

MyMukim2Cloud Collaborative System: A Mosque Collaborative Network for Enhancing and Serving the Society Needs in Malaysia

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Abstract - This conceptual paper seeks to put forth a novel vision, namely the combined deployment of the Quadruple Helix Model (QHM) collaboration mooted by Agensi Inovasi Malaysia, a Whole-of-Government (WoG) concept of ICT implementation across the Malaysian government agencies mooted by Malaysia Administrative and Modernization Planning Unit (MAMPU) and the Network of Mosques (NoM). This will be accomplished through leveraging the advances in cloud computing and mobile applications that could be used to set up what is proposed to be called the Collaborative MyMukim2Cloud System. The QHM actors, namely the Government, Academia, Industry and Citizen need to collaborate and share resources in nurturing and addressing the needs of less privileged and less fortunate people holistically, rather than the current practice which is executed in silos, isolation or independently. This proposed collaborative inter-organizational system is to enable a WoG and consolidated approach for government agencies, NGOs, the private sector and individuals in building up a single and trusted national database based on three (3) focus groups of people proposed in this paper, namely the Orphanage, the Poor and the Disabled. This database, proposed to be co-owned and managed by government agencies such as Department of Social Welfare (DSW) and Department of Islamic Development Malaysia (JAKIM), can be used and updated by all other authorized and relevant organizations and individuals in making a consolidated contribution in nurturing and developing these groups. Thus, this System shall eliminate unnecessary and duplication in data, efforts and investments made by the various organizations. The expected outcome of MyMukim2Cloud System will be an enhanced quality of life for the proposed focus groups through the execution of social entrepreneurship concept in healthcare, education and financial activities provided by the QHM collaborators.

I. INTRODUCTION

The advances in Information and Communication Technology (ICT) are changing

world activities as they have never been happening before. Individuals and organizations are leveraging on ICT creatively and innovatively in order to adapt to market condition, gain a competitive edge and fulfill their individual and organizational needs. The Internet is a technology that they use to communicate, collaborate, and share databases, information and knowledge in creating values and improve societal well-being. In Malaysia, the government has launched the Vision 2020 by the tabling of the Sixth Malaysia Plan in 1991. The Vision calls for the nation to achieve a self-sufficient industrialized nation by the year 2020, encompasses all aspects of life, from economic prosperity, social well-being, world-class education, political stability, as well as psychological balance [1]. This paper therefore propose a collaborative system, MyMukim2Cloud, which will be based on the collaborative Quadruple Helix Model (QHM), Whole-of-Government, and Social Entrepreneurship concept that addresses the aspect of economic prosperity and social well-being holistically as mentioned by the Vision 2020. In implementing the MyMukim2Cloud System, it is proposed to leverage on the existing network of mosques throughout Malaysia, acting as the Network-of-Excellence (NoE) in serving the 3 focus groups in particular and all Malaysians in general, where:

- MyMukim2Cloud system is proposed to be led, owned and operated by the Department of Islamic Development Malaysia (JAKIM) and the Department of Social Welfare (DSW).
- This collaborative system will demand that the QHM actors such as the Ministry of Health, the State Islamic Religion Council (SIRC) and Tabung Haji to collaborate and share resources with JAKIM/DSW in providing quality healthcare, education and financial support to these 3 focus groups of people based on shared databases, information and knowledge.
- The Network of Mosques (NoM) members, digitally connected, will act as the front desks in providing quality delivery services to the 3 focus groups with the SIRC monitoring and promoting the NoM collaborative activities and knowledge sharing.

- MyMukim2Cloud System will be made available to all NoM members throughout the country.
- ICT resources such as databases, knowledge, expertise and computing facilities will be shared amongst the QHM collaborators through the Cloud computing platform and mobile applications.

