VIDEO

HARNESSING THE POWER OF SATELLITE FOR EDUCATION

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Education is one of our basic human rights, reducing inequality, leading to development and lifting people out of poverty. It's one of the UNs Sustainable Development Goals, to ensure "inclusive and equitable quality education".

However, according to the UN, without additional measures taken by 2030, 84 million children and youth will be out of school, 300 million students will lack basic numeracy and literacy skills, and only 1 in 6 countries will achieve universal secondary school completion targets.

One of the regions that is most profoundly affected is Sub-Saharan Africa, where educational exclusion rates are the highest in the world. 70% of Sub-Saharan Africans are under 30— the youngest population globally, according to the UN. Providing this burgeoning generation with education is crucial for the continent's future. However, the region faces a significant digital divide due to insufficient broadband infrastructure.

One organisation that is addressing this issue is non-profit association ED4free, with their EDBox, an economical off-line content server pre-loaded with resources for schools and training programmes.

However, as the EDBoxes are often located in areas where there is no internet connectivity, updating the servers is problematic. Someone has to physically travel to each school to upload new, relevant content – making it an impossible task to reach all students.

To resolve this social and environmental issue, ED4free is partnering with leading satellite operator Eutelsat, video distribution solutions provider ENENSYS, and EKT to revolutionize the delivery of educational content.

By leveraging cutting-edge, standardized, broadcast technology, they aim to reach a wider audience bringing multimedia education to regions where internet connectivity is not available. Here's how.

THE CHALLENGE

THE CHALLENGE: EDUCATIONAL EXCLUSION IN SUB-SAHARAN AFRICA

Sub-Saharan Africa has the highest rate of children excluded from education worldwide. According to the UNESCO Institute for Statistics:

• Over 20% of children aged 6-11 aren't in school

• Over one-third of children aged 12-14 aren't in school

• By age 15, nearly 60% of young people have left school

Of the 59 million primary-school-aged children on the planet who don't go to school, more than half (32 million) are in Sub-Saharan Africa. The likelihood that a young person will leave school climbs with age, and girls are more likely to be excluded from education than boys.

Several factors keep children out of school, including a shortage of well-trained teachers, overcrowded classrooms, and a lack of learning materials and modern coursework. Textbooks are scarce, leading to multiple students sharing a single book, and replacing physical learning materials can be costly when they wear out or become outdated.

The cultural and linguistic diversity within Sub-Saharan Africa presents another obstacle. Estimates put the number of languages spoken throughout the Sub-Saharan region at more than two thousand. This diversity makes it difficult for many communities to find educational materials in their native languages.

To bridge this educational divide and reach the millions of young people currently excluded from schooling, the region needs low-cost, adaptable learning materials for both students and teachers in training. Digital assets, from videos to text-based materials, have the potential to transform education in this rapidly developing region. However, the digital divide mirrors the education divide, with less than 40% of people in Sub-Saharan Africa connected to the internet, according to the World Bank Group.

DIGITAL RESOURCES

DIGITAL RESOURCES FOR EDUCATION:
THE EDBOX SCHOOL SERVER

ED4free is a non-profit association based in France specialising in inexpensive, easy-to-use educational technology for developing countries, primarily in Africa.

They've created the EDBox to reach communities that lack resources for schooling. At around €150, the EDBox is an off-line school server pre-loaded with educational resources that teachers and students can access directly, or through a local Wi-Fi router. This allows users to download content onto their own devices without needing an internet connection.

The EDBox's content library, which supports primary schooling to higher education and teacher training, can be personalized to meet a community's educational needs in their native language. Since the content is stored in the EDBox itself, it can be installed and used even in areas with no internet connection, making it ideal for many remote regions in Sub-Saharan Africa.

Ed4free's EDBox is a great example of how a simple, effective solution can improve education for students by providing their teachers with modern digital tools, even if their schools are not connected to the internet.

