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Functional Decomposition Of Facilitated Web Hub For Government Projects And Corporate Social Responsibility

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***Abstract*— According to experts, effective awareness, active involvement and collaboration of stakeholders including local community members are essential for effective community development and successful corporate social responsibility implementation. Besides, active participation and collaboration of stakeholders do not just happen; rather, it requires a facilitator who initiates, moderates, supports and sustains the participation and collaboration. Consequently, in this paper, a web application called Facilitated Web Hub for Government Projects and Corporate Social Responsibility (FWH4GovP&CSR) is presented with Imo state in Nigeria as the case study. Functional decomposition is and features of the web application are presented. Google map mashup module enable projects and CSR initiatives to be viewed on Google map. The web application is developed using HTML, PHP, Java script and MySQL database management system. The map mashup application is based on Google map application program interface version 3. The application is locally hosted using Apache web server.**

Keywords*— *Corporate Social Responsibility; Map Mashup; Community Informatics, Geographic Information System; Online Community; Web Application; Web Hub

I. INTRODUCTION

In recent days, the use of internet has greatly motivated community interaction and collaborations. In this wise, the use of Information and Communication Technologies (ICT) in addressing Community challenges has become rampant. Such technology strategy that employs ICT in addressing Community challenges is called Community Informatics [1, 2,3, 4]. In addition, most web applications have also taken advantage of online mapping systems in providing more detailed user-centric services over the internet. The integration of mapping and map-visualization capabilities on web-application gives rise to a web-based Geographic Information System (GIS). A GIS is collection of hardware and software designed to collect, store, retrieve and display geographically referenced information [5,6,7].

Furthermore, the advent and unprecedented growth in online social network websites have triggered the use of such web applications to pursue many community development purposes including Corporate Social Responsibility (CSR) rendered by corporate bodies and government agencies. The CSR strategic advisory group for the International Organization for Standardization (ISO) defined CSR as an approach through which organizations seek to address the social , economic and environmental issues in such ways that is beneficial to the people, the communities and the society [8].

In this paper, a Facilitated Web Hub for Government Projects and Corporate Social Responsibility (FWH4GovP&CSR) is presented with Imo state in Nigeria as a case study. The FWH4GovP&CSR system is tailored to foster candid contributions of government agencies, corporate bodies, community members and other stakeholders in achieving and consolidating community development in Imo state. This system integrates social networking capabilities and GIS technologies in ensuring that the government agencies and corporate organizations avail the communities of their own quota for community development through their corporate social responsibility contributions and constituency projects. With this system, the CSR activities of individuals, groups and corporate organizations are uploaded onto the CSR hub (website) from which they are made visible and accessible to the general public. These web hub contents are accompanied with geospatial information such as the location coordinates of the part of the community referred to in the content. This enables other system users to visualize and track the CSR activities on web map.

Above all, the success of the FWH4GovP&CSR depends on the ability of a facilitator agency that is responsible for hosting the web application and for moderating the connections and the interactions on the web hub.

II. LITERATURE REVIEW

Corporate Social Responsibility (CSR) can be defined as an organization's sense of responsibility targeted towards the community , as well as environment in which it operates [9, 10]. A more elaborate definition of CSR extends its focus on

stakeholders to include focus on volunteering and philanthropy. This is a form of corporate self-regulation integrated into a business model [11, 12].

Similarly, experts state that citizens have the right to expect government to deliver certain basic services. Also citizens have the right to hold leaders accountable for their actions [13]. As such, in many developing nations, lack of awareness of government's development programmes is among the major causes of civil unrests. Apart from government development initiative, corporate social responsibility (CSR) plays key role in accelerating the overall development and nation-building process. In addition, CSR is a duty which when neglected for a long time generates friction between organizations and their host communities [14]. Consequently, lack of awareness of the corporate social responsibility contributions of corporate bodies are among the causes of hostility experienced by corporate bodies in their host communities.

