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## **CONFERENCE INFORMATION**



- Title : TALENTA - Conference on Engineering, Science and Technology 2017  
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- Date : 7-8 September 2017
- Venue : Grand Aston Hotel, Jl. Balaikota No 1, Kesawan, Medan 20112, INDONESIA
- Organizer : Faculty of Engineering University of Sumatera Utara
- Sponsor : Sustainable Energy and Biomaterial Centre of Excellent (SEBCoE) USU

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## SumutSiana

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# SumutSiana

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**Abstract.** Technically, a definition is at the heart of all forms of understanding. However, in the engineering aspect, the introduction becomes a first step that expands the meaning and function of definitions used for something, especially a particular study. SumutSiana is a term specifically constructed to understand not only North Sumatra culture, but the natural wealth required in social engineering, and this paper becomes infrastructure for it. SumutSiana is disclosed as a scope of discussion on natural resources, culture, human resources, and all related to North Sumatra.

## 1. Introduction

To give meaning or semantic technology, defining is the basic technique for achieving an understanding of a term [1,2]. In the world of engineering, all the technologies and tools as part of the system or not is to increase social prosperity or for better social engineering must be expressed more clearly in order to be adapted and they have a bridge of implementation to different systems [3]. In the world of education, giving definition to something is the scientific culture. The goal is that the conversation about something is not misdirected or widespread uncontrollably [4]. Moreover, to study things scientifically, it is necessary that something be well understood and true.

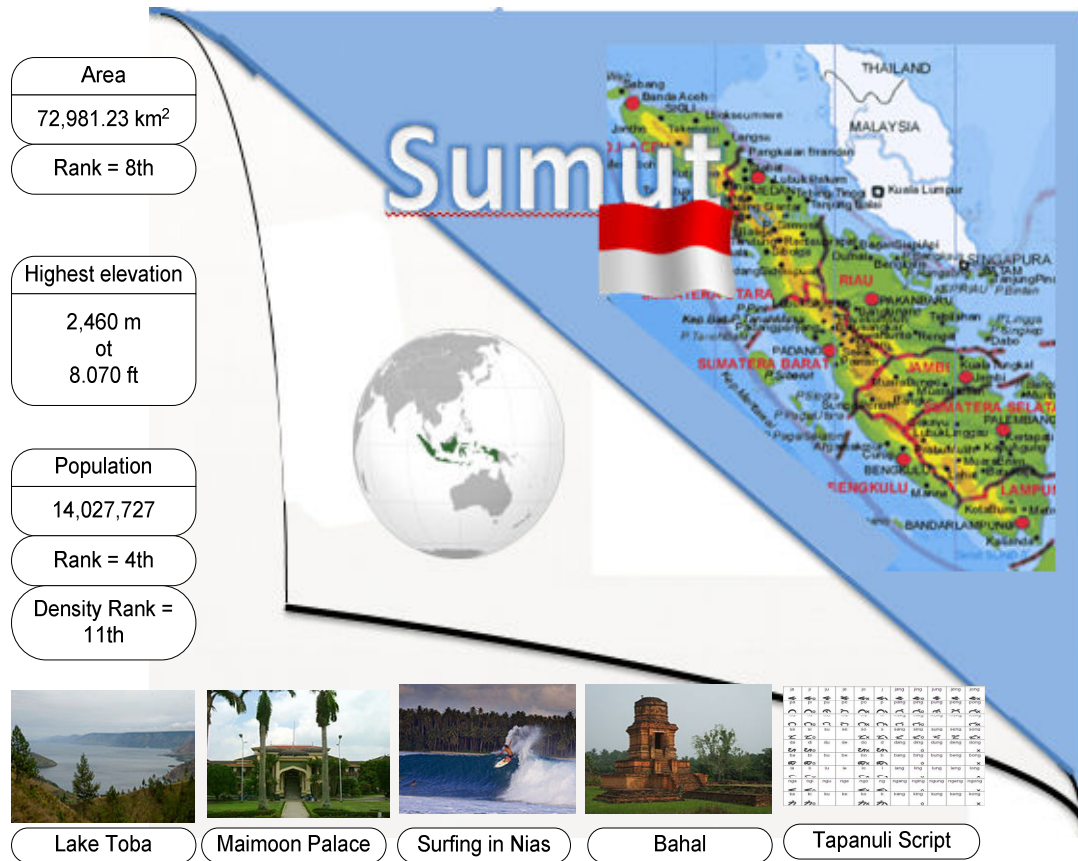
SumutSiana is an unknown term either it used by the public or it contained in any dictionary [5]. The term that is used to understand something, the like SumutSiana must be clearly recognizable its meaning. Usually everything that is not recognized should be introduced first [6,7]. This paper intends to introduce a scientific discourse related to the wealth of Indonesian nation located in the region of North Sumatra. Therefore, the first part of this paper is to introduce this term as the motivation for further research on this, and then to propose reasons as an approach, an end with a discussion of the scope of the intended wealth.

