

WiBACK-System

WiBACK Software Rel. 2



At a Glance

Developed by Fraunhofer FOKUS, the WiBACK technology offers a flexible, self-managing and a cost efficient solution to provide carrier-grade wireless back-haul coverage based on IEEE802.11 hardware.

WiBACK is designed to deliver services providing a high quality of experience. It efficiently bridges the gap between end-users and provider core networks. Sophisticated algorithms dynamically manage the entire backhaul network with respect to topology planning and load distribution. Compared to traditional fixed wireless operator back-haul technologies, the key WiBACK features lead to significantly lower setup (CAPEX) and operational costs (OPEX).

Contact

info@wiback.org
www.wiback.org

Fraunhofer Institute for Open
Communication Systems
Schloss Birlinghoven
53754 Sankt Augustin

+ 49 2241 14 2103
www.fokus.fraunhofer.de

WiBACK Key Features

- Plug & Play directional radio technology allowing broadband everywhere by everyone
- Self managing / healing / maintenance solution -> low effort / high reliability
- able to use free spectrum and standard hardware -> low CAPEX / OPEX
- provides carrier-grade services -> High QoS / performance

WiBACK Facts

Management Capabilities

Self Management	Network is set up automatically, running within minutes after hardware setup. No expertise required from users; Auto adaption of frequencies, paths, bandwidths, a.o.
Self Healing	Fast re-routing along fallback-links, recalibration of links
Maintenance	Monitoring and auto-alerting, simple replacement of parts or extension of network (only plug-in of new node required) Monitoring webpage accessible from everywhere

Quality of Services

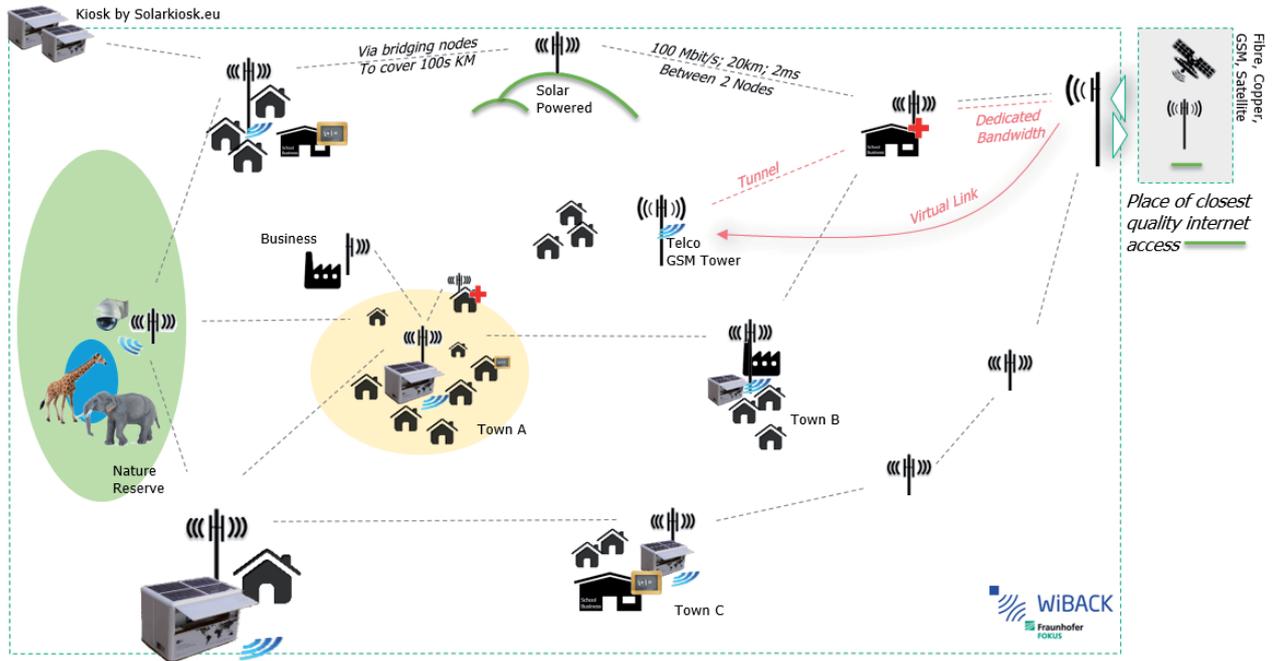
Routing, Capacity Mgmt.	Transparent ethernet bridging incl. VLAN trunking MPLS-based traffic engineering
Traffic Prioritization	Possible by data type (e.g. voice) and path
Monitoring	Auto-Alert, Monitoring and setup page accessible via web

Cost Efficiency / Flexibility

Hardware	Utilization of off the shelf hardware (see WiBACK Node) Local assembly possible (BoM available) Low energy footprint (Solar-ready WiBACK Node) Only two main components (Controller + WiBACK Nodes)
Physical Layer	Wireless links in unlicensed (WiFi) and licensed spectrum (e.g. TVWS); Can integrate wireline infrastructure into network

Technical Capabilities (via WiFi)

Bandwidth	100 Mbps
Latency	< 2 ms (per link)
Distances	20 km (max per link)



WiBACK Components

A typical WiBACK Network consists of only two types of electronic equipment keeping the system simple. A network requires one *Network Controller* seated at the root of the network and the *WiBACK nodes* which forward and provide the connectivity at its location.

WiBACK Controller (here Mini-PC, virtual and rack version available as well)



WiBACK Node (available for 2 and 4 Antennas, see data sheets)



Access can be granted from each WiBACK node via ethernet, or a connected access network (WiFi, WiMAX, GSM, 3G, 4G, etc.)



Utilizing WiBACK

Connect the Unconnected

Everywhere

Directional Radio Systems allow to efficiently connect rural areas, reaching the local population, institutions and businesses. These are still often denied the many benefits of broadband access, creating a digital divide, causing e.g. migration *Hospitals, schools, cellphone-towers, factories, government-buildings, sensors (security cameras, emergency sensors), and others*

Connect:

By Everyone

WiBACK significantly reduces the complexity and effort needed to set up and run such a network! No skilled labor or specific technological expertise is required. Therefore actors apart from the big operators are enabled to tackle this problem directly and bring access to where it is needed

Connected by:

Municipalities, organizations, companies, hospitals, schools, local operators, local population - allowing them to take matters into their own hands instead of being reliant on the big operators to see their profit

Enable needed Services

Services

Provide Information (General, Agriculture, etc.), Health services (general information, consultation of doctors via video conference, order/check availability of medicine), education, governmental services (ID, administration), communication (email, VoIP (significantly lower costs than via cell-networks)), many more

Access

Directly at a specific organization's site, or via a central **eKiosk system**, that provides access to the internet and a specific set of services. eKiosks and network are owned by locals, running a self sustaining business

Low invest- and operating costs, allow to reearn the investment in low profit environments