The TPOA Telecentre: A Community Sustainable Telecentre Architecture

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***Abstract*—This paper presented the telecentre implementation for the Orang Asli villages in remote rural areas under the Telecentre Program for Orang Asli (TPOA). TPOA telecentre architecture aims to assist the achievement of a rural community sustainable telecentre through innovation and strategic adoption of ICT technology. Lessons learned from our past telecentre experience have outlined various challenges in the technical aspects of the telecentre implementation and operation. The TPOA telecentre ICT architecture has been designed to address the outlined issues hence producing a smoother telecentre operation that enables the rural communities to self-sustain their own telecentres. The technical support for the remote rural telecentre can be very expensive and impractical due to the extreme physical access condition. Hence, the rural communities themselves have to carry out the support and maintenance to sustain the operation of the telecentre. The TPOA telecentre architecture has enabled a relatively friendly to operate ICT platform in order to assist and make it possible for the Orang Asli to sustain, support, and maintain the telecentre operation.**

***Keywords*—Telecentre; sustainability; TPOA; telecentre architecture; ICT4D; rural development**

I. Introduction

Telecentre has been a recognized model for bridging the digital divide that encourages the use of ICT tools as the medium to access resources beyond physical reach. The telecentre is particularly important to remote rural communities on social development. The telecentre model implemented in Malaysia started as early as 2002 in the Kelabit Highland of Bario, Sarawak called the eBario Telecentre, followed by the replication of the eBario Telecentre model for other remote rural communities in Long Lamai, Ba'Kelalan, Buayan, and Larapan. Since the implementation of eBario, the telecentre ICT architecture has evolved and improved based on lessons learned along the way. The telecentre model covers a much wider scope beyond its associated physical ICT systems and services. Telecentre's roles and programs, sustainability, and the social issues of the community it serves are among the important factors in overall telecentre development. Telecentre comes in many forms and different names in different countries to serve some special needs of the rural communities. In this paper, we focus on the technological development of the telecentres and showcase our recent telecentre implementations for the Orang Asli communities situated in the remote rural of Peninsular Malaysia. The Telecentre Program for Orang Asli (TPOA) was the third-generation telecentre implementation after the eBario telecentre and the second-generation eLamai, eBa'Kelalan, eBuayan and eLarapan by researchers from the Universiti Malaysia Sarawak (UNIMAS). Experiences gained from the previous telecentre implementations have laid a strong foundation to continue to innovate the ICT technology used for TPOA telecentres.

The TPOA telecentre implementations have moved the ICT team to innovate new ICT architecture that would overcome some of the limitations and shortcomings encountered in the past telecentre implementations. It is crucial to review these technical challenges which will act as fundamental expectations for the next telecentre implementation. All these challenges have direct and indirect impacts toward telecentre sustainability especially for telecentres in remote rural areas that do not have a lot of local resources and the luxury to receive lots of physical technical support from the urban.

The TPOA telecentre architecture is designed to increase its technical sustainability allowing the local community to self-sustain the telecentre. Design considerations that have been taken into consideration include energy efficiency of ICT equipment, friendly user experience, gentle learning curve, ICT system robustness, seamless device interoperability, reduce dependency on Internet bandwidth, and protection against negative impacts of the digital revolution that brought in together through the telecentre implementation. Innovated from the list of considerations, the TPOA telecentre architecture and its ICT components are presented.

The setup and operation methodology of the telecentre is crucial to influence the long-term sustainability of the telecentre in remote rural areas. An effective setup approach and operation mechanism will strengthen the concept of community-driven and community sustained telecentre. Important concepts such as the sense of belonging, the community elected management committee and caretakers, community-driven operation schedule, and community communal work towards self-sustainability were adopted to further promote community sustainable telecentre.

Lastly, the proposed TPOA telecentre architecture was to strengthen telecentre sustainability, especially by the Orang Asli communities. Although the ultimate telecentre sustainability is affected by a wider scope of other factors, we are playing our part to add more values to its sustainability through ICT innovations.