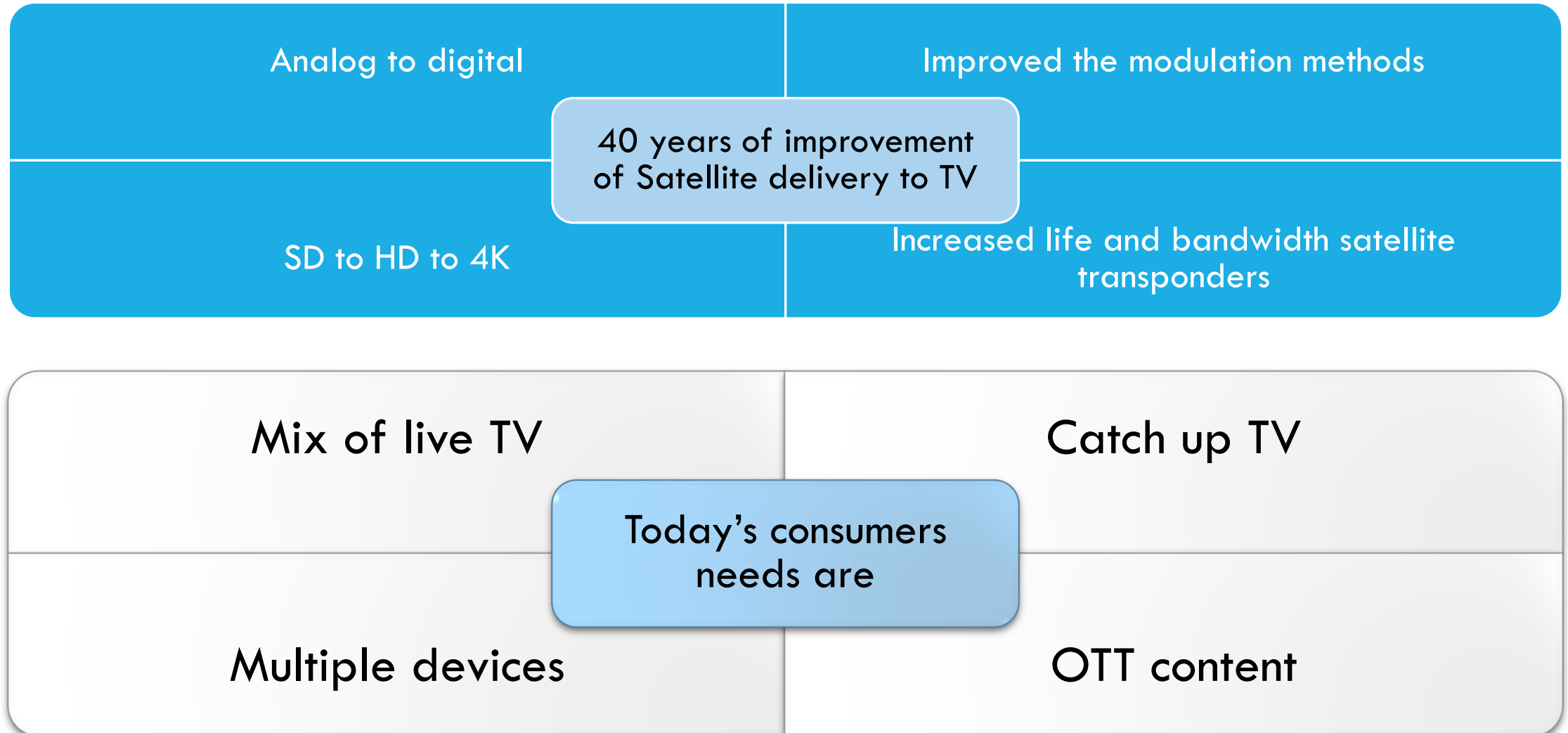


INTRODUCTION TO DVB-NIP

Why do we need DVB-NIP?



40 YEARS OF SATELLITE TV IMPROVEMENT BUT FAILURE TO KEEP UP WITH VIEWING REQUIREMENTS



WHY HAS SATELLITE DELIVERY FAILED TO KEEP UP?