EMPOWERING STUDENTS: ENRICHING CONTENT ON SCHOOL SERVERS VIA SATELLITE

While an offline educational content server brings unprecedented resources to students and teachers, its use potential can be exponentially multiplied when regularly updated. To further advance educational opportunities, Eutelsat, ENENSYS and EKT are partnering with ED4free on an innovative solution that utilises cutting-edge satellite communications to regularly update content on these school servers.

Leveraging advanced satellite technology, updates and new educational materials can be delivered directly to servers in remote or underserved areas. This ensures that educational content remains up-to-date and accessible, even without reliable internet connections. By utilizing satellite broadcasting, educational institutions can consistently receive the latest resources, thereby improving the quality and reach of education in these regions.

EDBox from Ed4free

DVB-NATIVE IP

REVOLUTIONIZING EDUCATION WITH DVB-NATIVE IP: BRIDGING BROADCAST AND BROADBAND

DVB-Native IP is set to revolutionize satellite broadcasting by facilitating file-based and IP-based content delivery. This next-generation broadcast standard enables the distribution of IP-native mABR (multicast adaptive bitrate) content—commonly used for OTT (over-the-top) services and targeting handheld devices, Smart TVs, and other connected devices—through traditional broadcast channels like satellite.

This convergence of broadcast and IP technologies allows a variety of digital content, including educational materials, to be transmitted to a wide audience without relying on internet connectivity. It can also offer a live broadcast service - accessible by all OTT-compatible receivers/players – giving access to an educational channel, for example, even in remote areas.

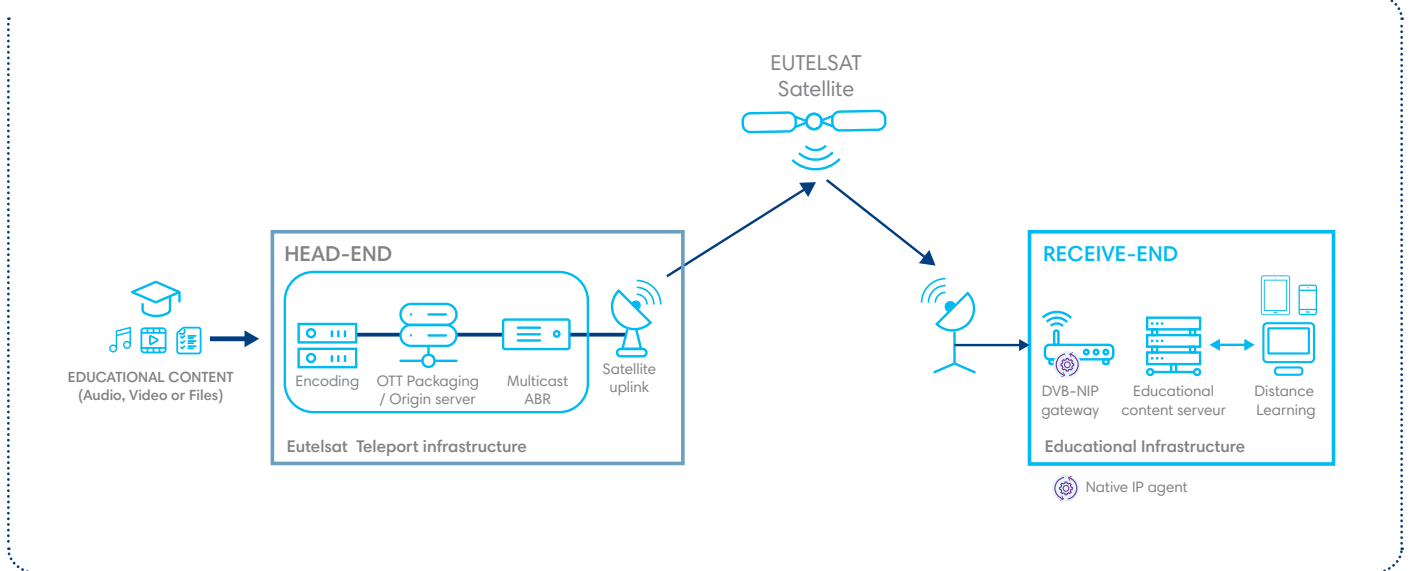The DVB-NIP standard bridges the gap between broadband and broadcast networks, fully integrating satellite technologies with those used in terrestrial networks to combine the power of broadband with the unparalleled reach of satellite signals. Eutelsat, ENENSYS and EKT are committed to bringing these innovations to the EDTech sphere, using DVB-NIP to reach students in the most remote corners of Sub-Saharan Africa.

