room 1-4 : located at the “Kantor Pusat Fakultas Teknik (KPFT)” building
- Room 5-7 : located at the “Jurusan Teknik Elektro dan Teknologi Informasi (JTETI)” building, 50 m from KPFT



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# Test on Interface Design and Usability of Indonesia Official Tourism Website

Anindito Yoga Pratama<sup>1)</sup>, Dea Adlina<sup>2)</sup>, Nadia Rahmah Al Mukarrohmah<sup>3)</sup>,  
Puji Sularsih<sup>4)</sup>, Dewi Agushinta R.<sup>5)</sup>

<sup>1,2,3)</sup>Informatics Engineering Department, Faculty of Industrial Engineering

<sup>4,5)</sup>Information System Department, Faculty of Computer Science and Information Technology  
Gunadarma University

Margonda Raya No.100, Pondok Cina, Depok, West Java, 16424

<sup>1),2),3)</sup>{aga.ti\_92, dea.adlina\_ti, n4dh1\_ch4n}@student.gunadarma.ac.id, <sup>4),5)</sup>{puji, dewiar}@staff.gunadarma.ac.id

**Abstract**— Indonesia tourism and travel information should reach people from all levels of society around the world. To do this, Ministry of Tourism and Creative Economy of the Republic of Indonesia must meet the wide audience various needs. The case study in this article is the website "Visit Indonesia-Indonesia Official Website for Tourism and Travel Information" which can be accessed at <http://indonesia.travel/>. We chose this case study to see the website interface design and usability, in addition, we are going to popularize Indonesia tourism and travel highlights. The purpose of this article is to see the website's usability functions, to evaluate the website interface design and to give some suggestions in order to make a better interface design that will escalate the website usability.

**Keywords** - Interface, Usability, Website

## I. INTRODUCTION

Websites are used daily for reading news, finding work vacancy, shopping, finding telephone information, ordering food, planning for a trip, selling products and even helping a company business process. Services concerning customers such as customer care in a company, internet banking service, online reservation service, product promotion and marketing, project management or even e-learning are examples of many services using web based application.

Interface development for tourism website must actively involving user from planning through evaluation. If a user feels uncomfortable in using an application or a product or a service then it can be assumed that it is difficult to use and has the potential to be a failure. If a website is a failure then there will be a certain loss in all of the money spent in the development of the website, loss in reaching market success, user disappointment, trip plans cancelation, bad image and business process disturbance.

Usability is a term used to indicate that people can employ a particular tool with ease in order to achieve certain goals. Usability can also refer to the method used to measure the usability and the study of neatness or efficiency of an object.

## II. LITERATURE REVIEW

Advance interface design has the following characteristics [1]:

- a. Standardization : The uniformity of the properties of user interfaces in different applications.

- b. Integration : Integration of packaged applications and software tools.
- c. Consistency : Uniformity in the application program.
- d. Portability : The possibility to convert data in a variety of hardware and software.

There are several things that cause reduced levels of usability of an interface design system, they are:

- a. Text not yet clear and precise wording that is not in doubt ask the cause and finally re-read, which allows users in interpreting it wrong.
- b. The graphics are not exactly that important elements are hidden.
- c. The title is not representative. It also creates confusion and hinders the ability of in view of the relationships that exist.
- d. Requests for information that is not important or irrelevant, information requests require a rethinking of the previous answers that confuse users which in turn lead to errors.
- e. Layout is not structured and directed that allow the occurrence of errors.
- f. Poor quality of presentation, it is difficult to read, would reduce the ability of users and cause the error again.

There are many usability methods and principles that exist such as usability inspections methods and discount usability methods [2], formative and summative usability evaluations [3]. These methods usually may also accompany think-a-loud protocols and competitive analysis. In any usability evaluation, there are always discussions regarding how many users are enough for a test. A study by Nielsen [4] further suggests that five users are enough. Research by Faulkner [5] suggests that as many as 85% of usability problems but that as few as 55% could be found as well with using only five users. With increasing the number of users to 15, the range of problems found can be 90-97%.