The definition of Social Entrepreneurship is doing social business in helping the underprivileged community as mentioned by Mohammad Yunus and Karl Weber [3], where there are two (2) kinds of business objectives. The first objective is for personal gain and another is for the purpose of helping others. The first type of business is to maximize profit for the owners with little or no consideration of contributing to others. The other type is utilizing the profit for the benefits of others and nothing for the owners except for the pleasure of serving humanity. According to Ashoka [19], Social Entrepreneurs (SEs) are individuals with innovative solutions in addressing the public most pressing social needs and problems. They are ambitious and persistent, tackling major social issues and offering new ideas for wide-scale change [4]. Farok Zakaria [2] said that in Malaysia, the SE term is currently widely used to explain the effort by some government agencies and private companies in enhancing the well-being of the poor, where they are assisted with micro financing scheme and upgrading their skills. The above mentioned scenario demonstrated profits made by the business entrepreneurs are used to fund voluntary work that ultimately benefit the society as proposed by Ashoka model [19] shown in Figure 1 below:

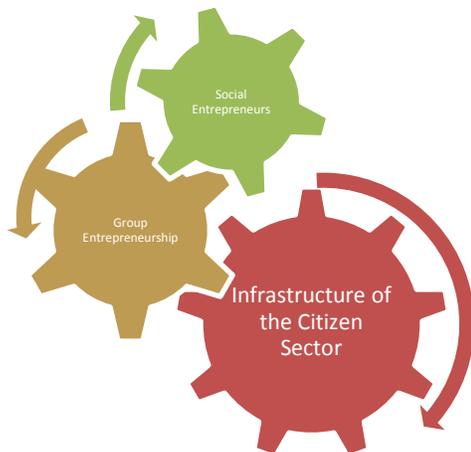


Figure 1: Ashoka Approach Concept [19]

Supporting Social Entrepreneurs (SEs): SEs are the actors of social change and role models in enhancing the quality life of the society especially the poor and the unfortunate. SEs can be identified through their investments and social contributions made in achieving maximum social impact [19].

Promoting Group Entrepreneurship: Groups and networks of social entrepreneurs that work together to accelerate and spread social positive impact. Ashoka engages communities of entrepreneurs and develops patterns of effective collaborations that change the entire fields [19].

Building Infrastructure for the Sector: A global network of change-makers requires tools and support systems to deliver sustainable social solutions. Ashoka creates the needed infrastructure, such as access to social financing, bridges to business and academic sectors, and frameworks for partnerships that deliver social and financial value [19].

The MyMukim2Cloud System has a vision to promote and enhance the quality of life and well-being of citizens through holistic and consolidated healthcare, education and financial services offered by the QHM collaborators – Government, Industry, Academia and Citizen. These consolidated services are delivered to the three focus groups via the Network of Mosques (NoM) throughout the country. These roles will enable mosques to transform and gradually become a Center-of-Excellence (CoE) as well as a Network-of-Excellence (NoE) in providing value-added services to underprivileged citizens particularly and the Malaysian public in general.

II. PROJECT BACKGROUND

A Mukim can be defined as a district, where in Malaysia; one Mukim with Muslim populations is required to have a mosque for the performance of daily prayers, Friday’s prayer, Aid prayers, Islamic non-formal teaching, endowment distribution, and also meetings amongst the community members. The Orphanage, the Poor and the Disabled are the usual groups of people that are highly attended to, both from the community as well as the Malaysian government. This is in line with one of the Quran’s verses that mentioned “and give away wealth out of love for Him (Allah) to the near kin and the orphans and the needy and the wayfarer and the beggars and ...” (2:177).

The Orphans can be categorized as children with the age range of 1 year to 16 years. According to UNICEF, orphan children is defined as children who have lost both parents and also those who have lost a father but have a surviving mother or have lost their mother but have a surviving father [20].

The Poor can be considered as people who have difficulty in getting their basic needs such as food, clothes, accommodation and insufficient income in enhancing the quality of their life. The state of being

Poor can sometime be attributed to the lack of education and job opportunities, where with proper education given they can support themselves and lead a better life. According to the New Straits Times, since 2010 more than 90,043 low-income families have benefited from the 1Azam anti-poverty programme [21].