## 2. Definition and Motivation

The term written as “sumutsiana” and introduced also as the logo in uppercase S, namely “SumutSiana” has not been the vocabulary of any dictionary either of Indonesia or other language [5]. So have no clear meaning. The term “SumutSiana” consists of a combination of the words “sumut” and siana”. Sumut stands for “Sumatera Utara” (in English it is North Sumatra). The name of the states in Indonesia, i.e. Sumatera Utara Province, in geographically according to layout located at coordinates 1° - 4° N 98° - 100° E, see Fig. 1. While the term “siana” comes from the article “si” (the) and the word “ana”. “ana” has a meaning to exist and also refers to the female or not male gender. The word “ana” present with the article “si”, i.e. “siana” means treasury or scientific wealth owned by the original owner from the beginning or has been a long time ago, and is not owned by another.



Therefore, the “SumutSiana” can be expressed as or refers to the treasures that are specifically owned by the North Sumatra region or natural wealth which is the kinds of nature or culture in the region of North Sumatra [6,7].



**Fig.1.** Sumatera Utara and some potentials

The area of North Sumatra has geographically rich contours, and this area is inhabited by 8 (eight) ethnics (the oldest social community in Indonesia) plus some immigrants [8]. Culturally there are differences and similarities between one another, both language and in social. This wealth not only includes natural resources but also local policies that have long been at the core of the social community activities of these tribes, like “Dalihan na tolu” [9]. Therefore, the definition of “SumutSiana” also involves a specific scope of regionalism in particularly, generally to Indonesian, covering the whole of what is contained in geographical space uniquely exist in North Sumatra, including ideas and concept, planning, design, strategy, implementation, naming, order, socialization, adaptation, policy, etc. Therefore, North Sumatra has potential as described briefly in Fig. 1. For example, the strategic plan of Universitas Sumatera Utara (USU) is based on and named with “TALENTA” (it means talent in English), but it based on mapping for the research and developing in USU, i.e. **T**ropical science and medicine, **A**groindustry, **L**ocal wisdom, **E**nergy (sustainable), **N**atural resources (biodiversity, forest, marine, tourism), **T**echnology (appropriate), **A**rts (ethnic) [10]. All of these go into the concept and idea about the study of SumutSiana.

### 3. An Approach

A definition is an approach to the complete understanding of something. Next, we describe the definition based on content and assigns a measurement value to each content, including the existence of the description and scope. SumutSiana becomes the basic concept for developing framework to embrace the scope of all the wealth of the North Sumatra region. This approach as a scientific culture

that developed from the past until now, and developed specifically to explore the hidden potential of the science and the technology (the hidden knowledge) in the area of North Sumatra and to enrich the knowledge of human life generally. Therefore, SumutSiana will have an impact on the continuous effort of conducting studies related to the scope of the definition, as seen in the tropical science phrase in “TALENTA”, although in general tropical science cannot be expressed in terms of its definition by ontology of knowledge [11,12], except only the naming about the kinds of publications and laboratories for example (use term “Tropical Science” as content of queries for submitting to Google and that search engine returns such information.[13]), so the term “Tropical Science” should be stated first by involving the ontology of knowledge.

The definition of SumutSiana also reveals the scope associated with North Sumatra technically, but socially engineering it include the related culture [5]. As culture comes from custom, and habit is caused by the compulsion either by nature or by rules. Thus, the scope of SumutSiana involves the implementation of an understanding related to the areas in definition. Therefore, SumutSiana which includes scientific wealth, it refers to the special thing of the natural resources, that is everything that comes naturally and effects to the human life in general, ranging from non-scatter creatures to moving creatures or termed as biotic and abiotic. The biotic category is such as animals, plants, micro-organisms, etc. While abiotic category is such as petroleum, natural gas, various metals, water, soil, etc. However, not all existing natural wealth will be expressed as a study in SumutSiana. In other words, the intended natural wealth is anything that is seen as a special North Sumatran treasury, such as Lake Toba exists only in North Sumatra [6,7].