Transport streams (.ts) often with DVB-CAS are incompatible mobile devices

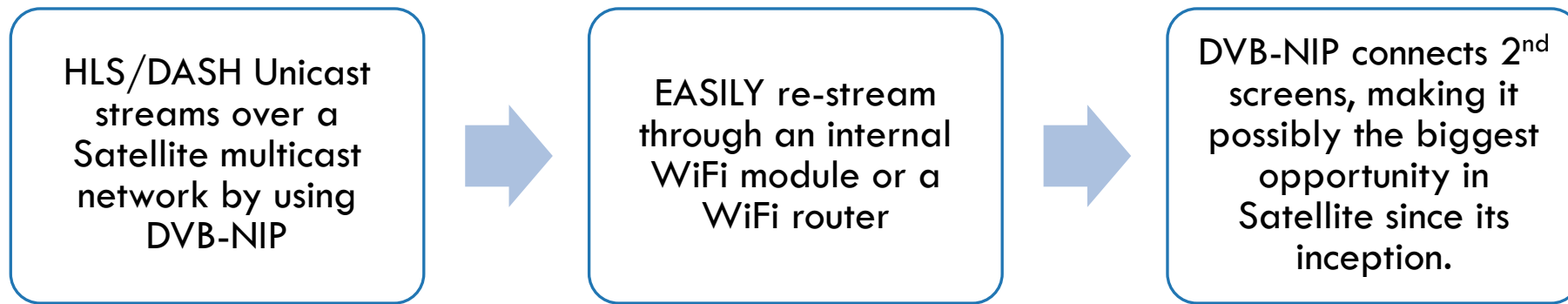
We cannot re-stream .ts to mobile devices without heavy processing from .ts to HLS

Mobile device

Mobile devices are built for unicast packet-based content delivery, such as HLS or DASH

STB cannot transcode from 1080i to 720p

DVB-NIP (NATIVE IP) OVER SAT — WHAT IS IT?



What is DVB-NIP?

Transmission of unicast content (HLS or DASH) over an existing DVB infrastructure.

To do this, the unicast content needs to be disguised in a format which is recognized by the DVB transmission equipment, so it is encapsulated with either GSE or MPE

In the EKT STB we remove the GSE or MPE encapsulation, exposing the original Unicast streams. This content can then be streamed easily to mobile devices, in addition to the traditional HDMI connection to the TV.

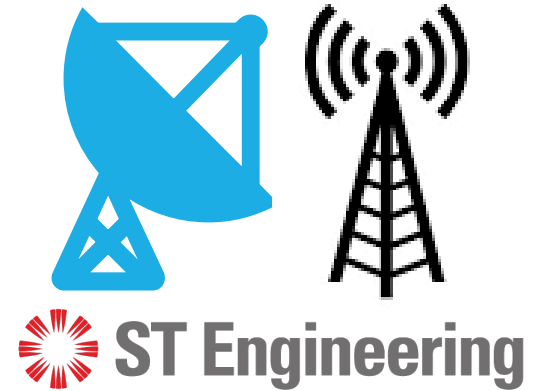


Collaboration of 6 companies who passionately believe:

- that NIP is the future
- selling an end-to-end solution is easier than components