Unfortunately, CSR initiatives face many challenges one of which is lack of community participation in CSR activities. The situation is further aggravated by inadequate communication between the organization and the community at the grassroots level [15, 16]. Accordingly, for more effective CSR initiatives, creation of awareness about CSR amongst the general public is essential. Also, development of partnerships among all stakeholders including the private sector, employees, local communities, the Government and society is also very important. Nowadays, such collaborative framework can be established and sustained through the use of social network web application

Basically, web applications are defined as software, which can be accessed through a browser over a network such as Internet or an Intranet[17, 18, 19]. Social network web application (SNWA) is a set of web-based and user-friendly applications that enables users to network, collaborate, co-produce and share content. SNWA can be characterized by focusing on collaborative, user-generated content shared among user communities through social interactions [20, 21, 22]. Examples of SNWA include, Facebook, YouTube, Twitter, MySpace etc. Social network web application can be designed for specific purposes and applications. Also, the functionalities of the web application can be extended by interfacing it with other applications. In this wise, location aware application and map mashup applications among possible software that are increasing being interfaced with social network web application. The interface of geographic information systems with social network web applications makes it easier to support online geo-communities with offline collaboration. It also makes it easier to generate and share local contents with strong and more reliable social validation mechanisms.

III. METHODOLOGY

The implementation of the FWH4GovP&CSR system follows a User-Centred Incremental System Methodology (UCISM). UCISM places the user of the system at the heart of the entire software development process and it begins with effective requirement engineering, which constitutes all the activities carried out to ensure that the system developer have in-depth knowledge of the user and system requirements. The activities embodied in the requirement engineering are the requirement elicitation, requirement analysis and triangulation and requirement specification. The requirement engineering process is followed by system design, coding, integration, testing and deployment.

As regards the system design, in this paper, the system functional decomposition approach is used. Furthermore, three-tier architecture based on WAMP configuration is adopted for the web application. In this case, WAMP stands for a combination of four items, namely; Windows operating system; Apaches web server, MySQl database management system and PHP scripting language. The three-tier architecture consists of the presentation tier, the application or logic tier and the data tier. The presentation layer (or tier) referred to as the user interface is implemented using Hyper Text Mark-up Language (HTML) , Cascaded Style Sheet (CSS) and Java script as the client side scripting language. The application or logic layer employs PHP as the server side scripting language while at the data tier; MYSQL was used for the database. The system was finally hosted locally on the Apache Web server.

A. Functional Decomposition of The System

Functional decomposition implies the breakdown of a complex problem or system into its respective unit and sub-units or modules and sub-module following the principles of divide and conquer approach.

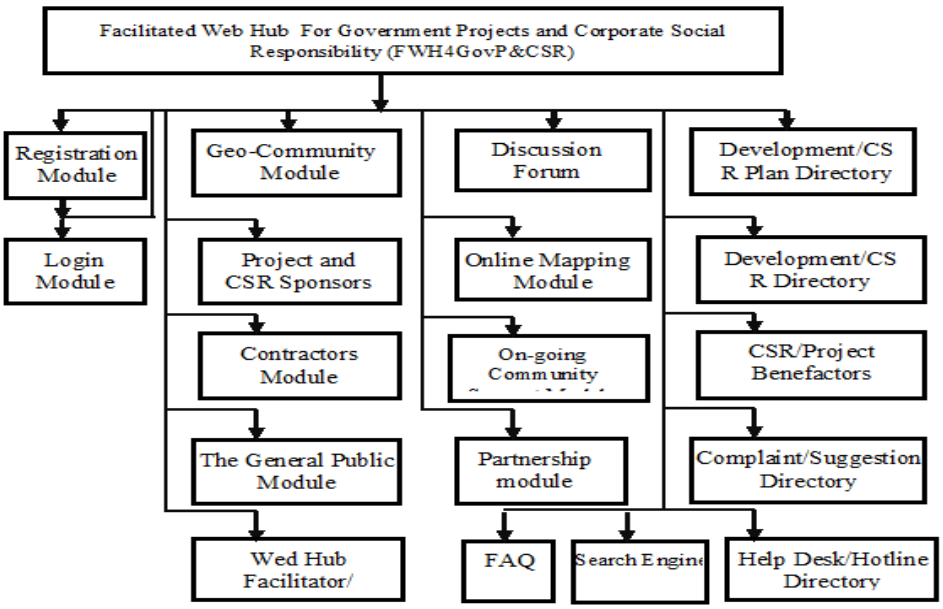

Figure 1: *Functional decomposition of the web hub for government projects and corporate social responsibility*.