Conceptually, every scientific wealth can be categorized and measured into a set of  $T$ , whereas the immigrant culture is also so measured into a set of  $S$ , by which the size of the influence between cultures that is prevail among  $T$  and  $S$  or  $T \cap S$  [2,14]. The formula that the existence of a culture is expressed by

$$e(C) = T \cap S / T, \quad (1)$$

while the influence of a culture to another culture is

$$i(C) = T \cap S / S. \quad (2)$$

The same formula (Eq. (1) and Eq. (2)) can be used to see the effect of external food on local food, where local food is a region’s wealth.

**Table 1.** Populations, categories and ethnic group assumption of districts/cities in Sumatera Utara

No	Districts/Cities	Population	<i>cats</i>	<i>eg</i>	No.	Districts/Cities	Population	<i>cats</i>	<i>eg</i>
1.	Asahan	796,283	P/D/F		17.	Padang Lawas Utara	252,589	P	M
2.	Batubara	400,803	D	D	18.	Pakpak Bharat	45,516	P	P
3.	Dairi	279,020	P	P	19.	Samosir	123,789	P	T
4.	Deli Serdang	2,029,308	P/D/F		20.	Serdang Bedagai	608,691	D	D
5.	Humbang Hasundutan	182,991	P	T	21.	Simalungun	849,405	P	S
6.	Karo	389,591	P	K	22.	Tapanuli Selatan	275,098	P	M
7.	Labuhanbatu	462,191	P/D/F		23.	Tapanuli Tengah	350,017	P/D	
8.	Labuhanbatu Selatan	313,884	P/D/F		24.	Tapanulis Utara	293,39	P	T
9.	Labuhanbatu Utara	351,097	P/D/F		25.	Toba Samosir	179,704	P	T
10.	Langkat	1.013,385	D	D	26.	Binjai	264,687	D/F	
11.	Mandailing Natal	430,894	P	M	27.	Gunungsitoli	135,995	P/D	
12.	Nias	136,115	P	N	28.	Medan	2,210,624	P/D/F	
13.	Nias Barat	84,917	P	N	29.	Padangsidempuan	209,796	P	M
14.	Nias Selatan	308,281	P	N	30.	Pematangsiantar	247,411	P/D/F	
15.	Nias Utara	133,897	P	N	31.	Sibolga	86,519	P/D	
16.	Padang Lawas	258,003	P	M	32.	Tanjungbalai	167,012	P/D/F	
33.	Tebing Tinggi	156,815	P/D/F			Sumatera Utara	14,027,727	P/D/F	

#### 4. Discussion

Each region is technically inhabited by its own ethnic group, and the tribe has culturally own customs. All of this is the richness of the region, the wealth uniquely owned by the tribe through the ability to

constantly explore the potential that exists in order to face the challenges of life, the changing world and to reach a certain level of life [15]. Therefore, in the tribe it will grow and the form of different cultures that become treasures of each tribe. In addition to such wealth, there is wealth naturally lost in the tribal areas. This wealth is sometimes not in line with the growing needs of people or cultures. Thus, much of the potential in the culture become dysfunctional and the tribes become lazy or unable to prosper with it [6].

Based on the time line, North Sumatra has its own history about the inhabited by humans. Apart from the conflict between cultures, eight tribes become a distinct wealth from North Sumatra, which from an anthropological point of view was recognized as proto or deutero. Therefore, the scope of the study on SumutSiana revolve around the culture that has emerged from a long time until now in the North Sumatra region. Viewed from related human resources are settled ethnic groups (*eg*) consisting of ethnics: Malay (D), Tapanuli (Mandailing-Angkola (M), Toba (T), Karo (K), Simalungun (S), and Pakpak-Dairi (P)), and Nias (N) [6]. This paper does not use the term “Batak” for Tapanuli because this term means “*nations are not cultured*” [16], but this tribes have the oldest writings recognized by the world [17]. The province of North Sumatra has 33 districts/cities (Table 1), of which there are the origin of eight ethnic groups. Any evaluation of the existence of a culture can be done independently by involving the culture of the immigrant tribes such as Aceh, Minangkabau, Java and other immigrants from outside Indonesia such as Tionghoa (Chinese), India, and others, which generally involve three categories (*ca*): proto (X), deutero (Y), and foreign-settlers (Z) [18], for example.