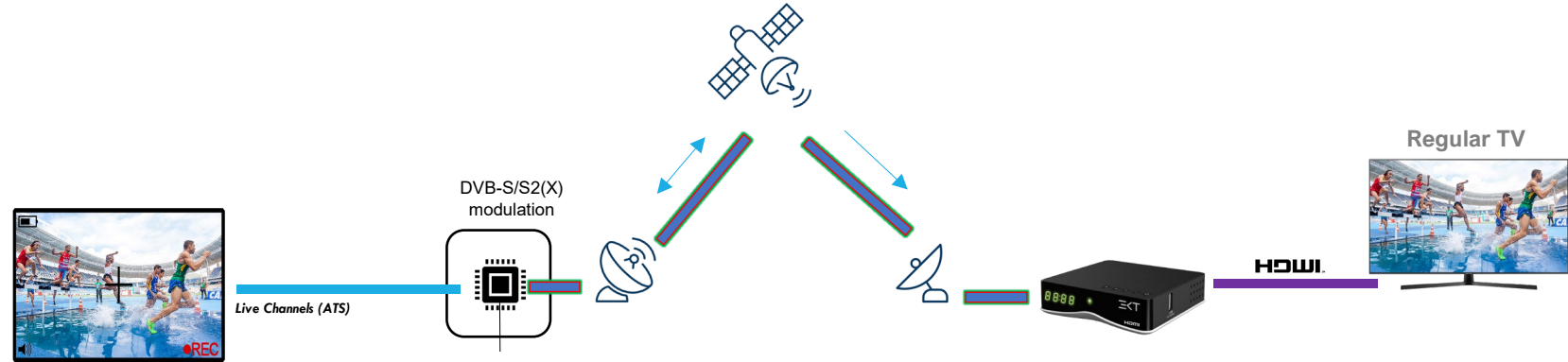
Creation of an end-to-end solution, which is flexible and cost effective enough to address the all potentials which the team have identified

Dynamic, passionate, enthusiastic, committed team, actively marketing and promoting the future of broadcast

