

Integrated E-Government Model with Cloud Computing Technology

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Abstract

The government has a big responsibility to provide maximum service to citizens or the society and the effectiveness of internal processes in government such as coordination and collaboration between ministries and externals such as services to society. On the other hand, technological developments, especially cloud computing, can be alternative solutions so that information systems can be more efficient and effective. The purpose of this research is to build a comprehensive e-government model that covers all parts of the government using cloud base technology. The result of this research is an integrated electronic government model based with cloud technology.

Keywords

e-government, cloud computing, model

1. Introduction

E-government is built with the aim of providing maximum service to society, both individuals and institutions, as the state's responsibility to serve its people and e-government also increases the effectiveness and efficiency of internal government processes such as communication, coordination, collaboration and several management functions among ministries, divisions or divisions in government.

Some parts of the government have used information technology-based systems to support departmental performance including improving services to the public. For example, tax payments can be made online, immigration permits for people who want to go abroad have also been done online and in several parts others are already doing the same. However, between one department or part and another is not integrated, making it difficult to coordinate and collaborate.

On the other hand, cloud computing technology has been widely used by companies because it provides many benefits for this background and the potential use of cloud computing technology, so this research aims to help the government improve the effectiveness and efficiency of services to society and internal government processes by using e-government. The final result of this research is a cloud computing-based e-government model for its user.

2. Literature Review

2.1. E-Government

Electronic government in common can be definite as the use of digital computer to convert government actions, which goal to increase efficiency, productivity and service distribution (Rehman,2012). The word of electronic government or electronic government discusses to the usage of computer tech. by government. Administrations so that these governments become extra operative and apparent. With electronic government, it is expected that services to the public can be improved, the inside efficiency of government is growing and free access to information in a government situation is getting at ease(Kase,2010).

To develop electronic government there are four stages), specifically Attendance, Collaboration, Contract and Conversion .The four phases of development, if contextualized for the development of electronic government web sites , include (Gupta, 2004):

- 1) Attendance, namely bringing up regional web on the internet. In this phase, the elementary information desired by the public is showed on the government web
- 2) Collaboration, specifically a regional website that delivers services for communication among the communal and resident government. In this phase, the information showed is extra diverse, such as transfer facilities and email communiqué on government websites;
- 3) Contracts, specifically resident government websites which in adding to having communication services are also equipped with community service transaction services.
- 4) Conversion, specifically in this situation government facilities are increased in an combined means

E-government is the usage of IT by the government to offer information and services to its residents. I includes:

- 1) Government to Citizen (G2C) is a type of government- community relationship. This relationship purposes to progress the communication among the government and the community and to simplify the public in discovery various data around government.
- 2) Government to Business is a kind of government-business connection. For the reason that it really needs a good connection, among the government and the commercial community. And the goal is for the sake of an ease of doing business people from the business community.
- 3) Government to Government is a type of relationship by other governments. This relationship aims to be able to fulfill various kinds of information needed between one government and another, and to facilitate and also facilitate a cooperation between the governments concerned. is a type of relationship between government and employees. This relationship is intended so that government workers or public domestics can improve the performance and welfare of employees who work at one of the government institutions.
- 4) Government to Non-Profit (G2N) is a type of relationship between the government and non-profit institutions or institutions, such as NGOs, political parties, etc. This relationship aims so that non-profit institutions or institutions can be managed properly, so that the objectives of this institution or institution can be realized in accordance with their respective functions and authorities.(Jing,2015)

2.2 Cloud Computing(CC)

Cloud computing is a grouping of the usage of information technology in a linkage with internet-founded cloud which has the purpose of consecutively applications over computers associated at the similar time, but not completely are linked through the internet consuming CC (Inayatulloh,2020)

Five important features of CC , namely(Puthal,2010):

1. On-demand self-service. Consumers could control computing abilities unilaterally, equally server time and net storage, mechanically as desirable deprived of needful human communication with apiece service worker.
2. Wide-ranging network entrance. Abilities that are accessible over the network and retrieved via typical devices that introduce the usage of multiple stages.
3. Supply combining. A pool of computing properties owned by a provider to serve several different virtual customers, vigorously allocated and assigned allowing to customer request. Here is a logic of site objectivity that the consumer commonly does not have controller of the site of the resources providing, but it is possible to determine locations at a higher level.
4. Quick resistance. Abilities can be assigned in some cases performed mechanically to rapidly count out and enter on request. For customers, the available capabilities are frequently limitless and the quantity can be attuned.
5. Dignified Service. CC systems mechanically monitor and optimize resource usage by applying dimension capabilities (metering) at numerous stages according to the kind of service .

