

THE DEVELOPMENT OF A COMMUNITY-BASED INFORMATION SYSTEM TO EMPOWER INDONESIA E-GOVERNMENT IMPLEMENTATION: A Case Study of www.nagari.org

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ABSTRACT

The construction of e-government entails the construction of an information system connecting the government with its society. The infrastructure and content of the applications determine the success of an e-government's implementation. Limitations of Internet access and people's awareness are the main problems in most developing countries, including Indonesia. Thus, the implementers of Indonesian e-government have to consider the social conditions and cultural behavior of their society. We propose the development of Community-based Information Systems (CIS) to empower the implementation of Indonesian e-government. A CIS is designed to take into account the Indonesian societal system, which is structured by communities. CIS is formatted based on one primary portal that groups numbers of community websites. In this paper, one pilot system is presented (www.nagari.org).

Keywords: Community, Information System, Minangkabau

1 INTRODUCTION

E-government applications are in use all around the world. E-government applications, such as a government's portal and online tax payment, help simplifying the bureaucracy and allow citizens to experience the advantages of an Internet online system. The significance of Internet use will be not only to provide web surfing and email facilities but also to help people deal with all types of administrative matters. The construction of e-government is the construction of an information system connecting a government with its people.

The infrastructure and content of the applications determine the success of an e-government's implementation. Most developed countries have set broadband as their main infrastructure while the applications are designed to be attractive and easily accessed. By assessing their infrastructure and number of people who utilize the applications, European countries and the USA have achieved successful e-government implementation.

However, e-government has just begun in developing countries, such as Indonesia. The first step is to construct the government's website (.go.id / .gov), which does not contain many advanced applications. The main problems facing e-government are limited Internet access and lack of awareness by the general population; therefore, e-government has to consider the social conditions and cultural behavior of Indonesian society.

In this paper, we propose the development of a Community-based Information System (CIS) to empower Indonesian e-government implementation. This CIS is designed to take into account the Indonesian societal system, which is structured by communities. The CIS is formatted based on one primary portal that groups numbers of community websites. It contains applications of interest to the people in the community and also to outsiders, such as community data. This paper will describe the construction of the CIS and further methods of empowering the Indonesian e-government system and also present the system constructed in www.nagari.org.

2 COMMUNITIES AND E-GOVERNMENT

2.1 A general comparison

The development of *e-government* requires input from two sources: the government, as creator of the system, and the people, as users of the system. The system aims to simplify the bureaucracy and lead the people to a knowledge-based society. Its construction can be deemed successful once the applications are fully utilized by the people and are found to truly reduce the paper-based government's tasks. In developed countries with high digital awareness, *e-government* has been efficiently implemented.

The problem in developing countries is that the government and the people are not working together. Governments build most of the systems, but the people do not use the applications. This happens because digital awareness is still low. The benefits of an online system do not yet touch the daily activities of the common people. Usage is very segmented and concentrated in urban areas. In order to have a proper system, it is essential to have the participation of the society

2.2 Societal conditions in Indonesia

Because of its unique societal conditions, we will study the *e-government* implementation in Indonesia. Indonesia consists of thousands of communities living on thousand of islands. Each community represents a different tribe and culture, in the form of a village. The Indonesian formal government, the Republic of Indonesia, adopts the community system by considering the village to be the lowest level in the governmental hierarchy. In most of the provinces, the village is named *kelurahan*, *desa*, or *nagari*. State regulation also supports the concept of autonomy, which gives the provinces, as groups of communities are called, the power to manage their own economic resources. "Figure 1" illustrates the governmental structure in Indonesia.

