

GOESMART : SOCIAL MEDIA EDUCATION IN CLOUD COMPUTING

Asep Nugraha¹, Suhono Harso Supangkat², Denny Nugroho³

¹Polytechnic Telkom, ²School of Electrical Engineering And Informatics ITB, ³PT. Indismart

¹asepnugraha@gmail.com,

²suhono@stei.itb.ac.id,

³dennynugrohomail@gmail.com

Abstract-- Today, the dominant topic of Information Technology's development are social media and cloud computing. Based on statistical data, a social networking or social media can have up to hundreds millions of active users. The amount of data users will precisely impact on investment in infrastructure to support IT services. Regarding to that condition, Cloud computing technology with the paradigm that seeing IT as a Software as a Service (SaaS), Infrastructure as a Service (IaaS) and Platform as a Service (PaaS) is expected to deliver IT Investment's cost reduction.

Geosmart social media is an interactive, informative and communicative media for education, with the objective is to increase the intelligentsia of all level of generations in Indonesian society. Lectures, students, Alumni, and Parents are the main target as the users. The Geosmart's website, provide a content-based education feature, which intended to encourage the users in education process.

Geosmart has collaborated social media and could computing technology to produce what so called a social cloud. Social cloud will facilitate and enhance the third parties contribution in order to add services into the Geosmart's web.

Keywords-- Cloud computing, Goesmart, Social cloud

I. INTRODUCTION

The social media development is so rapid in recent years. Based on survey result, in January 2005 social media sites on the Internet has reached 115 million members around the world[1]. Facebook, Myspace, LinkedIn, Friendster, and others are examples of successful social media sites to reap hundreds of millions members around the world. From the Facebook's official website, it is currently recorded has 845 million active members by the end of December 2011 [2]. Social media is the real model of the world's communication by providing a platform to facilitate communication and sharing among users According to practitioners of information technology, cloud computing is a paradigm that sees IT as a service in which an IT resource (infrastructure, platform, and software) are offered through the internet to users at an affordable price as per the usage [3].

The rapid development of social media and cloud computing technologies have lead to create a social media based on cloud computing also known as a social could.

II. WEB 2.0 AND SOCIAL MEDIA

One of factor that supports the development of social media is the concept of web 2.0 technology. The examples of Web 2.0 applications is social networking sites like facebook, twitter, blogs, wikis, youtube, and others.

World Wide Web inventor, Tim Berners-Lee stated that Web 2.0 is a medium for collaboration, a place where all users can meet, read and write the information activity. In terms of Tim Berners-Lee, this condition is called the Read / Write Web [4]. According to Shetty's opinion, Web 2.0 is a web application which has eight characteristics [5]:

1) *User Centered Design.*

A web design which is created in a way that ist fulfills every possible need of the end user and empowers the user to perform certain customizations within the design..

2) *Crowd Sourcing.*

Every small unit of contribution is important to a Web 2.0 service. Millions of such contributions eventually lead the website to state of higher relevance.

3) *Web as A Platform.*

Any condition of a user (client) does not affect the quality of services application. Users should not depend on the operating system (Windows, Linux, MacOS, Unix, etc) that they used to access the web application.

4) *Collaboration.*

Wikipedia is a successful example of collaboration in building the knowledge. Since previously users could only access the encyclopedia only. Collaboration is one of the important characteristics of Web 2.0.

5) *Power Decentralization.,*

Back Then, most of the services used to be administered and was not automated. But Web 2.0

services follow a self-service model rather than being an administrator dependent

6) *Dynamic Content*

Dynamic content is the effect of crowd sourcing characteristic where each user has equal opportunity to contribute to the development of services and content

7) *SaaS (Software as a Service)*

Applications that have the characteristics of Web 2.0 is an application that supports the implementation of cloud computing. Web 2.0 applications are Software as a service (SaaS), software is available as a web service without depending on the user's platform.

8) *Rich User Experience*

Use of XHTML, CSS 2.0, Ajax, flex and other similar rich media producing technologies have potentially helped making the web services lighter, faster, less cluttered and more appealing to the end user. The ability to integrate various sources of digital media makes the user is always connected with the service and connected with the effort of updating, sharing and collaboration with other users.

In addition, McAfee provides another view of the characteristics associated with Web 2.0. The characteristics of Web 2.0 can be seen from the acronym SLATES, namely Search, Links, Authoring, Tags, Extension [6].