The functional decomposition of the Facilitated Web Hub For Government Projects and Corporate Social Responsibility (FWH4GovP&CSR) is presented in Figure 1. Brief description of the various modules in the system is then presented.

B. Registration and Login Module

According to the administrative policy of the FWH4GovP&CSR web portal, every user must be registered and every registered user must login before access can be granted to the user to use the system. However, in Figure 1, there is help desk with toll free hotlines to attend to new users and non-registered users who may want to access some services prior to registration.in that case, the help desk attendants will take note of the unregistered user's details while attending to him or her.

C. Geo-Community Module

In order to manage users in the FWH4GovP&CSR web portal, the users and contents are organized in terms of online geo-communities. In this case, the geo-community identifies different local communities that are found in a given State in the nation. For instance, in Nigeria with 36 States, each with a number of Local Government Areas (LGAs) and each LGA has many towns; the online geo-communities will be grouped first according to State and then according to LGAs and possible with respect to towns. Once a user is registered, the user will automatically be assigned to a default online geo-community depending on the information the user provided at the point of registration. However, the user can access other online geo-communities listed on the FWH4GovP&CSR web portal. The online geo-community structure makes it easier to visualize the distribution of government projects and CSR contributions among the various local communities in a nation.

D. Public Module

The public module, Figure 2, is used to capture what functionalities and roles that are available to anyone who chooses to use the FWH4GovP&CSR web portal. Other categories of users identified in the system are the Project and CSR Sponsors, the contractors or project implementers and the FWH4GovP&CSR wed hub facilitator or administrator.