The Disabled is classified as any person who is unable to obtain for him/her, fully or partially, the normal requirements of an individual and/or is unable to participate fully in the community due to shortcomings either physically or mentally and whether it occurred since birth or later in life. Rehabilitation service is provided to help the disabled to be independent and subsequently enabling them to reach the maximum potential in all aspects of their lives which are suitable to their abilities. The statistic has shown that in 2010, the population of disabled people was 2.8 million out of 28 million Malaysia population. However, only 280 thousand disabled have been successfully registered by DSW [5]. In short, the above issues demonstrated that the government and communities currently are unable to gather accurate data about these three focus groups.

The above-mentioned situation has inspired the MyMukim2Cloud initiative, where the expected outcome is to enable the QHM actors especially the government agencies, NGOs and private companies to contribute and enhance the quality of life and well-being of underprivileged citizens through holistic and consolidated healthcare, education and financial services delivered through the network of mosques. Hence, the transformation of the QHM organizations and mosque functions need to be addressed through an effective Change Management program such as mentioned in "The Malaysian Public Sector ICT Strategic Plan 2011- 2015" which is the pervasive use of ICT for citizen-centric and WoG in delivering quality services [17]. Bennet P. Lientz and Kathryn P. Rea argued that there is a fear of change and what might happen after change. There is a potential loss of power due to change. And if there are no guidelines as to what to do after the change, then there will be issues and problems [17]. MyMukim2Cloud System needs to be anchored on the Whole-of-Government (WoG) concept mooted by MAMPU and the Quadruple Helix Model (QHM) concept put forth by Agensi Inovasi Malaysia (AIM) in which its services are connected across the relevant Government agencies, Industry, Academia and Citizen through sharing of ICT resources such as database, information, knowledge, and expertise.

Another expected outcome of MyMukim2Cloud is the establishment of a nation-wide, consolidated, trusted, and a single view of data/information/knowledge on those 3 focus groups of people, where

any decisions making, planning and activities by all relevant QHM actors including Network of Mosques (NoM), can be based on.

III. PROBLEM STATEMENT

The current roles of mosques have dramatically changed as compared to the time of Prophet Muhammad S.A.W. Spahic Omer [8] stated that "Apart from being a place for congregational prayers and other collective worship practices, the mosque, likewise, furnished the Muslims with other most vital social amenities, it served as the seat of the Prophet Muhammad's government, a learning center, a hospital, a rehabilitation center, a welfare center and the place for some legitimate recreational activities." However, mosques nowadays are mainly used by the community for limited types of religious activities [9].

To revive the strategic roles which mosques used to play, some of the contemporary concepts such as QHM, WoG and Social Entrepreneurship together with the ICT capabilities such as ubiquitous and Cloud computing need to be leveraged and deployed. As a Proof-of-Concept (PoC) implementation, the MyMukim2Cloud System based on the above concept is proposed in serving the healthcare, education and financial needs of the three focus groups - the Orphans, the Poor and the Disabled. In addition, the MyMukim2Cloud PoC implementation will gradually evolve as a Network-of-Mosques (NoM) as well as a new marketing channel, where the community of one mosque is able to do businesses with the community of other mosques. The NoM will promote holistic and collaborative delivery services to the focus groups, thus overcoming organizations offering services in silos. Whereas, the new marketing channel will encourage and spur Halal products businesses between mosques, especially for Muslim entrepreneurs who are facing challenges of not getting Halal Logo Certificate due to unavailability of factory and manufacturing facilities.