- 1) Search, information can be easily searched via keyword search.
- 2) Links convey the same information that connected to each other in a web ecosystem through connectivity between networking tools.
- 3) .Authoring, the ability to create, update and edit content through users collaboration.
- 4) Tagging, content can be given different categorization by the user to facilitate the process of searching without being influenced by pre-existing categories. Collection number of tags is made by many users within an application system known as folksonomies (folk taxonomies).
- 5) Extension, the software is used to produce web application also serves as a document server, so users should not have difficulty with the extension that generated by the in use web application
- 6) Signal, the use of RSS syndication technology to notify users of changes to the content.

III. CLOUD COMPUTING

Cloud computing is the combination of computer technology (computing) and Internet-based application development Internet-based (cloud). Cloud is a metaphor of the internet, in Cloud Computing, 'cloud' is an abstraction of a complex hidden infrastructure. Cloud computing is a method of

computing in order to presents Information Technology as a service, so

the user can access it through the Internet ("in the cloud") without necessity to find out what is inside. Regarding to its implementation, cloud computing is integration between the virtualized physical sources, virtualized infrastructure, virtualized middleware platform and another application is made for the advantage of business users. By using Cloud Computing, the user can focus on its core business, and no longer bother with the issue of managing IT. IT division owner can be focused to improve IT service-specific, while general matters are handled by the service provider [6].

Cloud computing is a distributed computing paradigm that focuses in providing distributed access to a variety of users, virtual infrastructure hardware, and virtual software through the Internet [7]. The perspective of cloud computing can be seen from the aspect of capabilities and access.

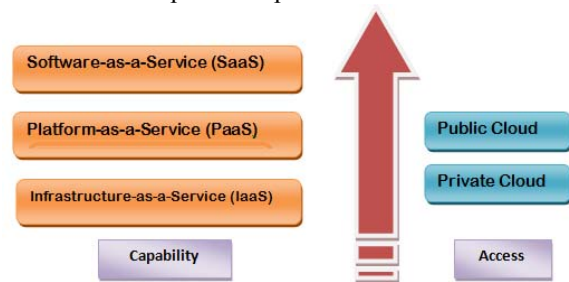


Fig. 1 Cloud computing architecture

Software-as-a-Service (SaaS) services focus on providing a model of software development that developed by vendors or third parties and possible to be used by multiple users through the internet or cloud. Some vendors of SaaS services are:

- Google Apps: a service provider web-based office applications such as e-mail, calendar, and document management.
- salesforce.com: application service provider of customer relationship management (CRM).
- zoho.com: application service provider of web-based enterprise.

Infrastructure-as-a-Service (IaaS) focus on providing computing infrastructure through the Internet. Some vendors that provides IaaS services includeare:

- Microsoft Live Mesh: it provides a distributed file access service for individual users.
- IBM Computing on Demand (CoD): provide the services that the server can be configured with additional data storage.
- Amazon Simple Storage Solution (S3): provides data storage services with dynamic capacity.

Platform-as-a-Service (PaaS) focus on providing application development platform for individuals or organizations through the Internet. Several PaaS vendors that provide services include:

- Google App Engine: provides a platform for running applications created by developers.

- Microsoft Azure Services Platform: provides a platform for computing and storage services on-demand.
- Yahoo! Open Strategy (Y! OS): provides a service platform for web-based application development.

Basically, the cloud computing resources accessibilities are divided into:

- Public Cloud's services are destined for public purposes and usually free. For example: Facebook, Yahoo Mail or DropBox.
- Private Cloud is a service that is operated only for a particular organization. For example: Telkom Cloud, Biznet
- Hybrid Cloud is a mixed composition of cloud services. Remain a stand-alone entities, but its linked by technology that enables data and application portability between the cloud.

Cloud computing has some advantages, such as:

- 1) Cheaper, because users do not need to provide their own IT infrastructure as well as the human resources.
- 2) More reliable, because the data is maintained 24/7 by the provider
- 3) More efficient, because users are able to choose which services that they need and will be charge according to the services that they choose and use only. a
- 4) More compatible, because it can be accessed from anywhere through any internet connection.
- 5) More secure, since all data is stored in a centralized Enterprise server with backup fuserver attached.
- 6) More simply, because it does not need a deep understanding of IT systems.