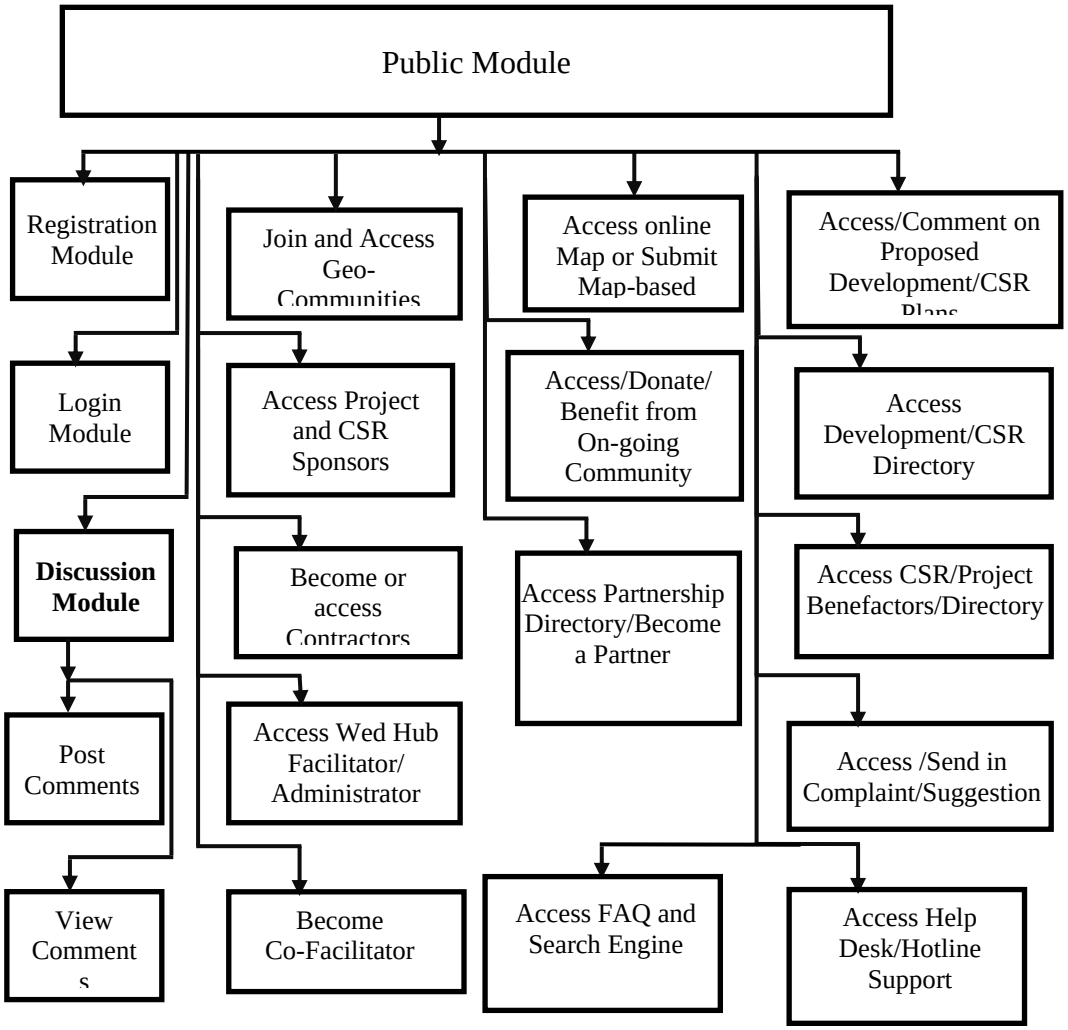

Figure 2: Functional decomposition of Module for the general public

Each of the user categories has different user privileges that determine the actions they can perform within the system and the functionalities they can access. However, the general public user functionalities apply to all the user categories. As such, the public module, Figure 2, is used to express the general user features applicable to all the categories of user.

In Figure 3, the different options available to user for viewing or searching for projects and CSR contributions in the web hub are presented. Both viewing and search can be carried out with respect to the geo-coordinates of the content being searched or the name or other attributes associated with the content. Importantly, there is exhaustive listing of the projects and CSR contributions in terms of Sponsor Agency or Organisation, Location, Benefactors, Contractor, Date and Status such as Completed, On-going, Yet To Start, Abandoned, Paused, etc.

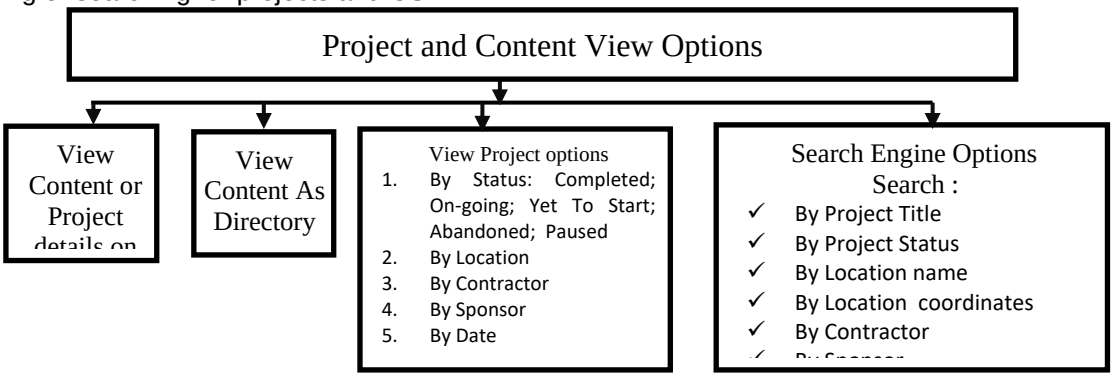

Figure 3 The View Option Available to the users

In order to enable the spatial search engine and map-based visualisation of contents, the online mapping module, Figure 4 is included in the web hub.

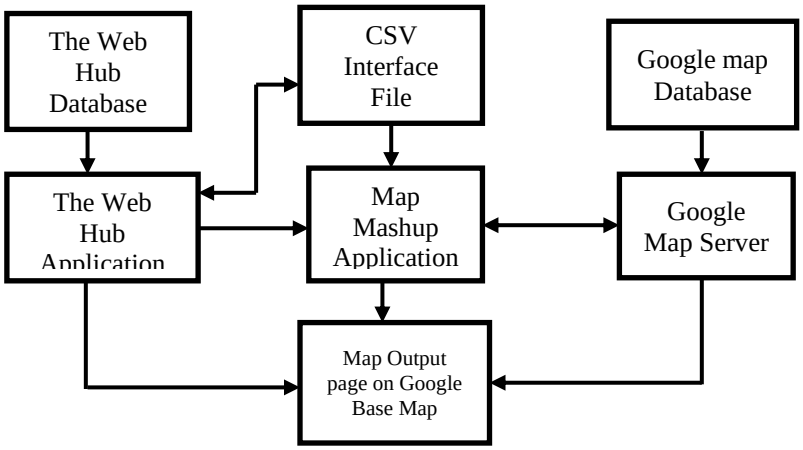

Figure 4. *The Online Mapping Module*

According to Figure 4, the online mapping is based on Google base map. The local web hub application updates the content of a CSV file based on the search output from the web hub database. Then, a map mashup application interfaces with the local CSV file and the external Google map server to render the map output on the map canvas. Meanwhile, the external Google map server reads its data from the external Google map database and also the locally generated data passed to it from the CVS file. In all, the map output page is a combination of external data from the Google database and the internally generated content from the we hub.