HOW DVB-NATIVE IP WORKS FOR EDUCATION

Educational video, audio, text, and files of various formats are stored on the ENENSYS Multicast server and broadcast via satellite to the DVB-NIP gateway by EKT.

The gateway copies and stores the content on each school's local content server. This push-style system ensures that schools receive updated educational resources efficiently, without needing a broadband connection, nor requiring additional local storage capacity.

SERVICE ARCHITECTURE

EUTELSAT Satellite

HEAD-END

EDUCATIONAL CONTENT (Audio, Video or Files)

Encoding

OTT Packaging / Origin server

Multicast ABR

Satellite uplink

Eutelsat Teleport infrastructure

RECEIVE-END

DVB-NIP gateway

Educational content serveur

Distance Learning

Educational Infrastructure

Native IP agent

IMPACT ON COMMUNITIES

REAL-WORLD IMPACT ON COMMUNITIES

On the ground, ED4free has already had a profound impact in countries like Mauritania, where the Ministry of Education is equipping 240 secondary schools and 60 teacher training centres with EDboxes, supported by the French Embassy and the Agence Française de Développement. The island nation of Madagascar has already provided EDBoxes for 140 secondary schools.

Offline EDBoxes come with pre-installed international content such as Wikipedia, Project Gutenberg and Khan Academy. Local educators are inspired by the arrival of these resources and eager to develop their own educational content tailored to their community's needs. With satellite, EDBoxes can be regularly updated with customised local texts and standard content.

In the most isolated villages, many teachers lack both materials and adequate training to deliver their lessons properly. Via satellite, EDBoxes can distribute pre-recorded videos of lessons delivered by well-trained instructors. These are shown to students and used by local teaching staff as a reference. Each lesson could be stored on local servers for several weeks before new ones are uploaded, ensuring that students receive lessons that meet the national educational programme and are delivered in their native language.

FIND OUT MORE

ED4free, ENENSYS, EKT, and Eutelsat are showcasing this innovative DVB-NIP solution for EDBoxes in September 2024 at the IBC 2024 conference.

This demonstration will highlight how multicast distribution of OTT over satellite represents a significant innovation in providing educational content, benefiting a wider audience and delivering a consistent, broadcast-quality experience.

By leveraging this technology, we can transform educational opportunities in Sub-Saharan Africa and beyond, showcasing the profound impact of connecting our world.

To book your demo and learn more about this groundbreaking solution, contact us today:
www.eutelsat.com/enquiries

Eutelsat Group is a global leader in satellite communications, delivering connectivity and broadcast services worldwide. The Group was formed through the combination of Eutelsat and OneWeb in 2023, becoming the first fully integrated GEO-LEO satellite operator with a fleet of Geostationary satellites and a Low Earth Orbit constellation of satellites.

The Group addresses the needs of customers in four key verticals: Video, Mobile Connectivity, Fixed Connectivity, and Government Services. With a unique suite of in-orbit and on-ground assets, it delivers integrated solutions to meet the needs of customers globally.

Headquartered in Paris, Eutelsat Group employs more than 1,700 men and women from 50 different nationalities, who are experts in their fields and work with clients to deliver the highest quality of service. The Group is committed to delivering safe, resilient, and environmentally sustainable connectivity to help bridge the digital divide.

What can we do for you? Please visit
www.eutelsat.com/enquiries