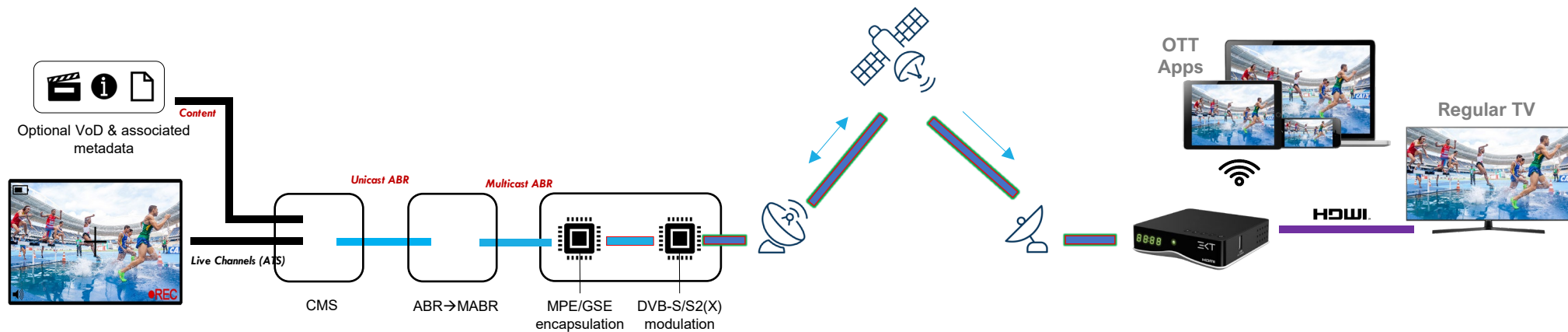


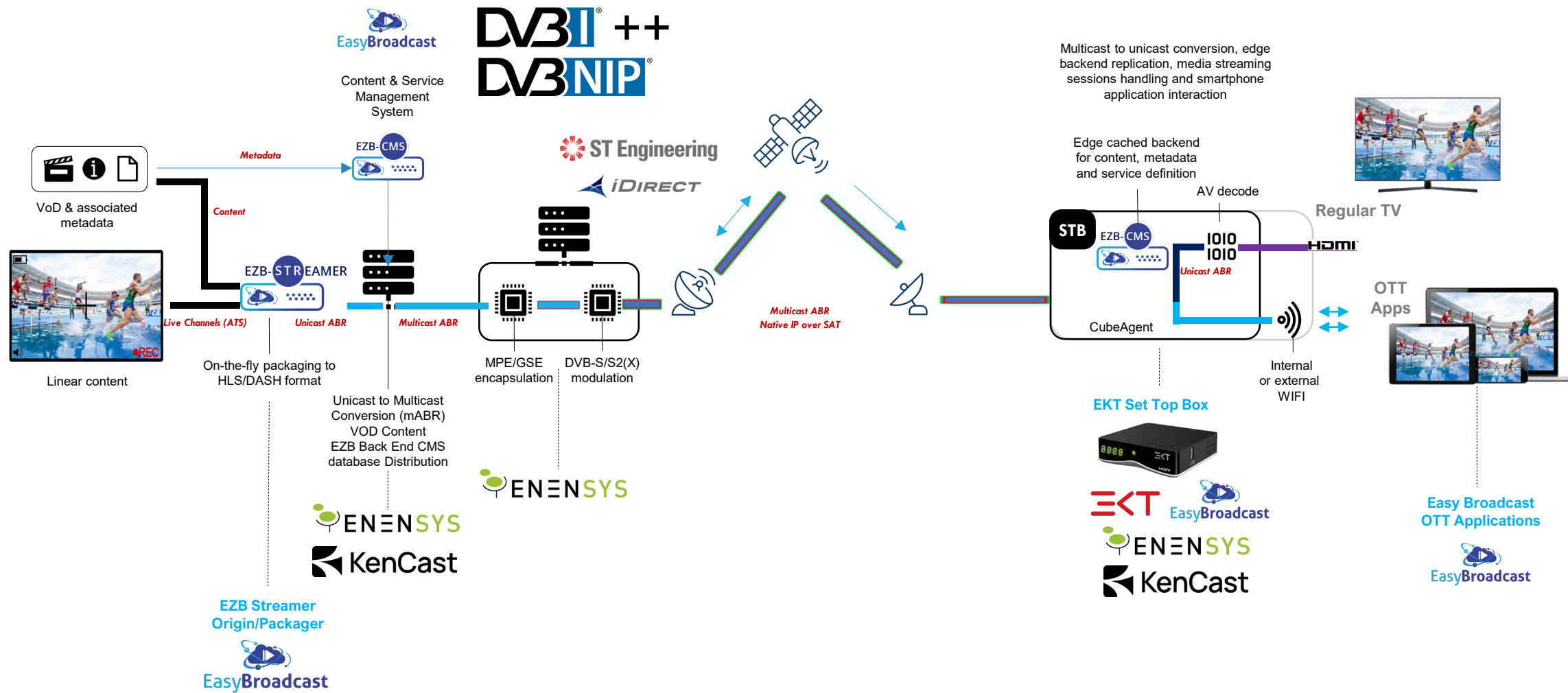
COMPARISON — DVB v DVB-NIP

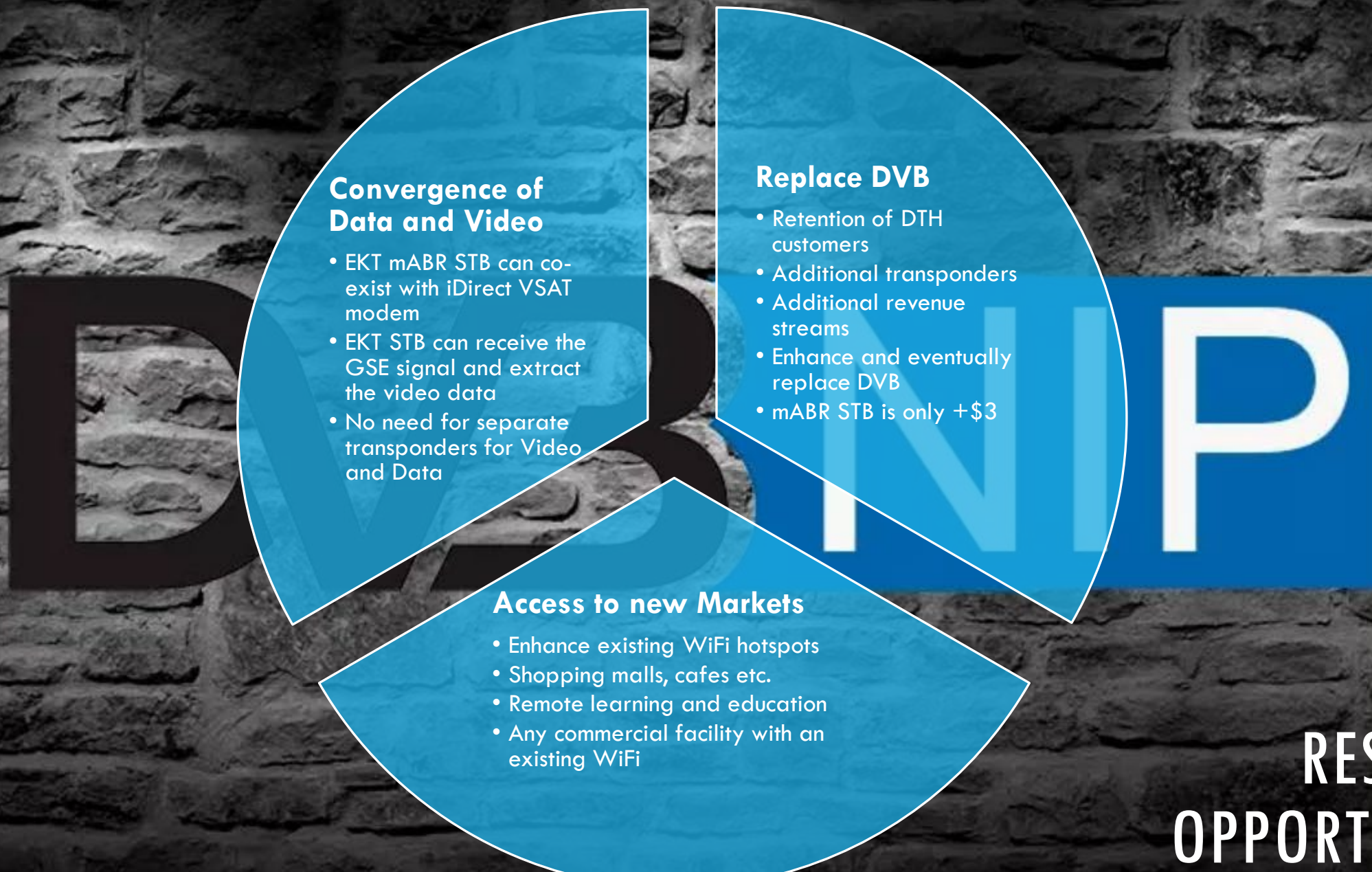
OLD — Traditional/Legacy DVB broadcasting



NEW —DVB-NIP broadcasting







Convergence of Data and Video

- EKT mABR STB can co-exist with iDirect VSAT modem
- EKT STB can receive the GSE signal and extract the video data
- No need for separate transponders for Video and Data

Replace DVB

- Retention of DTH customers
- Additional transponders
- Additional revenue streams
- Enhance and eventually replace DVB
- mABR STB is only +\$3

Access to new Markets

- Enhance existing WiFi hotspots
- Shopping malls, cafes etc.
- Remote learning and education
- Any commercial facility with an existing WiFi

**RESULTING
OPPORTUNITIES**

REMOTE EDUCATION – GOVERNMENT



VOD / e-books / Audio / Info Country wide accessible

School content and lectures not available to all students
COVID has seen many students needed to stay at home

HLS-livestream of educational content + PVOD (lectures, papers, presentations)

Accessible by everyone in LAN on mobile devices

Cost effective

Optional VSAT return channel

Deployed within a matter of months

New markets

IN PERU, DVB-NIP WAS SELECTED AS THE NEW DTH PLATFORM