E. The Web Hub Facilitator or Administrators

The web hub facilitator or administrators are the people that moderate the connections, the interactions and the contents generated in the FWH4GovP&CSR web hub. The facilitators will consist of a team of people with diverse areas of specializations with the ability to maintain FWH4GovP&CSR web application; build and sustain the online community in the FWH4GovP&CSR web hub; connect and interact with the project and CSR sponsors; as well as, ensure sustained active participation of the diverse stakeholders in the FWH4GovP&CSR web hub. According to the design of the web hub, the hub facilitator or administrators can engage the services of volunteered moderators who will help in extending the facilitator services to the various geo-communities.

IV. RESULTS AND DISCUSSIONS

The screenshot of few pages of the FWH4GovP&CSR web hub are presented. The welcome page for user login is shown in Figure 5. Registered users login to access the system. the screenshot of new user registration page is shown in Figure 6 which also shows the registration form.

Figure 5. The Welcome Page For User Login

The screenshot for Project and CSR Directory is shown in Figure 7. In the directory is listed all the projects and CSR contributions of individuals, groups and organisations. The list shows the sponsors, contractors, status and the location where the project or CSR initiative is being implemented. It also provide link for viewing the project or CSR initiatives on map. A sample map view of project and CSR initiatives is shown in Figure 8. On the Infowindow on the map in Figure 8, the detail of road rehabilitation project at Okigwe is shown.