The cloud computing functionality is requires a qualified server. Without a server, it is impossible to run these services, because all functions depend on a server- enterprise systems. Terms of a suitable server for Cloud Computing:

1) *Virtualization capabilities*

Virtualization is the ability to run multiple virtual servers in the main server. Virtual Server can be run using the features and special applications, such as VMWare or ProxMox. With a virtual server, the user does not need to buy lots of servers to run different server functions, such as web server, database server, FTP server, etc.. Virtualization cloud computing is absolutely necessary, in order to serve the user with a variety of software platforms.

2) Using the original server's architecture and components.

A cloud computing Server is a hardware that with a proper server architecture and components. This is important because cloud services must be able to work non-stop (24-hour x 7-day), capable of handling the job request in large quantities and can handle data in a large capacity. For instance, some of the important components that a server technology

must have, such asare: Processor, Motherboard, Hard Disk and Power Supply.

- 3) Use a server with a specific mainboard's specifications, such as dual-Gigabit Ethernet LAN ports. It has capability to distinguished the internet protocol's functions from different server.

4) *Have the ability to scale-out*

Scale-Out Server is a unique server's feature which makes it different from other computer devices. Scale-Out is a feature where the server's unit is expandable as well as multi users oriented.

IV. IMPLEMENTATION AND ANALYSIS

This paper will present the sconcept of social cloud in cloud computing with case the study case is an education based of social media applications which is GoeSmart (www.goesmart.com).

Geosmart social media is an interactive, informative and communicative media for education, with the objective is to increase the intelligentsia of all level of generations in Indonesian society.

Lectures, students, Alumni, and Parents are the main target as the users. The Geosmart's website, provide a content-based education feature, which intended to encourage the users in education process.

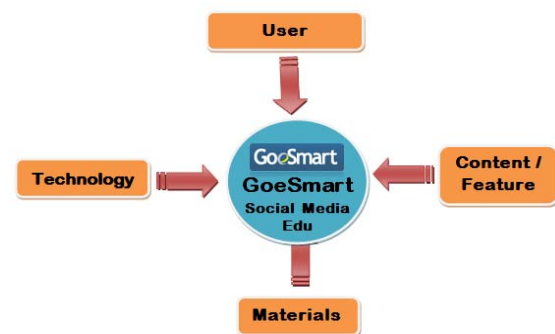


Fig. 2 Conceptual diagram of GoeSmart

From a conceptual diagram above shows there are six major entities that became the pillars of GoeSmart social media education. Those six entities are:

A. User Entity

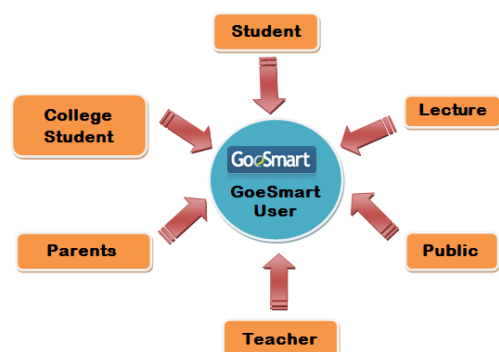


Fig. 3 User entity

Goesmart main users are those who are directly or indirectly in any educational environment. Based on Fig. 3 Goesmart user classification is divided into:

1) Student

Through Goesmart, student can collaborate and share with others students from various schools to a positive educational activities.

2) Teacher

Through Goesmart, teacher can collaborate and share with others teacher from various schools. For example through discussion forum between the teachers it can be used to find the best teaching methodology for students. Then the teacher can also collaborate with the students to discuss a lesson's subject.

3) Lecturer

Through Goesmart, lecturer can collaborate and share among lecturer or students. For example, the course material is uploaded by lecturers to Goesmart for enriching course material for students or other lectures.

4) Campus Student

Through Goesmart students can collaborate and share with other students across campus. Goesmart can be a beneficial discussion, communication, and information sharing for each other students.

5) Parents

Most of the social media's active users is dominated by teenagers and those who are students. Virtual interaction on social media sites is generally not socially controlled. Goesmart make the parents as one the user entity to help monitoring the social development as well as social achievement development of their children in school.

6) Public

As a media for public such as alumni or education practitioner so they still able to communicate and seek information about their school or campus through Goesmart.

B. Technology Entity



Fig. 4 Technology entity

Technology becomes an important part of Goesmart social media development. Goesmart's Content/ features developed in two platform technologies as shown in figure 4. Namely:

1) Web platform

Social media application represents the web 2.0 generation where the internet network is utilized to run the web applications. So that the web base technology became the main platform for Goesmart development.