- Government tender for the new DTH platform, to run initially in parallel
- Educational content to homes
 - ✓ **Consumer Gateway**
- 50 000 schools will be equipped with hotspots
 - ✓ **Professional routers** for 200 users
- Commercial channels to follow
- Neighboring countries will follow...

BASES ESTÁNDAR DE LICITACIÓN PÚBLICA PARA LA CONTRATACIÓN DE BIENES

Aprobado mediante Directiva N° 001-2019-OSCE/CD

OSCE

SUB DIRECCIÓN DE NORMATIVIDAD - DIRECCIÓN TÉCNICO NORMATIVA
ORGANISMO SUPERVISOR DE LAS CONTRATACIONES DEL ESTADO - OSCE

Requerimiento	Especificación
Propuesta Técnica	Para la implementación de un Sistema DTH con tecnología DVB-NIP, en una capacidad satelital de 25 MHz (en un transponder de 36 MHz), teniendo como premisa la capacidad de transmisión de 12 canales HD (aproximadamente 40 Mbps), con compresión Video: MPEG-4 AVC (H.264); Audio: HE-AAC. Estos canales serán las 4 señales del IRTP, así como contenidos de otras entidades y una señal de audio de Radio Nacional. También deberá estar preparado para envío de archivos de Video, PDF, Word, Excel, material offline, etc. para almacenamiento y/o descarga en el STB. La solución del postor deberá cumplir totalmente y ser interoperable con el estándar DVB-NIP (DVB Document A180 - Native IP Broadcasting)