IV. LITERATURE REVIEW

In 1991, the Malaysian government introduced its Vision 2020, where it calls for the nation to achieve a self-sufficient industrialized nation by the year 2020, encompassing all aspects of life. The Malaysian Prime Minister's Department has established the Performance Management and Delivery Unit (PEMANDU) to manage and facilitate the Government Transformation Programme (GTP) and Economic Transformation Programme (ETP) [15]. To sustain the national economical

competitiveness in the changing global environment, the Malaysian government has used different basis of economic drivers. Traditionally, the fundamental of economic growth and wealth creation are based on land, labor and capital [16], as illustrated by the Factor-driven economy which is based on agriculture and mining. Investment-driven economy is the next movement which focuses on manufacturing, banking and real estate [16]. In today's era, Malaysia is moving to Innovation-driven economy and Knowledge-driven economy for ensuring that the country remains ahead of the competition [16].

Unit Inovasi Khas (UNIK) under the Prime Minister's Department, was established in August 2010, to be the focal point for innovation in Malaysia and to drive the surge forward towards developing an innovation-led economy [16]. UNIK was given the mandate to identify solutions to address the gaps in the innovation eco-system and to examine all areas of the eco-system: government, universities, the education system, funding and skills [16]. As a result of the recommendation, the National Innovation Agency (Agensi Inovasi Malaysia, or AIM) was set up in order to be the driver for the innovation-related initiatives. AIM's vision is "Wealth Creation through Knowledge, Technology and Innovation", while its mission is to "Stimulate and Develop the Innovation ecosystem in Malaysia toward achieving Vision 2020. AIM has four (4) objectives, namely: (a) Generate additional revenue and contribute to Malaysia's GDP; (b) Create more jobs for the Malaysian workforce; (c) Inspire and produce a new generation of innovative entrepreneurs; (d) Facilitate the evolution of Malaysian companies into major global players. In order to achieve the Vision, QHM is implemented. QHM is originally an improvement of the "Triple Helix Model", which was the interaction between Industry, Academia and Government. The QHM adds Rakyat (Citizen) as another element that is very important in today's innovation [16].

Furthermore, QHM across the Malaysian government agencies is reflected in "The Malaysian Public Sector ICT Strategic Plan 2011-2015", where the Whole-of-Government (WoG) approach is planned and implemented. The WoG is initiated by Malaysia Administrative and Modernization Planning Unit (MAMPU). The Public Sector ICT strategic direction is designed to meet seven (7) strategic objectives in line with the national transformation agenda. The objectives are (a) to streamline ICT architecture; (b) consolidate ICT operations; (c) intensify inter-agency collaboration; (d) rationalize ICT governance structure; (e) attract, develop and retain top talent in the Public Service; (f) strengthen performance culture; and (g) foster a knowledge-

based environment. Ultimately the plan aims to ensure the adoption of a citizen-centric and WoG approaches whereby the combination of people, process and technology is leveraged optimally to support policy formulation, programme development and the delivery of outcomes [16].

i. Mosque as a Community Center in the Malaysia context

There were many discussions among the scholars [7][10][11] regarding the Mosque as a community center. The mosque had strategic roles during the time of Prophet Muhammad S.A.W. as we can see from the first day of the establishing of the Muslim Ummah in Madinah after his migration from Makkah. Spahic Omer [8] has argued that: "The mosque institution was set to be introduced at once as a nucleus of the believers' existence and an epitome of the inexhaustible struggle between good and evil on the earth."

During the time of Prophet S.A.W, his Mosque was seen as the ultimate center for the Muslim community where many activities including social, economy, political, and educational were conducted. Moreover, the period after Prophet S.A.W, especially during the time of the Abbasid Caliphate has shown many evidences as Halaqah Al-Ta'lim (study circles) have taken places in mosques. Spahic Omer [8] stated that: "Apart from being a place for congregational prayers and other collective worship practices, the mosque, likewise, furnished the Muslims with other most vital social amenities, it served as the seat of the Prophet Muhammad's government, a learning center, a hospital, a rehabilitation center, a welfare center and the place for some legitimate recreational activities." However, the situation had gradually changed because of the size of community in many Muslim nations including Malaysia. Undeniably, mosques nowadays are mainly used by the community for limited types of religious activities [9].

ii. The Emerging of Technology Capability

A strategically important technology trend in our daily life is the growth of interactivity applications. The capability to "reach and respond" on-demand has become technically possible due to the integration of broadband telecommunications, the Internet, digitization of content and mobile devices. The advent of mobile technologies have significantly enhance the ability of mobile devices by transforming to smart phones, which not only make and received calls but also can access to Internet. People nowadays uses smart phone as part of their daily routine.

