

The South African Opportunity

With one of the most dynamic and powerful economies in Africa, South Africa stands ready to lead the continent well into the 21st Century as an engine of growth for not just itself but the continent as whole. Central to this mission, is the need to invest, grow and nurture the next-generation digital economy. According the UN and the World Bank, ICT investments are a major driver of continued and sustained economic growth and competitive advantage and foremost among areas that should be priorities for investment are broadband connections and vastly increased access for citizens. Understanding this, the Government of South Africa has provided significant leadership in creating a National Broadband Plan which according to a statement from President Jacob Zuma in January of 2014 should "... aim to connect all schools, public health and other government facilities by 2020, and at least 90% of our communities should have substantial and super-fast broadband capacity by 2020." But, how to get from today's reality to tomorrow's promise?



Limpopo TV White Spaces Project

One recent effort to bridge this gap and support the National Broadband Plan is the recently announced The Limpopo TV White Space (TVWS) project. A collaborative effort between Microsoft's 4Afrika initiative, the Council for Scientific and Industrial Research (CSIR),

Multisource and the University of the Limpopo, the project aims to connect leading universities and schools in the Limpopo area with broadband access. Realizing that access alone is insufficient, the project also includes a complete solution of the latest Windows 8 devices, educational software, training and local content to provide a complete and meaningful Internet powered education experience for students. Each of the partners in the project has specific tasks to complete to ensure overall success. Educators and school administrators will also be empowered by the solution and together these efforts are an important step in helping the communities of Limpopo develop the skills to thrive in the modern digital economy.

The Technology

The Limpopo project builds on years of experience from Microsoft and other partners to use the underused spectrum resource known as TV White Spaces (TVWS). TV white spaces networks work in much the same way as conventional wireless networks, but the signals travel over longer distances than the typical wireless signal. In typical applications, a strong wireless signal can cover 100 meters while a TV white spaces wireless signal at the same power level can easily travel 400 meters and with higher power can cover many kilometers. This exciting new technology is a perfect fit for Limpopo and the proven solutions are ready to deploy.

The project uses a backend database developed by CSIR that details the TV Channels available for use in each province and dynamically allocates the spectrum as needed. The Internet communications travel over these "empty" white spaces effectively creating a new resource. The partnership with the University

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of Limpopo allows the mounting of a special White Spaces radio on their library that converts normal internet traffic into a format that can be broadcast across the TV White Spaces. This technology is then in communication with the initial 5 target schools in the project thereby enabling the broadband access.

Benefits

The approach adopted in this pilot, using TVWS, has allowed provided significant benefits to all parties. Not only has it enabled a more rapid deployment, but the learnings created in working with such innovative technology will prove to be critical in helping this type of access scale across South Africa. Also, creating a total solution for students, teachers and administrators that includes not just access but devices, training, support and content will be critical in the long term success of the project. The content developed for the students includes both best-in-class training form resources such as the Khan Academy as well as course material specifically targeted for various grade levels. The Microsoft Education team in South Africa has led training throughout the project.

Summary

With over 80% of the world's countries having some sort of National Broadband Plan, there is no question that equipping citizens for the 21st century economy is an almost universal priority. But the question of how to get from the planning stage to the implementation continues to be a challenge. To bridge this gap, innovative solutions like the Limpopo TVWS Project will be critical. With deployment happening in 2014, the teams involved - Microsoft's 4Afrika Initiative, University of Limpopo, Multisource and CSIR are looking forward to helping the rest of South Africa achieve their ambitious broadband access plans.