Using DVB-NIP to close the connectivity gap in Peru

Wildfredo Baro Fanola Merino (Universidad Nacional Mayor de San Marcos)

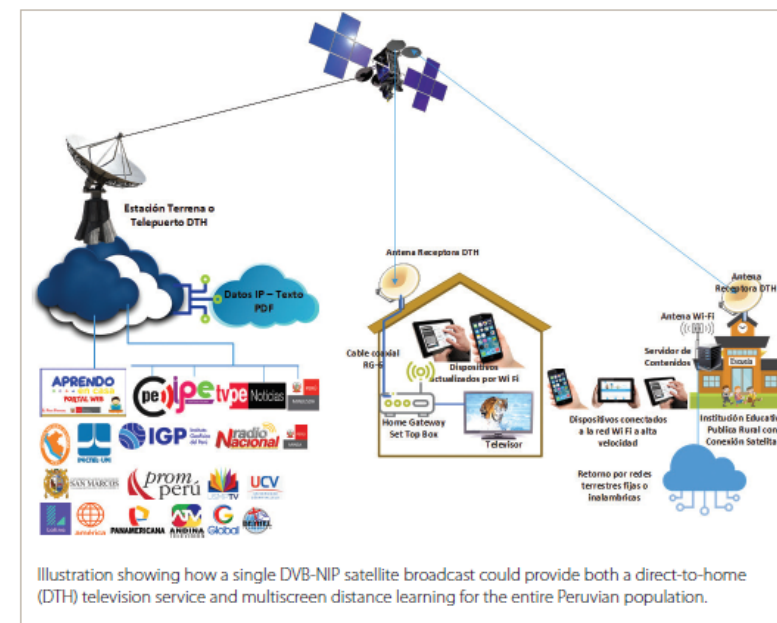


Illustration showing how a single DVB-NIP satellite broadcast could provide both a direct-to-home (DTH) television service and multiscreen distance learning for the entire Peruvian population.

LIVE DEMONSTRATION FROM PITAMPURA DVB-T2 TRANSMITTER

Demonstration partners

Contributions to our DVB-NIP demo at BES India 2023



EasyBroadcast – CMS and applications for gateways and receivers



EKT – gateways for DVB Native IP



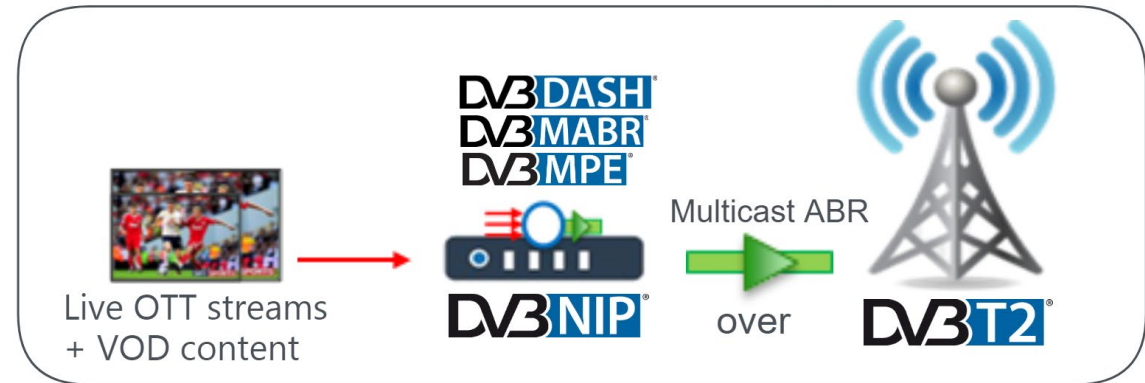
Quadrille Ingénierie – DVB- MABR encapsulation and client