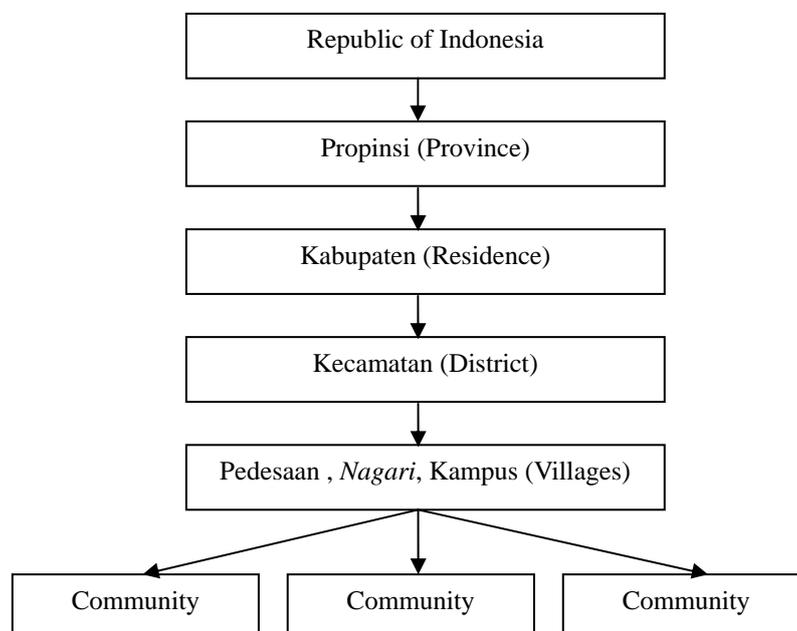


Figure 1. Governmental structure in Indonesia

In practice, each province has made its website (go.id) its official platform. However, the websites only list statistical information without any significant interactive applications. This matches the behavior of the common people who do not understand the benefits of online applications. A proper *e-government* system, however, must attract users and increase people's awareness. Since the Indonesian people are members of tribes, it is essential to consider their tribal behavior.

In this paper, we study community system behavior in the West Sumatera Province, which groups approximately 530 communities, *nagari*, in the lowest level of governmental structure. The tribes and cultural system of people living in the West Sumatera Province territory are called *Minangkabau*.

3 IMPLEMENTATION: WWW.NAGARI.ORG

3.1 Basic Perspective

The basic perspective of the system is derived from an understanding of *Nagari*. *Nagari* is defined as the smallest governmental authority in the West Sumatera Province with its culture of *Minangkabau*, similar to *Desa* in Javanese culture, or village in general governmental hierarchy. Unlike in other provinces, *Nagari* not only reflects the governmental authority but also symbolizes the cultural behavior of its residents. It is obvious that people born and living in a *nagari* have a great sense of belonging to their particular *nagari*. That sense is very specific and cannot be compared with other cultures in Indonesia. Even though members are *perantau* (a *Minangkabau* custom of leaving one's *nagari* to find a job and better life outside of the West Sumatera territory), they still return home and send money to their family regularly.

The *nagari's* influence on all its members, wherever they may live, positively impacts their economic efforts. There is great motivation for people to build and develop their *nagari*. Because of the Indonesian Regional Autonomy program, the province can no longer rely on aid from the central government but has to stand on its own resources. Therefore, the concept of *nagari* has become even more important in the region's livelihood.

The development of online applications in a Community-based Information System, through the website www.nagari.org, supports economic activities, such as promoting tourist attractions and potential resources in every *nagari*. The long-term expectation is to fully support digital economic activities.

3.2 Logical Construction

The concept of online applications is extremely suitable for promoting territorial autonomy in the West Sumatera Province. Officially, West Sumatera has been divided into 543 *nagari* (Province Regulation No: 9/ 2000). This is one of the most viable of Indonesian cultures, with a strong relationship between the culture and its economy. Hence, the purpose of the Community-based Information System is to increase the people's economic ability **through a cultural approach**, combined with the Information Technology perspective as a tool of the *e-government* system.

Below is the logical construction of the Community-based Information System (CIS) implemented in www.nagari.org.

A. Grouping the community in relation to cultural behavior

The basic perspective of the CIS is to group the 543 *nagaris* in West Sumatera. In *Minangkabau* custom, people belong to their *nagari*. Each *nagari* represents a community and the people who live in it. Our idea is to make a psychological link between the people and their *nagari*, then translate that into an information system. Each community should have its own website, representing the *nagari* in digital architecture. These websites are then grouped into a single portal www.nagari.org, which is the main Internet platform.

There are two alternatives to group *nagaris*, either to put them as sub-domains under www.nagari.org or to link their URLs. The sub-domain schemes are for *nagaris* that do not yet have their own website. They will be given a password and access to existing websites following a template. Another scheme is for *nagaris* that already has their own domain.

“Figure 2” illustrates grouping chart of *nagaris*.