Usability dimensions which are classified Whitney Quesenberry [6], as follows:

**Effective** Effective is the first E. If a user cannot actually do something he or she set out to do. It probably doesn't matter whether the experience was short or long, easy or hard. In the end, they have failed to complete their tasks or meet their goals. If we want to measure



effectiveness, we have to define success or usefulness, whether this is relatively straight forward or more subtle.

**Efficient** Efficiency may be something that is carefully defined, for example in a call center where operators are measured on the number of calls they can handle in a day. It may be a subjective judgment when a task is taking “too long” or “too many clicks.”

**Engaging** “Engaging” replaces “satisfaction,” looking for a word that suggests the ways that the interface can draw someone into a site or a task. It also looks at the quality of the interaction, or how well the user can connect with the way the product is presented and organized.

**Error tolerant** It would be lovely to say “error free” or “prevents errors” but mistakes, accidents and misunderstandings will happen. The cat nudges the mouse as you click. You misread a link and need to find your way back, or enter a number with a type. The real test is how helpful the interface is when an error does occur.

**Easy to learn** A product may be used just once, once in a while, or on a daily basis. It may support a task that is easy or complex; and the user may be an expert or a novice in this task. But every time it is used the interface must be remembered or relearned, and new areas of the product may be explored over time.

Usability is defined by 5 quality components [7]:

**Learnability** How easy is it for users to accomplish basic tasks the first time they encounter the design?

**Efficiency** Once users have learned the design, how quickly can they perform tasks?

**Memorability** When users return to the design after not using it for a certain period, how easily can they reestablish proficiency?

**Errors** How many errors do users make, how severe are these errors, and how easily can they recover from the errors?

**Satisfaction** How pleasant is it to use the design?

III. METHODOLOGY

The broad information on tourism triggers users to seek information on a website. Therefore in this research, testing was conducted by collecting the required data from users. Data is collected by using survey methods and testing the formal usability to users. The respondents are selected by considering their background, activity, knowledge, skills, and frequency of Internet use. Formal usability testing questionnaire is given to 30 respondents with 3 different types of respondents which are college student, lecturer, and general public. The three respondents comprised the skilled and unskilled in using computers and the Internet.

The survey was conducted to obtain early feedback, each function that is considered a problem for users and to the user general perception of the application.

Analyses were performed according to the criteria of usability tests mentioned before.

From the analysis done by looking at the criteria specified for testing combined with the results of the questionnaire, we will give advice(s) in accordance with the results that we have processed from data gathering and testing.

Criteria used for the usability tests are easy to use, easy to learn (terms used, system speed, time, and consistency), system fault, and the language that should be used in Indonesia Official Tourism Website [8].

IV. RESULT AND DISCUSSION

This section will discuss the results of data collection that was carried out, the usability levels of Indonesia Official Tourism Website, and the problems encountered in Indonesia Official Tourism Website.

A. Usability Tests

Measurements of the usability tests of Indonesia Official Tourism Website can be seen from the questionnaire filled out by respondents, which can represent any question of the criteria used for the usability tests. 10 questions given in the questionnaire are as follows:

1. Is there any latest news on Indonesia Official Tourism Website?
2. Are the destination search results satisfactory?
3. Are the activities search results satisfactory?
4. Is the applied language appropriate?
5. Does the image on the moments captured considered as good?
6. Are the locations shown on the Map of Indonesia correct?
7. Is the information obtained in event list complete?
8. Is the information obtained in the FAQ's complete?
9. Is there any difficulty in filling the register form on the Register menu?
10. Is the Contact Us menu easy to use?

The 10 questions on the questionnaire are answered as “Yes” and “No”, if the answer is “No”, there are entries for the reasons and suggestions.

The results of the analysis and the questions asked of respondents look like in table 1.

TABLE I. RESULT OF ANALYSIS AND QUESTION

Usability Levels	Result (%)
Easy To Use	83.33
Easy To Learn	85.83
System Fault	45.56
Language Used	100

The following is an explanation of the analysis and answers from the respondents conducted in accordance with the criteria of usability tests was:

1) Easy To Use

Easy to use in here is intended to operate the menus or elements contained in the Indonesia Official Tourism Website can be operated easily.