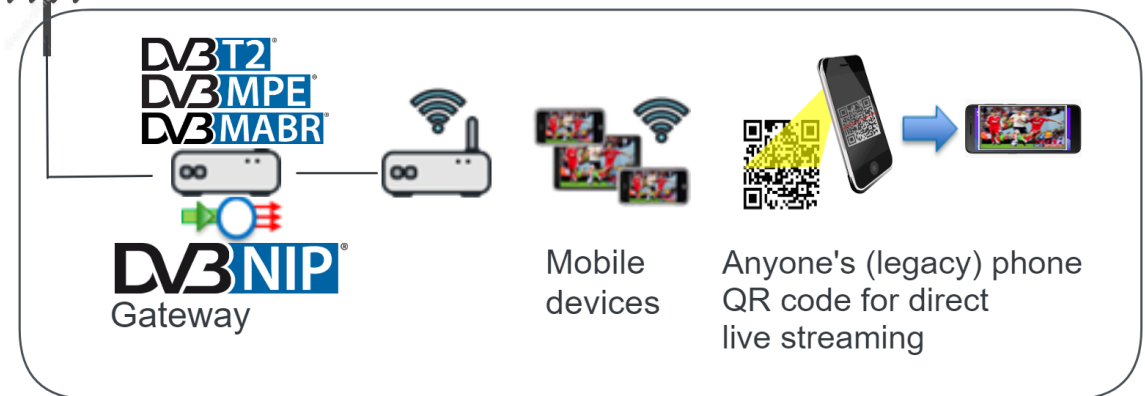
ST Engineering iDirect – IP encapsulation and modulation



DVB-T2 Transmission site (Pitampura) in Delhi) - HPHT 6kW



BES Exposition center in Delhi



MOBILITY – MOB/SAT OPERATOR



LiveTV – on mobile devices – in all regions

In many locations, mobile networks are limited
Which means limited or no availability of (live) video content in cars, boats, aircraft

Case study: In car unit with DVB-S2/T2/4G/Iridium reception
WIFI Access Point for up to 5 mobile devices
Continues service between Satellite, Terrestrial and 4G

New markets

MOBILITY — MOB/SAT OPERATOR

- Two on-going PoCs:
 - Supply Navy with Content
 - Supply cruise ships with content



New markets



DOWNLOAD TO CARRY + LIVE



Download when shopping, watch while drinking your coffee

Not everyone has broadband internet at home
Simply go shopping while downloading the latest shows/news

Add STB to existing WIFI networks
Access for up to 200 users per router hotspot
Super fast download speeds

New deployments to Coffee shops/shopping malls/etc

WATCH ANYWHERE IN THE HOME - ANYTIME



Watch on any device, at any time. Live + Video On Demand content

Enhances existing DTH operations, by adding live streaming and PVOD
Makes DTH competitive against emerging OTT and ISP competition

Connect your mobile to the Sat receiver and watch anywhere in the home
Download content to watch now or later
With or without a return to the internet

Convert existing DVB to mABR

WATCH ANYWHERE IN THE HOME - ANYTIME

- Five on-going PoCs to launch PayTV DVB-NIP+VOD DTH:
 - Brazil, Mexico, Indonesia, Thailand, Colombia
 - Multiple tuner
 - Free to view with targeted advertisement funded