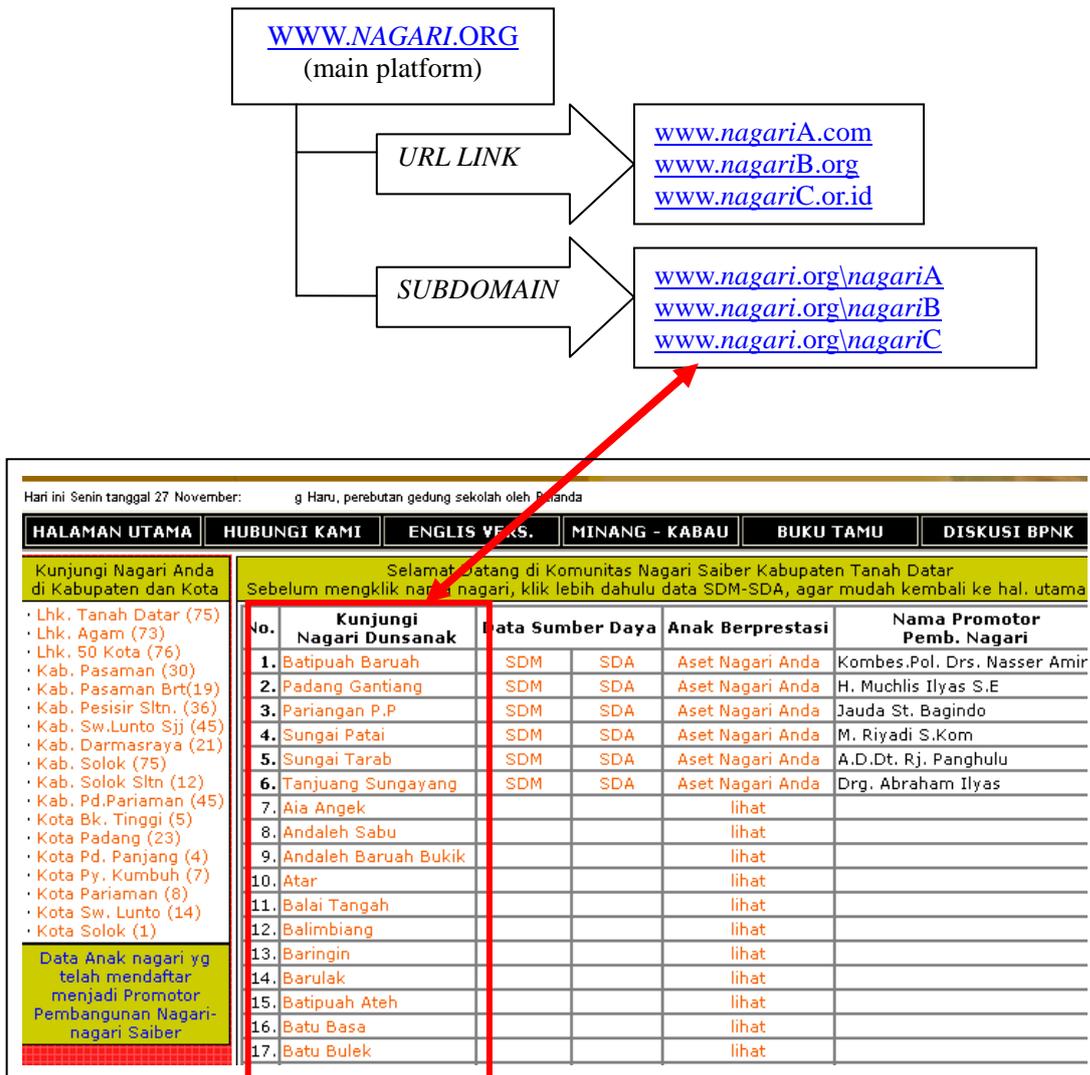


Figure 2. Grouping chart of *Nagaris* representing communities (above: logical hierarchy, below: a caption from www.nagari.org)

B. Developing applications related to cultural behavior

Utilization of the applications is an important issue in *e-government*. People will use the applications only if they benefit them. Online tax payment attracts people to the system because it is much more comfortable than having to deal in person with the tax office. In the CIS, usage is based on a community’s customs and culture. *Minangkabau* people working outside their *nagari* are still psychologically dependent on their families remaining in the *nagari*. As a result, part of their salary will be delivered regularly to the family and also to the *nagari*’s infrastructure development, usually of a religious nature, such as building or repairing a mosque. Therefore, we developed applications that are related to the *Minangkabau* people’s general character. At present, we have built 3 applications:

1. Applications that record a community’s donations and results of these donations
2. Applications that record the *nagari*’s physical and non-physical resources
3. Applications that record births, deaths, and other population data

The first two applications concern the economy, where donations may help the *nagari*'s development. The list of natural resources contained in a website can promote business and investment by people living outside of the community. There are some *nagaris* that actively promote tourism, despite limitations. These websites can display only images, without interactive applications.

Figure 3 displays a page of one *nagari*'s web. On the left side is a list of applications accessible to the people of the community. The main page contains general information about this particular *nagari*, *Tanjung Sungayang*.