2) Easy to learn

The easy to learn of the menus or elements contained in the Indonesia Official Tourism Website contents measurements can be seen in the following aspects: Terms Used, System Speed, Time, and Consistency.

A detailed explanation of each of aspects is as follows.

**Terms Used** Due to the limited knowledge, amongst the overall terms contained in Indonesia Official Tourism Website used such as the name of the menu, submenu, menu page headers, field lines, captions, etc., there are two terms that is difficult to understand by the respondents and the authors. These terms are: MICE, Ecotourism

**System Speed** From the analysis the authors state that speed of Indonesia Official Tourism Website is quite fast in responding to any command given. However responds speed depends on the speed of the internet through Indonesia Official Tourism Website.

**Time** It does not need a long time to access each menu. There is no complaining from the respondent concerning time needed in accessing each menu that are listed in the questions.

**Consistency** The authors analyze that consistency of Indonesia Tourism Official Website is quite high, on each menu we click there are almost no inconsistency in it. The inconsistencies found are the difference of interface when changing the website language and the changed or removed sidebars in different pages.

3) System Fault

At the time of testing, some respondents see the mistakes made by the system (Indonesia Official Tourism Website) when performing a search. Almost respondents made the same comment. Comments provided that they complained that the destinations and activities are not sorted based on popularity but on alphabetical order, which indicates that the destinations and activities on top of the list are not the most recommended by Indonesia Official Tourism Website as seen in figure 1 and 2.

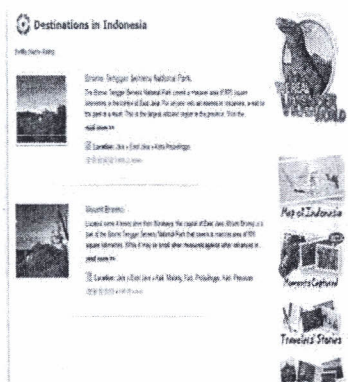


Figure 1. Search Destinations



Figure 2. Search Activities

4) Language Used

Indonesia Official Tourism Website is available in eight languages. All respondent commented that the language used in the website is appropriate and has fulfilled the language grammar. Language that they see is Indonesian and English.

B. Problems Encountered

At the time of testing, respondents encountered some problems in Indonesia Official Tourism Website.

**Term** The main problems encountered by the respondents and the authors relates to terminology. There are three terms that are rarely heard or found in every day terms, namely: MICE and Ecotourism.

**Dissatisfaction of respondents on the use of a specific menu** Almost respondents answered question number 3 and 4 with "No", indicating that they feel a certain degree of dissatisfaction with the search for destinations and activities in Indonesia Official Tourism Website since it is not sorted by the most recommended.

**Difficulty respondents on the use of a specific menu** Another problem is some of the respondents had trouble using a particular menu. Some of the respondents find it difficult to use the menu Contact Us and filling in the form on the Register menu because there is reCAPTCHA function.

V. CONCLUSION AND RECOMMENDATION

Usability testing on the interface of Indonesia Official Tourism Web site can be deduced according to the tested usability criteria which include easy to use, easy to learn (terms used, system speed, time, and consistency), system fault, and the language that should be used on the website. The analysis and questioner results show that these criteria have more than 50% for the criteria easy to use, easy to learn, and language used, while for the system fault is less than 50% that indicate that this website is satisfactory, a good screen design, interactive interfaces, and high levels of usability plays an important role to the advancement of a website. Similarly, terms used and the syntax is using the standard language making it easy to understand. Other issues and suggestions from users may be foreseen through this test. A user-oriented system development must this be done by the manager of the web site to get an optimal results.