Three service mockups of CC (Bhardwaj,2020), namely: Software as a Service is the ability given to consumers to custom supplier apps. can operate on a cloud structure. Applications can be accessed from a variety of client devices through an interface .The customer does not achieve or controller the fundamental cloud structure containing the system.. Examples are Google Apps, Salesforce.com and social networking applications such as Face Book.

1. Platform as a Service is the ability providing to customers to organize consumer-completed or developed applications to CC structure by means of programming and apparatuses maintained by the supplier. The customer does not accomplish or controller the fundamental cloud structure containing or system servers, Examples that have implemented this are Force.com and Microsoft Azure investment.
2. Cloud Infrastructure as a Service is the ability given to customers to development, supply, network, and other vital computing resources, where consumers can organize and run the application easily, which can contain applications of operating system. The customer does not achieve or controller the fundamental cloud system but has control over the operating system, storage, deployed applications, and perhaps limited control over select network components (eg, host firewall). Examples include Amazon Elastic Compute Cloud and Simple Storage Service.

2.3 Model

The model is a representation of the object where the aim of this research is to build an e-government model that describes the e-government system. The model has been widely used in several researches such as the IT Governance model (Inayatulloh,2020), the TAM SME model (Inayatulloh,2020), the “Bekraf” model (Inayatulloh,2020) , the block chain model(Inayatulloh,2020), the commerce learning model(Inayatulloh,2020) and others

3. Methods

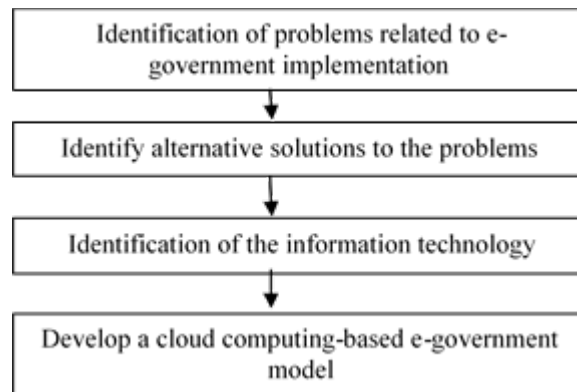


Figure 1. Research Methodology

The first step is to carry out an observation to identify problems related to the implementation of e-government, based on the findings of the observation, the problem is that each department has its own system and is not integrated with other departments. The second step is to identify alternative solutions and the solution is to integrate system systems from several departments into an integrated system and use cloud computing technology to increase the effectiveness and efficiency of e-government systems. The final step is to build an e-government model that integrates all parts of government and services to society.

5. Results and Discussion

Figure 2 explain E-government model based on cloud computing. The e-government model that integrates all parts of government and cloud computing-based is divided into several parts as follows:

- a. Internal processes and parts that include organizational and information processing, public services and access. Organizational and information processing is the part that deals with the presidency, public utilities, local government and ministries.
- b. Demography and taxes. And the third part is access, which is the part related to telecommunications and the internet. These three processes and parts use PaaS, SaaS and IaaS cloud computing technologies. PaaS or Platform as Service is used to build e-government systems that are given responsibility to developers. IaaS or Infrastructure as Service is used to provide infrastructure to support e-government systems and the responsibility is given to the network engineer to manage this part. The last is Software as Service which is used by end users to support the use of cloud computing such as google doc.
- c. End users are divided into two, namely internal and external users and end users can use several devices such as PCs, laptops and smartphones to be able to use e-government

Evaluation with cloud base e-government that Cloud-based e-government has several advantages over traditional e-government as explained below