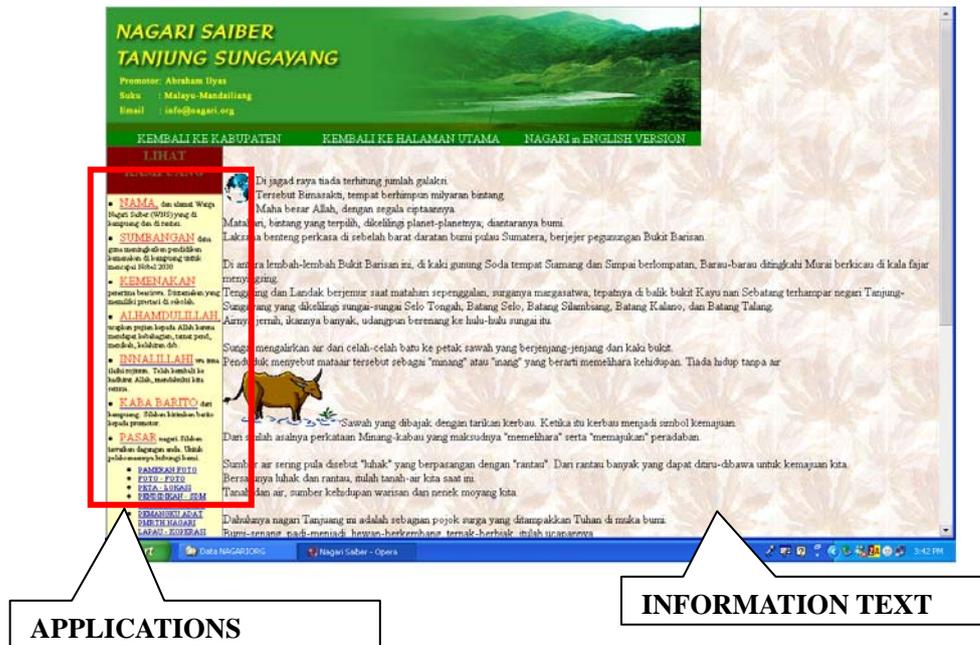


Figure 3. A display captured from a nagari website

C. Information System and Data Management

From its name, the community owns the Community-based Information System. Therefore, the community's administrator should be responsible for the data management. There is a web administrator for www.nagari.org, but for each *nagari*'s web page, there is also a sub-administrator called a promoter. The web administrator has full access, while the promoter has access to his/her community's data only.

To become a promoter, a person must register with the web administrator. Following approval, the promoter will have to complete the basic data for the *nagari* and regularly update the website's content. The sub-domain web data are recorded in www.nagari.org's server. However, *nagaris* that have built their own websites and databases should manage them separately, but they are encouraged to follow the main portal data template.

To support *e-government*, the CIS global data record economic resources, natural resources, and human resources. Figure 4 shows the purpose of data management. Each of the three basic applications has long-term objectives to support *e-government*. These objectives are: economic activities, resource optimization, and online activities. At present, those data are applied in the three applications mentioned in Section 3.2 B. Table 1 shows the data and applications in detail.