Thus, this paper proposes MyMukim2Cloud with mobile capabilities, which provides interactivity

applications for users. For example, users can access programs or workshops that are offered by universities. Also, universities can check the list of the attendees to their workshops by using mobile applications via their smart phones. At the same time, the use of social media has paved the way for innovative engagement between the government agencies and its clients.

iii. Mobile Computing and its Applications

Zimmerman [13] has highlighted that “Mobile computing is used to describe the use of computing devices, which usually interact in some fashion with a central information system, while away from the normal, fixed workplace”. The users can create, access, process, store and communicate information without being constrained to a single location via mobile computing technology. Zimmerman [13] stated there are two types of mobile computing application, namely;

- *Horizontal.* These applications have broad-based appeal and include software that performs functions namely email, web browsing, word processing, scheduling, contact management, to-do lists, messaging and presentation. These types of applications usually come standard on Palmtops, Clamshells, and laptops with systems software such as Windows 7 and 8.

- *Vertical.* These applications are usually used for industry and only have appeal within the specific industry for which the application was written such as retailing, utilities, warehousing, shipping, medical, law enforcement and public safety. These vertical applications are often transaction oriented and normally interface with a corporate database [12].

iv. Definition of Cloud Computing

As Bento [12] stated that Cloud computing is a model for allowing convenient, on-demand network access to a shared pool of configurable computing resources, such as networks, servers, storage, applications, and services that can be speedily provisioned and released with negligible management effort or service provider interaction. Cloud computing provides three service models which are Cloud Software, Cloud Platform as a Service and Cloud Infrastructure as a Service.

- *Cloud Software as a Service (SaaS)*

The consumer is able to make use of the services running on a cloud infrastructure. Applications are accessible from various client devices through a thin client interface such as a web browser and web-based email. The consumer does not manage or control the underlying cloud infrastructure including network, servers, operating systems, storage, or individual

application capabilities with the exception of limited user-specific application configuration settings.

- *Cloud Platform as a Service (PaaS)*

The ability for consumers to deploy onto the cloud infrastructure consumer-created or acquired applications based on programming tools provided by the providers. The consumer does not manage or control the underlying cloud infrastructure including network, servers, operating systems, or storage. It has control over the deployed applications and possibly application hosting environment configurations.

- *Cloud Infrastructure as a Service (IaaS)*

The service provided to the consumer is to provision processing, storage, networks, and other fundamental computing resources. The consumer is able to deploy and run arbitrary software, which can include operating systems and applications. However, the customer does not manage or control the underlying cloud infrastructure but has control over operating systems, storage, deployed applications, and possibly limited control of select networking components such as host firewalls.

V. CONCEPTUAL SOLUTION

The conceptual solution proposed in this paper has the following main components:

i. People

This system shall adopt the collaborative Quadruple Helix Model (QHM) [16] involving four (4) actors - Government, Academia, Industry and Citizen. These four (4) actors have the important roles to achieve the system objectives in enhancing quality of life as well as sustainability of generating revenue. All four (4) actors need to work together. The proposed owners of this system are JAKIM and DSW, working in close collaboration based on WoG concept with other Government agencies, Academia, Industry and Citizen.

