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PAMOJA NET

PROVIDING INTERNET ACCESS THROUGH MESH WI-FI IN THE DEMOCRATIC REPUBLIC OF CONGO

Set up of a node of the Wi-fi mesh at Idjwi. Photo courtesy Project First Light

EXECUTIVE SUMMARY

Pamoja Net is a mesh-Wi-Fi network on the island of Idjwi in Kivu, Democratic Republic of Congo. Ensemble Pour La Difference, a not-for-profit organization has deployed the network in collaboration with Fjord, an innovation consultancy based in the United Kingdom. The network has provided Internet access to 10,000 Congolese people through a public display system and Wi-Fi access points since May 2016.

Keywords: GSM, community network, Wi-Fi, rural, Democratic Republic of Congo

CONTEXT

An estimated 250,000 people live the island of Idjwi in the Democratic Republic of the Congo (DRC). The island has no broadband infrastructure, and lesser than 10 homes have a computer. The cost of smartphones and 3G access is too high for most on the island, who survive on less than US$ 1 a day.

The Democratic Republic of Congo is also among countries with incredibly low broadband penetration, with only 7 percent of users having access to broadband connections per the GSMA. The DRC was ranked by a *Global Finance Magazine* study as the poorest country in the world. United States Central Intelligence Agency (CIA) statistics estimated that about 63 percent of the DRC population lives below the poverty line, and the gross domestic product (GDP) per capita was US$ 800 in 2016. For less than US$ 2, mobile Internet subscribers can activate small daily data packages, and monthly data packages start at US$ 10. The DRC was among the countries with the lowest Internet speeds as well – at 0.55 megabits per second (Mbps) as of May 2017 based on data from Worldwide Broadband Speed League.

Democratic Republic of Congo				
Population (UN, 2015)	4,671,142	**Fixed broadband subscriptions (%) (ITU, 2016)**	0.00
Population density (people per sq. km) (UN, 2015)	13.66	**Mobile cellular subscriptions (%) (ITU, 2016)**	39.48
Median household income (Gallup, 2006-2012)	US$ 2,106	**Individuals using the Internet (%) (ITU, 2016)**	6.2
Education (Mean years of schooling) (UNDP, 2013)	Male: 6.7 Female: 5.5	**Individuals using the Internet by gender (%) (ITU, 2016)**	N/A

PROJECT DESCRIPTION

Given the nature of challenges faced by the residents of Idjwi, Fjord and Ensemble organized a 'makeshop' with the residents of Idjwi to identify user patterns for the creation of a public display system. A large screen was installed in Bugarula, Idjwi's busiest market, to which Mwami (the king of the island) can send messages using an Android application. Further, a kiosk with Raspberry Pi computers enables users to access services online. The kiosk in Bugarula has five tablets and four computers. The display system is now giving weather and news information to islanders, with 20-30 users connecting to the Internet via the access points every day.

The mesh Wi-Fi system has three nodes, one of which connects to the town of Bukavu on the mainland nearly 60 km away. The system was tested in the Brahan estate near Inverness in Scotland, which provided an ideal simulation owing to its remoteness and limited interference

from other signals, before being delivered to king Gervais Rubenga for the residents of Idjwi in May 2016. Download speeds are around 100 MBp/s

Project details			
Technology	Wi-Fi hotspots	**Training**	No
Year program started	2016	**Cost to users**	Free
Geography	Island in the middle of a lake	**Total cost of program**	Undisclosed
User profile	10,000 islanders	**Associated organizations**	Accenture, Fjord,

PROGRESS AND RESULTS

The online public display system in the local market of Burugawa shares up-to-date news, health information and messages which are sent by king Gervais Rubenga from his Android phone. Traders who travel to the mainland to sell coffee and fish are now able to check the weather forecast to determine if it is safe to cross the lake, which prevents many deaths. Further, they have access to information on the prices of their goods in the local markets. Over 10,000 people on the island now have access to this system that did not have any access to connectivity before.

Internet connectivity also provides access to news about security in the country, which earlier took weeks to reach the residents of the island. Full access to the Internet is free to the residents of Idjwi right now. Unlike mobile connections, citizens of Idjwi do not have to disclose details of their identity to the government while accessing the Internet, which allows them to escape censorship at the hands of the regime. To make the project sustainable, the king of the island is conceptualizing a scheme to keep basic health information and news available free by charging residents US$ 2 a month to browse Facebook, YouTube and other sites.

CHALLENGES

Challenging terrain: Idjwi is in the middle of a lake in Kivu. The nearest access point is over 70 kilometers away in Bukavu on the mainland. The region is also highly prone to lightning strikes.

Lack of access to devices: Most residents in Idjwi did not have a device that could access the Internet. Less than ten homes had access to a laptop or computer that could be connected to the Internet, and most users used legacy phones that were unsuitable for mobile broadband usage.

Lack of affordable access: Several residents of Idjwi earned less than US$ 1 a day. 3G and mobile broadband is unaffordable for them

PAMOJA NET'S SUGGESTIONS FOR FUTURE PROJECTS

Public displays for up-to date information sharing can be useful in areas with low device usage – The benefits of Internet connectivity and up-to-date information sharing can be delivered through innovative modes such as a public display system, as in the case of Idjwi where there are fewer than ten computers for an island of about 300,000 residents.

Needs assessment with local communities through makeshops and constant feedback mechanisms can lead to innovative solutions – Pamoja Net's team believes in the value of constant feedback from the local communities that they serve, and created shared solutions to enable greater utilization of their network. This is useful to improve take-up, especially in areas where devices adoption may be very low.

SOURCES

Miller, E.(2017, January 27)
Project website: https://firstlight.fjordnet.com/pamoja-net-a-community-commons/