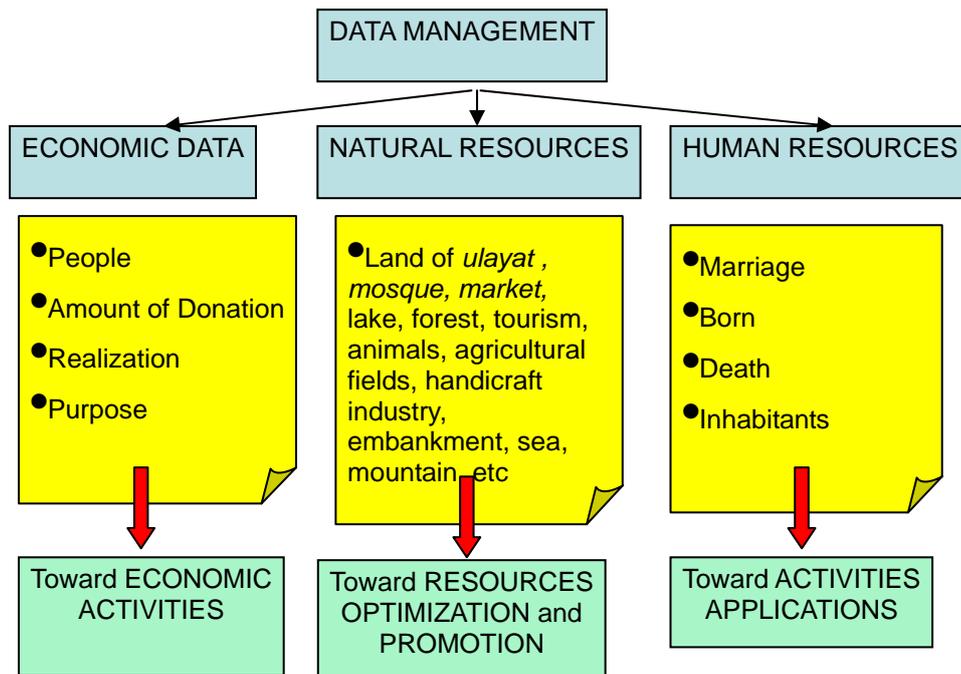


Figure 4. The long tem objectives of Data Management

Table 1. Basic data and applications in www.nagari.org

No	Applications	Data	Data management	Verification
1	Community donations	Who donate	Promoter	Community
		Amount of donation	Promoter	Donator
		Purpose of donation	Promoter	Community
		Realization	Promoter	Community
2	Resources record	Physical	Promoter	Government
		Non-physical	Promoter	Government
3	Residents	Inhabitants	Promoter	Government
		Births	Promoter	Government
		Deaths	Promoter	Government
		Marriages	Promoter	Community

Explanation:

1. Donations to the community, including donors' names, amount of donation, purpose of donation, and its realization.
2. Physical and non-physical resources, most important as they represent the resources of the community. We emphasize these data, as defining materials and resources are important to *Minangkabau* customs.

Physical resources include:

- *ulayat* land (public lands, may not sold or owned by an individual),

- Forests, rivers, embankments, mines, lakes or seas, mountains, rice fields, other agricultural fields, animal husbandry / breeding, caves, roads,
- Recreational attractions, traditional sport venues, cultural sites, ancient monuments,
- Handicraft industries, markets,
- Mosques, financial bodies (*cooperatives*),
- Houses of tradition / customs, people's homes, graveyards,
- And other resources located in the *nagari*.

Non-physical resources include:

- Geographic condition, history and legend / myth of *nagari*, customs,
 - The legacy system, art, and tradition.
3. Miscellaneous population data include births, deaths, marriages, and names of all residents, the complete record of the *nagari* including all activities occurring there.

D. Government Involvement

In order to optimize the system, the government should develop applications related to the three basic applications given above. One of the advantages of a CIS is that *e-government* won't be limited to the central government's applications. Indonesia's *e-government* may expand its application for the purpose of increasing the quality of life for all Indonesians.

Thus, the government's involvement is the key to the success of the system. A CIS clearly has the potential to optimize economic resources, including trading, new investment and investment transactions, which could be done through online applications. For example, the government may develop applications for a *nagari*'s home-industry. Combined with certain policy and actions, the government can use the CIS portal as a web-promotion, reaching all over the world.

Another advantage of a CIS is that it helps us understand the economic behavior of a culture. A *Nagari* is not only the smallest unit in terms of governmental divisions but also as a unit of culture. In *Minangkabau* philosophy, a land and its resources located in a *nagari* may not be owned by a party other than the *nagari* itself. This does not mean that foreigners cannot invest money in the *nagari*, but that they cannot own the land. Therefore, investors must trust the field management to *nagari* people while earning revenue from their investments. On the other hand, the people of the *nagari* gain benefits from the investment and learn to manage resources together with the investor.

3.3 Problems and Limitations

The proposed system was developed three years ago. The main portal and empty template for 543 *nagaris* has been constructed and is ready to be used. However, a classic problem has occurred - lack of support from both the government and society. As is common in developing countries, digital awareness needs to be increased, not only by the people but also by the government's policy makers. In an ideal situation, a government adopts and manages the CIS system as part of its formal policy.

4 CONCLUSIONS

We have explored the development of a Community-based Information System. The pilot system was built in West Sumatera Province, an area structured by communities named *nagari*.

A CIS can empower an *e-government* applicable to other community systems, such as *desa* in Java. This system has been developed to aid *e-government* implementation in developing countries. In order to understand how the CIS will change *e-government*, it is necessary to discover the current community situations and customization the process. The basic concept of a CIS is to pay attention to the customs and cultural behavior of a particular community. Online applications are conceived, which will increase the quality of human resources by exploiting the physical and non-physical resources owned by communities,

since the final objective of every economic activity is to increase quality of life.

In a CIS, a web-administrator and promoters manage data, but future development will rely on the involvement of government and society. The overall *e-government* system will unite with the concept of digital economics as the developing country faces future globalization. .

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