- a. Availability and access where IT capabilities have traditionally been limited to creating and delivering online services. The limited availability of online services affects the level of public trust in their use. Meanwhile, cloud-based e-government applications and information online 24/7 via an internet connection have high availability. The public can access it anytime and from anywhere and management is carried out by the system provider. (Luna, 2010), (UN, 2014),(L1,2013)
- b. The sharing of resources and data exchange where traditional e-government only provides different platforms and spread over several places makes it difficult to integrate. This causes obstacles in the availability of data and information. Meanwhile, electronic government founded on CC helps organizations build a common platform to support all applications. With CC, government activities can generate a essential information organization and share properties, application and infrastructure (Ahmad,2018),(Taher,2011),(Trivedi,2013),(Lee,20120).
- c. The technology used and the migration process where in traditional e-government many computing servers are used indeterminately and use their complete volume. In accumulation, there is no application management. Meanwhile, in cloud-based e-government, cloud architecture provides effective use of computing properties since it can assessment server and application workloads so that they can switch and achieve properties and device management that keep up with technological developments.

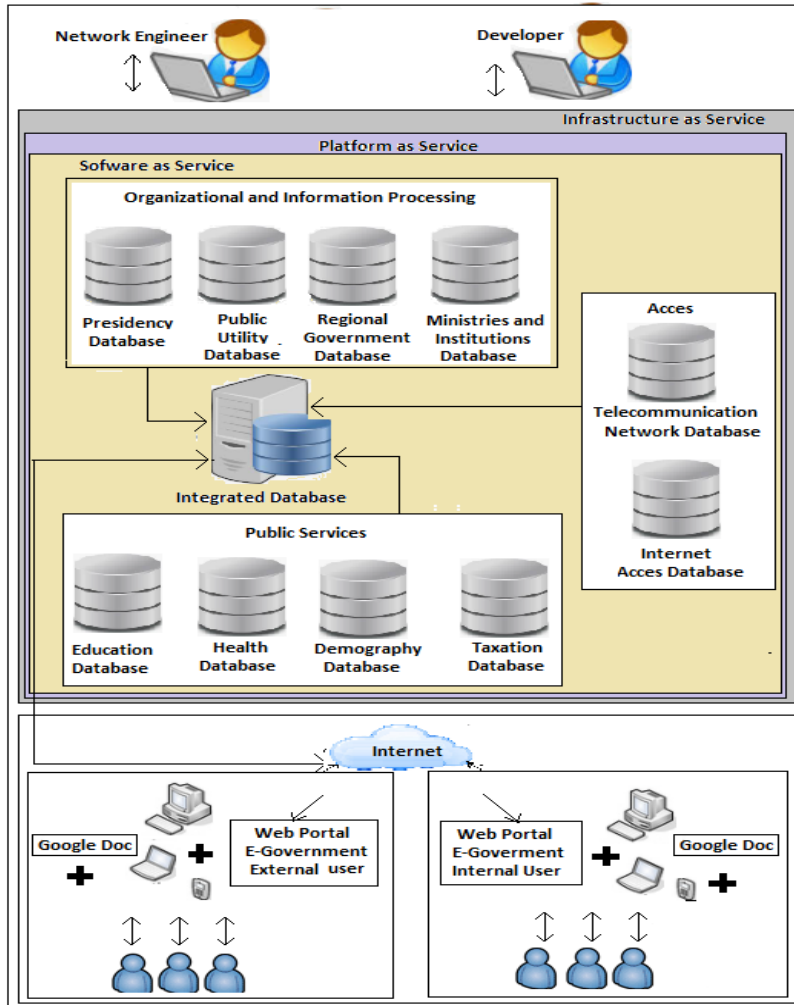


Figure 2. E-government model based on cloud computing

6. Conclusion

The e-government model that integrates all parts of government is an effective solution to creating good governance because of the effectiveness and efficiency created to support internal processes in government and services to citizens. The model built using cloud computing technology will add to some of the benefits of e-government as well as the benefits of cloud computing

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Biography

Inayatulloh is a candidate doctor at Bina Nusantara University's Doctor of Computer Science. Since 2000, Inayatulloh has been a lecturer at Bina Nusantara University, school of information system. I am experienced in system development in several companies such as garment, petroleum, retail and others. Scopus indexed publications have been produced with topics related to information systems such as e-learning, e-SCM, e-CRM. E-government, block chain and others