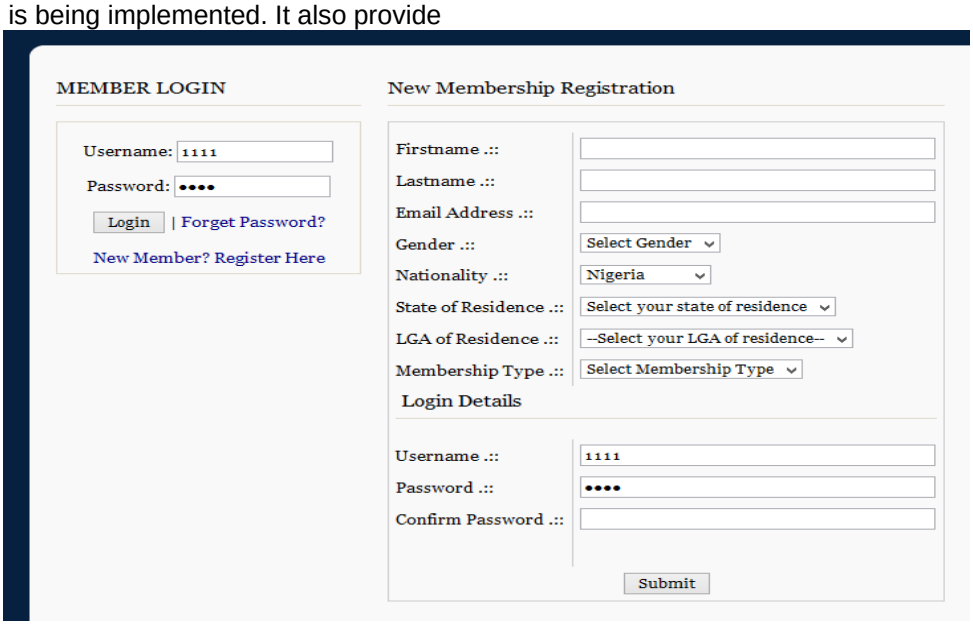

Figure 6. *The New User Registration Page*

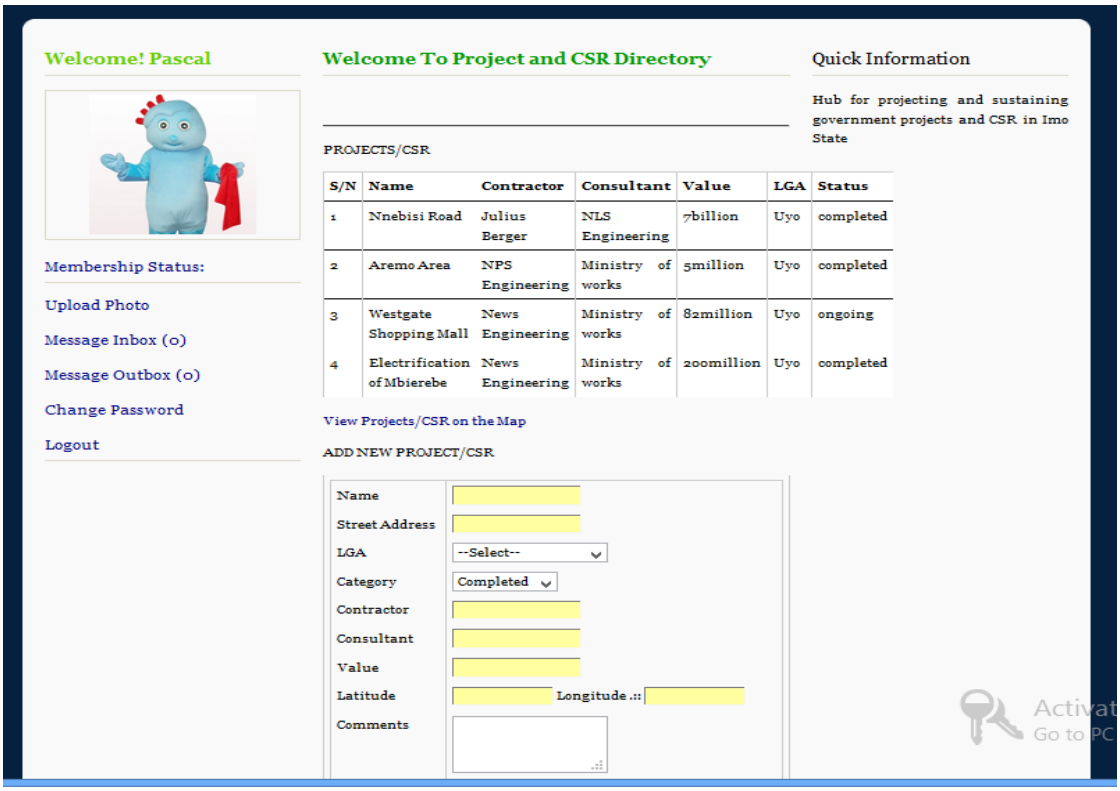

Figure 7. The Project and CSR Directory

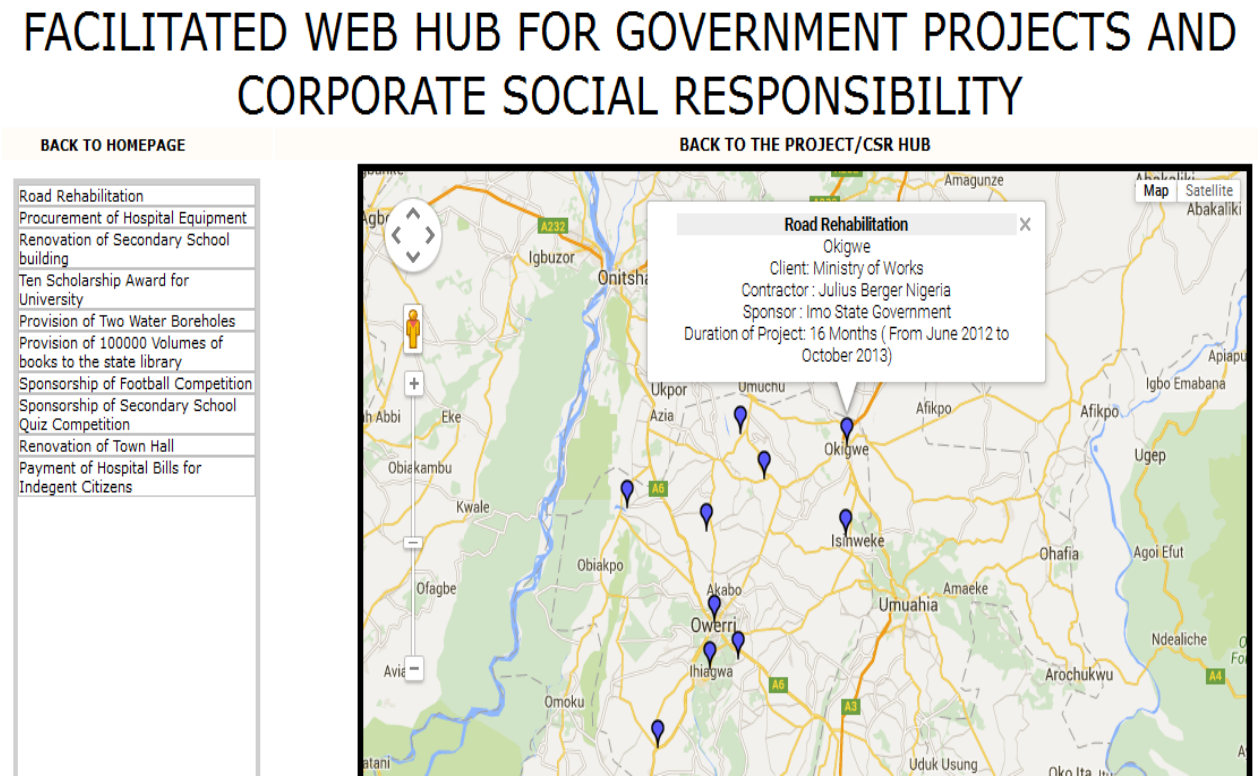

Figure 8. Map View of Project and CSR Initiatives

The road rehabilitation project is sponsored by Imo state government and is coordinated by the ministry of works and the contractor is Julius Berger of Nigeria. The duration of the project if from June 2012 to October 2013. The screenshot for posting new topic for discussion in the online discussion forum is shown in Figure 9.