2) Mobile platform

Convergence of information and communication technology has made the rapid development of mobile technology. Currently the mobile devices are equipped with the operating system and applications to access data services via the internet. Goesmart development that based on mobile technology is aims to enhance the utility and portability of the user. The Goesmart's mobile technology Features or services is value-added service to bind the user loyalty. For example Goesmart Messenger is an Instant Messaging application based on Android platform that is used for chatting between Goesmart users.

C. Feature Entity

Goesmart as a social media education has several important features for the educational community, those are:

1. Discussion Forum
2. Chatting
3. Educational materials
4. Competition
5. Album
6. Ranking
7. Try out
8. School Page
9. Badge
10. Goesmart Mobile

D. Education Materials



Fig. 5 Education material

As social media, Goesmart collaboration has a capability to place various parties to contribute educational materials, as in content or applications. Goesmart provides several business model options for the contributors, such as free content or paid content (on demand). The contribution of every Goesmart's community users regarding to the educational materials, will lead to a collaborative educational material service.

V. GOESMART DESIGN AS A SOCIAL CLOUD

Goesmart Design in cloud computing as a social cloud will facilitate various parties, so they can give lots of contribution to Goesmart.

In the social cloud, every service should be accessible by certain goesmart's registered user. The objective is to provide interaction between users and services [8]. For example, a teacher would like to contribute paid material/content/application education to the user community with a charging mechanism from Telco provider. The architecture of Goesmart social cloud can be described as follows:

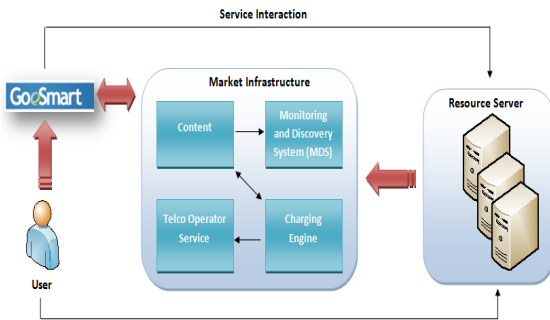


Fig. 6 Social cloud architecture

The social cloud architecture contained main component includes :

1) Goesmart API

Goesmart API is used as an interface for third parties to deliver both content and application services to the site Goesmart. Users who will upload the service to the site Goesmart will be given a page with the URL interface <http://apps.goesmart.com/socialcloud/> access that will be forwarded to the server and will result in a response page as interface/preview content. Processes that occur can be seen in the following figure.



Fig. 7 Uploading content to Goesmart

Processes that occur when users upload the service to Goesmart's Store depicted in the following sequence diagram:

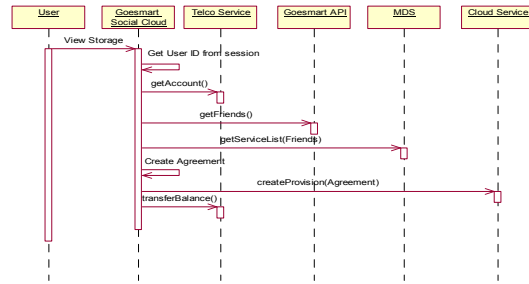


Fig. 8 Uploading service process

2) Monitoring And Discovery System (MDS)

MDS is a component that provides information services, what services are contained in the resource server. Through MDS services will be updated periodically and stored in the storage.

3) Telecommunication Provider

Telecommunication providers will provide the content into system services. The system will communicate with the existing services on the Goesmart's web Transaction processing process only conducted for Goesmart's registered users.

4) Registration

The users or contributors of Goesmart's service, should do the registration process first to get Goesmart ID. The registration process can be seen in the following sequence diagram:

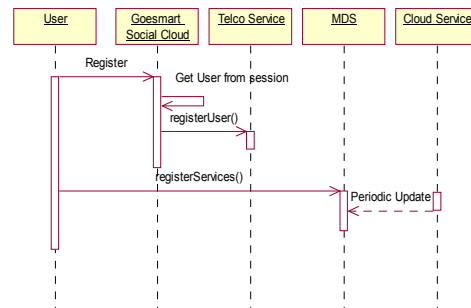


Fig. 9 User registration process

VI. CONCLUSIONS

- 1) The increasing users of social media on the Internet show that social media has become the main media of communication and sharing information sharing among people.
- 2) Cloud computing technology can be used to support social media development or social media based on cloud computing. Known as social cloud.
- 3) Social cloud gives benefit regarding to the investment aspect and facilitate various parties to give contribution of service on social media.

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