Generally the spread of eight ethnic groups as follows: Karo is in Karo district and Deli Serdang regency; Mandailing is in east coast and west coast region; Malay around east coast region; Nias is mostly in Nias Island and small population around west coast; Pakpak, majority in Dairi regency, and Pakpak Bharat District; Simalungun, majority in Simalungun District, a part of Pematangsiantar, Asahan, Tebing Tinggi, other districts; and Toba is throughout regencies in north part. Therefore, Mandailing ethnic is in some areas Labuhanbatu, Labuhanbatu Selatan, Labuhanbatu Utara, Mandailing Natal, Padang Lawas, Padang Lawas Utara, Tapanuli Selatan, and Padangsidempuan with population (*T*) is 2,553,552. For social engineering, based on Eq. (1), existence of Mandailing in Medan  $2,210,624/T = 0,87$ , while based on Eq. (2) the other influence on Mandailing ethnic in Medan is  $2,553,552/9,263,551 = 0,28$ , whereby  $S = 9,263,551$  is the population in Sumatera Utara – the population in Medan – 2,210,624. This technique can be used to view cultural mixing in areas where cultural assimilation applies between proto, deutero, and foreign-settlers. One function of this technique is to reduce the rate of cultural loss of ethnicity.

The same technique can also be used to measure the effects of local ingredients used in foods, medicines, transportation and others, so as to obtain the influence of local materials on economically sustainable production [19,20], for example, the influence of the wasabi Japanese spice on the existence of the andaliman from Sumatera Utara:  $T$  and  $S$  or  $(T \cap S)$  has value based on Web (andaliman,wasabi,Indonesia) = 2,500,  $T$  has value from internet (andaliman,Indonesia) = 140,000, while  $S(\text{wasabi,Indonesia}) = 572,000$  [21], hence existence of andaliman can be expressed as 0.018 while the influence of wasabi on food andaliman is 0.004.

North Sumatra has a natural wealth: North Sumatra is flanked by two beaches and oceans, east and west; North Sumatra has two types of waters, the salt water (sea) and the fresh water (lake), so it has a diversity of marine wealth and freshwater wealth such as fish, shrimp, and shellfish (other sea fruit) [22]. In addition to culture, natural resources can also be positioned based on the region of existence [23]. Like some natural plant-specific plant resources per area compared to the extent of the plant corning from outside, such as oil palm (“kelapa sawit”) against coconut plants (“kelapa”) [24]. Regional potential naturally grows in virgin forests, whereas additional potential when new plants emerge comes from outside. The number of high and low plateau form the contour of the region, and this becomes its own potential, including activities on the coast and the surrounding ocean, such as the presence of wind as a potential for new, is due to the sea and sloping land.

Freshwater waters have an area of 30 km with a depth of 505 meters named the Lake Toba. This lake is the largest in Indonesia and Southeast Asia. Being at a considerable altitude and being on a hillside and among the towering mountains in the centre of North Sumatra [25]. Therefore, North Sumatra has a distinct biological richness between lowlands and highlands. The hot lowland plains



have special peculiarities with the plants and animals that live there. Some plants and animals that live there. Some plants and animals are in cold places. If it continues to be sustainable, the lake is not only a source of freshwater, but source of energy that can improve the welfare of North Sumatra. From the point of tourism, the existence of Lake Toba is 0.991, while the influence of Bali towards Lake Toba tourism is 0.007, in this case  $T \cap S = 45,000$ ,  $T = 459,000$  and  $S = 66,900,000$  based on search engine Google [21].

Nature geographically influences culture, and with it technically every ethnic has local wisdom, engineered the life of related society, forms social groups, and determined social structure. Conversely, limited natural resources lead to the change of society social, especially changes in social structure [26]. In this case, the natural, the resources and the community groups become the study of SumutSiana.

## 5. Conclusion

SumutSiana term is presented from a special area named North Sumatra and all that is in it. SumutSiana is a discussion discourse or study that aims to explore all potentials related to North Sumatra, from human resources to natural resources. This definition becomes the framework of reference for all learning, research, and development activities within the coverage of North Sumatra.

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