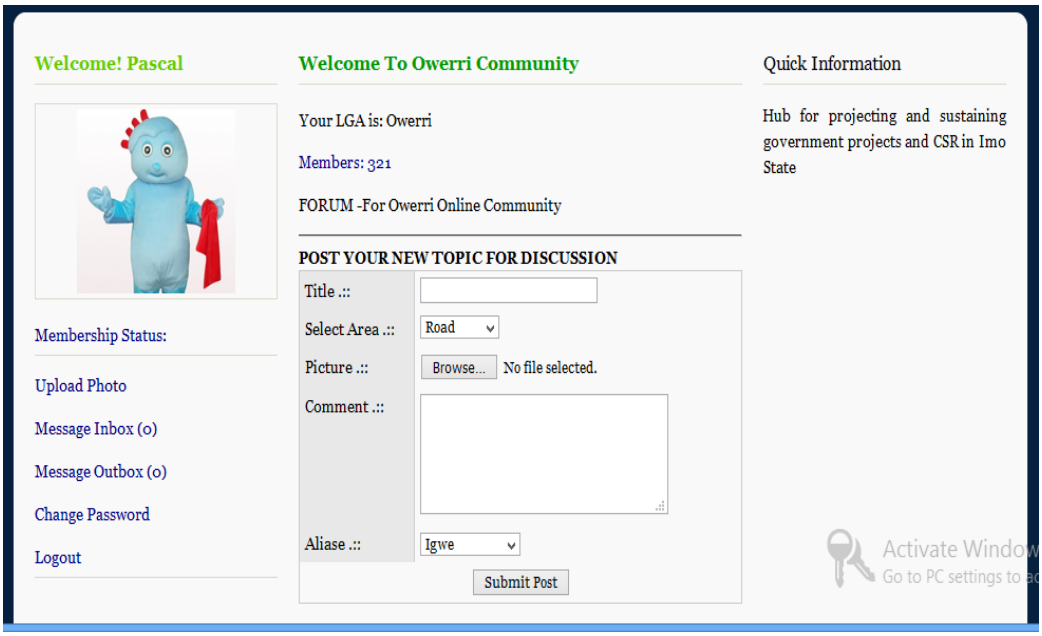

Figure 9. Post New Topic For Discussion In The Online Discussion Forum

V. CONCLUSIONS

The development of a web application for Facilitated Web Hub for Government Projects and Corporate Social Responsibility (FWH4GovP&CSR) is presented with Imo state in Nigeria as the case study. The functional decomposition and relevant screenshots are presented and used to explain the features of the web application. Google map mashup application is also interfaced with the FWH4GovP&CSR web hub to enable the project and CSR initiatives to be viewed on Google map.