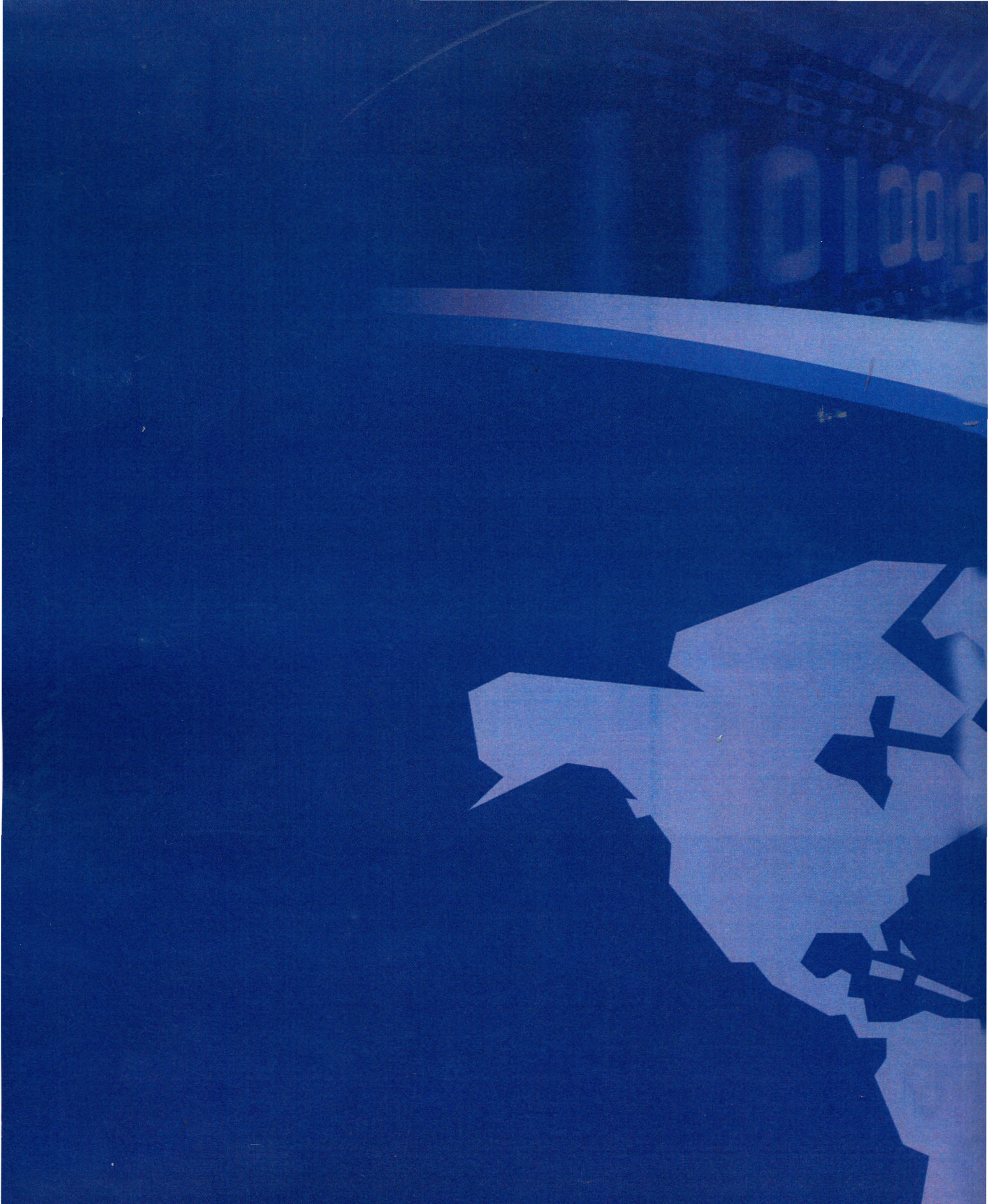
Below is the advices given by the respondents and the author for the improvement of Indonesia Official Tourism Website:

- a. Negate the reCAPTCHA on the menu Contact Us and in Register form, because not everyone can understand how to use it.
- b. Sort the search results of destinations and activities based on the most recommended or on popularity rating.
- c. Fixing the inconsistency on page layout for each language.

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**Department of Electrical Engineering and Information Technology**  
**Faculty of Engineering, Gadjah Mada University**  
**Jalan Grafika no. 2, Kampus UGM**  
**Yogyakarta, 55281, Indonesia**



9 772088 657001