- *Federal Government*

JAKIM and DSW are to provide leadership and branding as well as ownership of MyMukim2Cloud System by establishing of a nation-wide, trusted, consolidated, and a single view of data/information /knowledge on those 3 focus groups of people, where any decisions making, planning and actions by all relevant QHM actors including Network of Mosques (NoM), can be based on. The Ministry of Health and Hospitals are to provide medical and healthcare services based on data/information/knowledge repository from MyMukim2Cloud system. The National Registration Department of Malaysia can contribute in the form of confirmation of citizenship of these focus groups. *Universities* like the International Islamic University Malaysia (IIUM) can

contribute in terms of providing education, training, entrepreneurship program, e-commerce development, etc.

- *State Government agencies*

The State Islamic Religion Council (SIRC) through the State Islamic Religion Department (JAIN) is to provide the financial assistance (e.g. Zakat, Scholarship) to the needy. For instances, the on-line collection of zakat and fidyah on behalf of SIRC can be conducted via MyMukim2Cloud System. Finally, mosques get fund allocation from SIRC for staff allowances, maintenance of mosques and conducting Islamic/public activities.

- *Private/Non-Government agencies*

PETRONAS is proposed as one of the QHM collaborators where it can discharge its corporate social responsibility by providing scholarship and financial assistance for the 3 focus groups of people. *Tabung Haji (TH)* is proposed as one of the collaborators where it can discharge its corporate social responsibility by providing scholarship, financial assistance and sponsoring of Hajj and Umrah for the 3 focus groups. *Bank Islam* is proposed to provide financial assistance and loans for social entrepreneurs whose focus are directed to the well-being of the Orphanage, the Poor and the Disabled.

ii. *Process*

This System is proposed to adopt a collaborative and co-operative arrangement of open consultation, open data, shared knowledge and expertise, consolidation of shared services and enhanced horizontal MyMukim2Cloud System across the Government agencies through WoG concept as well as with other QHM actors. This will eliminate duplication in costs, efforts, processes and databases. At the same time, this will help to strengthen and consolidate the planning, decision-makings and service delivery by the responsible QHM actors holistically and effectively to the Orphanage, the Poor and the Disabled. The same service delivery system can be extended and used by the mosques in servicing the Orphanage, the Poor and the Disabled nation-wide.

iii. *Technology*

Mobile computing is a generic term used to refer to a variety of devices that allow people to access data and information from where ever they are. Mobile computing can use cellular and smart phone connections to make calls as well as connecting to the Internet and information. Cloud computing - SaaS, PaaS and IaaS as shown in Figure 2 - is a model for allowing on-demand network access to a shared pool of configurable computing resources, such as

networks, servers, storage, applications, and services that can be speedily provisioned and released with negligible management effort or service provider interaction.

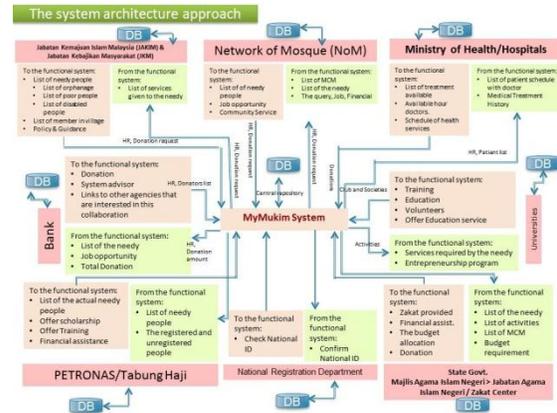


Figure 2: The Proposed System Architecture (1)

iv. *Change Management (CM)*

To support transformational projects such as MyMukim2Cloud System, the QHM actors and end-users need to be managed through Change Management (CM) programs. According to “The Malaysian Public Sector ICT Strategic Plan 2011–2015” [17], CM provides the method and approach in addressing change in the business processes caused by the pervasive use of ICT in delivery services to the focus groups. Change within and across organizations can affect different things in different ways.