REFERENCES

1. Gurstein, M. (2007). *What is community informatics:(and why Does it Matter)?* (Vol. 2). Polimetrica sas.
2. Avery Gomez, E., & Passerini, K. (2010). Information and Communication Technologies (ICT) Options for Local and Global Communities in Health-Related Crisis Management. *The Journal of Community Informatics*, *6*(2).
3. Lesame, Z., Ratshinanga, P., & Seti, V. (2014). Technology Access Centres and Community Development: Selected Cases from the Eastern Cape and Gauteng Provinces in South Africa. *Available at SSRN 2411954*.
4. Stillman, L., & Linger, H. (2009). Community Informatics and Information Systems: can they be better connected?. *The Information Society*, *25*(4), 255-264.
5. Maguire, D. J. (1991). An overview and definition of GIS. *Geographical information systems: Principles and applications*, *1*, 9-20.
6. Longley, P. A., Goodchild, M. F., Maguire, D. J., & Rhind, D. W. (2015). *Geographic information science and systems*. John Wiley & Sons.
7. Clarke, K. C. (1997). *Getting started with geographic information systems* (Vol. 3). Upper Saddle River, NJ: Prentice Hall.
8. Akkucuk U. (2014), *Handbook of Research on Developing Sustainable Value in Economics, Finance, and Marketing,* IGI-Global, Hershey, USA, 2015 .
9. D'Amato, A., Henderson, S., & Florence, S. (2009). Corporate social responsibility and sustainable business. *Greensboro, North Carolina: Center for Creative Leadership*.
10. Ismail, M. (2009). Corporate social responsibility and its role in community development: An international perspective. *The Journal of International Social Research*, 2(9), 199-209.
11. Rangan, K., Chase, L. A., & Karim, S. (2012). *Why Every Company Needs a CSR Strategy and How to Build It. Harvard Business School*. Working Paper 12-088, April 5.
12. Hohnen, P., & Potts, J. (2007). Corporate Social Responsibility. *An implementation guide for business*.
13. National Planning Commission, (2012). National Development Plan 2030: Our future–make it work. *Pretoria: National Planning Commission*.
14. Enuoh, R. O., & Inyang, B. J. (2014). Effective Management of Corporate Social Responsibility (CSR) for Desired Outcome:

The Niger Delta Issue in Nigeria. *International Journal of Business Administration*, *5*(4), p32.

15. Nadaf, Y. B. R., & Nadaf, S. M. (2014) Corporate Social Responsibility: Issues Challenges and Strategies for Indian Firms. OSR *Journal of Business and Management* (IOSR -JBM) Volume 16, Issue 5. Ver. III (May. 2014), PP 51-56
16. Frynas, J. G. (2005). The false developmental promise of corporate social responsibility: Evidence from multinational oil companies. *International Affairs (Royal Institute of International Affairs 1944-)*, 581-598.
17. Al-Ibrahim, M. (2011). Are our Educational Technology Systems Secured?. *International Journal for e-Learning Security (IJeLS)*, *1*(3/4).
18. Ahmad, K. (2014). A Potential Solution to Mitigate SQL Injection Attacks.
19. Busch, M., & Koch, N. (2009). Rich internet applications. *UML-Based web engineering, Technical Report*, *902*.
20. Panahi, S., Watson, J., & Partridge, H. (2012). Social media and tacit knowledge sharing: developing a conceptual model. World academy of science, engineering and technology, (64), 1095-1102.
21. Lomas, C., Burke, M., & Page, C. L. (2008). Collaboration tools. Educause (August 2008).
22. Ala-Mutka, K., Broster, D., Cachia, R., Centeno, C., Feijóo, C., Haché, A., ... & Valverde, J. A. (2009). The impact of social computing on the EU information society and economy. JRC Scientific and Technical Report EUR, 24063.

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