TV White Space for Internet Access In The Developing World

Authors: **Tawachi Nyasulu, Dani Anderson, David Crawford, R. Stewart (University of Strathclyde)**

Malcolm Brew (Mawingu Networks)

In 2013, the University of Strathclyde began working with Microsoft's 4Afrika programme to create a data communications network in Kenya, providing connectivity and Internet access to a number of remote locations, including schools and health clinics in remote villages. The outcome has been the evolution of the Mawingu Networks project, which is now a fully licenced internet service provider using unlicensed or "white space" radio frequencies to enable low cost internet access. Despite the fact that universal Internet access is part of the UN's sustainable development goals and has been shown to spur social and economic development, a large percentage of people in developing countries do not yet have access to the internet. This is often due to a lack of infrastructure, large distances and dispersed populations.

The Mawingu Network in Kenya uses various innovative technologies, including emerging TV White Space (TVWS) technologies which make effective use of portions of radio spectrum that are not being used by existing licensees at all times or in all locations. In particular, TVWS exploits gaps in the UHF TV band to provide power-efficient signals with good propagation characteristics. Due to the remoteness of the locations, it was also necessary to develop a system that made use of renewable energy sources, particularly solar power. The success of the project led to the formation of Mawingu Networks in 2015, who continue to collaborate with Microsoft and provide cost-effective connectivity to almost 24,000 registered users at the latest count.

Our poster will present an overview of TVWS technologies, with emphasis on our 4Afrika collaboration with Microsoft and Mawingu Networks. In addition, an insight into some recent developments in other African countries (notably Malawi, Zambia, and Ghana) is presented.

Microsoft CEO Visits Mawingu

Mawingu Rurakl Village 'Internet' Cafe

HRH Prince Phillip on a Skype call to Mawingu