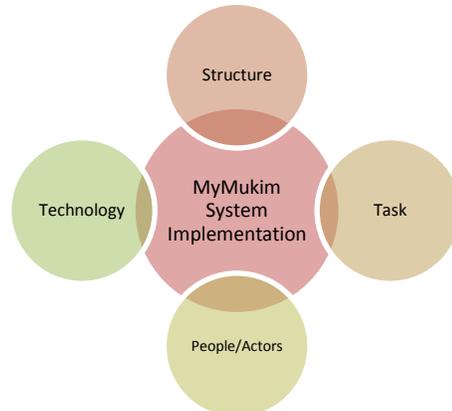


Figure 3: Leavitt's Model

Leavitt's model shown in Figure 3 suggests that changes in technology, people, task, or organizational structure may influence the other areas. Implementing MyMukim2Cloud can impact the people within and across organizations as well as the

tasks the individual's perform and the organizations' structure. Blended with CM program, the end result of implementing MyMukim2Cloud is a better and improved life for the citizens of Malaysia – especially the Orphanage, the Poor and the Disabled.

The structure variable refers to the identification of authorized parties in using system and works perfectly with the across organizations such as QHM actors. The technological variable includes the technological mechanism supporting the MyMukim2Cloud System that is required for the task variable; the task variable refers to all processes and subtasks involved in providing products and services [18]. Finally, the human variable refers to people who are associated with the tasks to achieve the system goals i.e. enhancing the quality of life and well-being of the three focus groups [18].

VI. NEXT STEP

It is hoped that this conceptual paper motivates the actors of the Quadruple Helix Model collaboration, especially JAKIM and DSW through WoG implementation, to start working towards shared goals and integrated IS-based solution in meeting the needs of the Orphanage, the Poor and the Disabled. The development and implementation of MyMukim2Cloud System demands for:

- (a) the streamlining of government agencies' Information System (IS) architecture, where efforts are driven to simplify systems, remove duplication and silos, and leverage on technologies that enhance the government delivery of services to the Orphanage, the Poor and the Disabled holistically,
- (b) the consolidation and optimization of the government's ICT resources namely people, applications, technology, facilities, and data,
- (c) intensifying inter-agency collaboration towards fostering "Whole-of-Government" public service, where the government agencies work across portfolio boundaries in a collaborative and co-operative environment of open consultation, open data, shared knowledge and learning, consolidation of shared services and enhanced horizontal applications, and
- (d) the network of mosques acting as the "front desk" service delivery to the Orphanage, the

Poor and the Disabled. Thus, enhancing the roles of a Mosque – a place for Worship/"Ibadah" and as a community center for the local Muslims as well as for the Malaysian in general.

The strategic intent of this paper is for the government agencies such as JAKIM and DSW, to consider on the proposed ideas, and if deemed necessary, deliberate, refine, plan, develop and implement through the pervasive use of IS for "Whole-of-Government" delivery by unlocking the full potential of government's IS with a focus on value creation and optimization of government resources.

VII. CONCLUSION

One of the Quran's verses has mentioned that "And let there among you be a group of people who invite to all that is good, who enjoin what is right and forbid what is wrong" (3:104). This verse outlined the way how societies or communities should be organized and run. This conceptual MyMukim2Cloud System demonstrated the strength of collaborative concepts such as QHM and WoG, blended with social entrepreneurship concept that can be deployed in serving and enhancing the quality of life of 3 main focus groups - the Orphanage, the Poor and the Disabled. At the same time, the QHM actors utilizing Network of Mosque (NoM) as an effective service delivery channel to the focus groups.

MyMukim2Cloud developments augur well for new government suite of service offerings to the Orphanage, the Poor and the Disabled that support a collaborative and co-operative arrangement of open consultation, open data, shared knowledge and expertise, consolidation of shared services and enhanced MyMukim2Cloud services. MyMukim2Cloud application can be replicated, adapted and roll-out to other countries. It is also suggested for MyMukim2Cloud to be part of IslamGRID portal, operated and co-owned by JAKIM and DSW.

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