PRODUCTS

By EKT

SKYFLOW PRODUCT RANGE STRATEGY

Strategy on STB range – Flexibility to accommodate the varied deployments

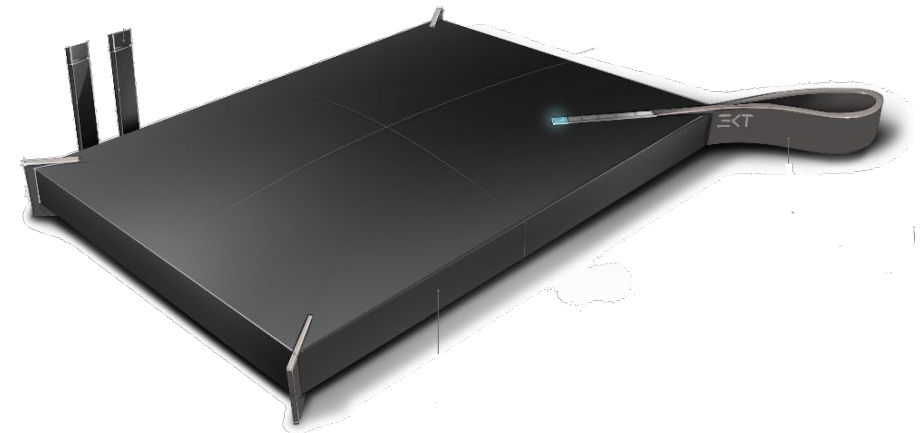
Have a suitable model for each target potential

All STB software to support:

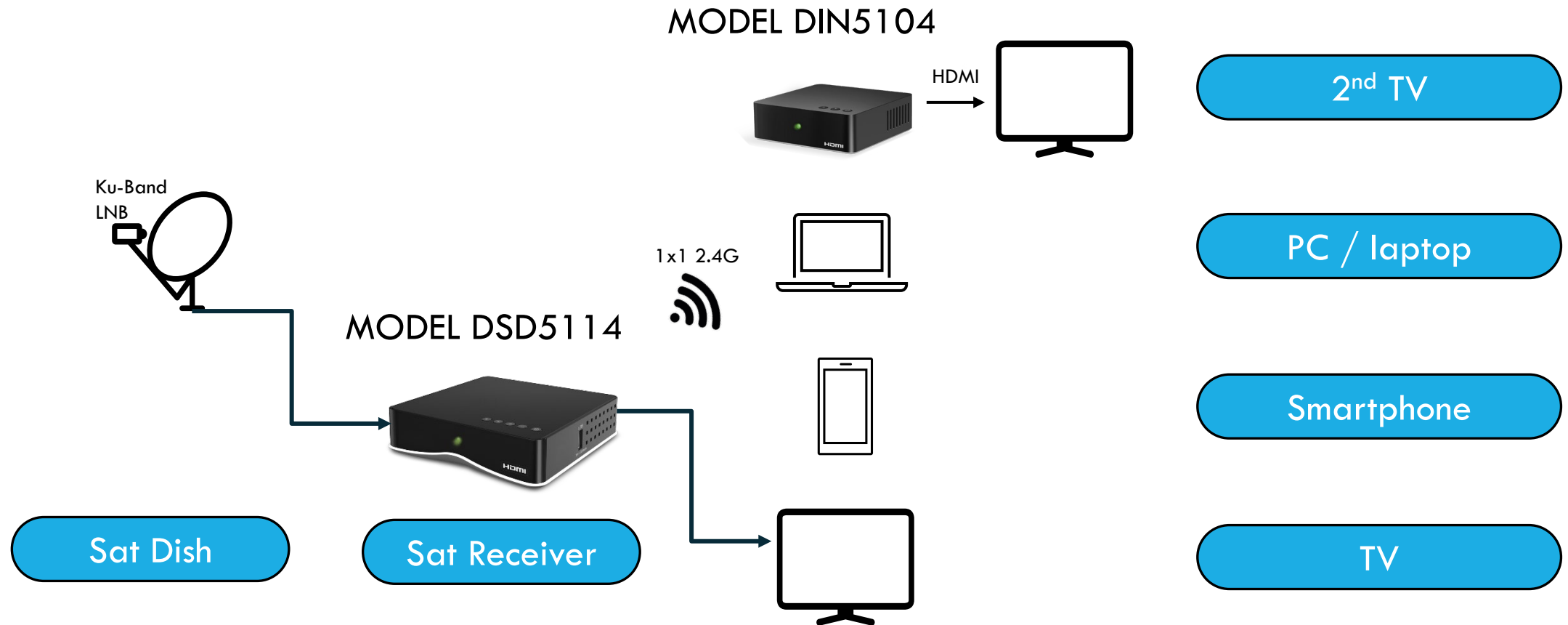
DVB, MPE, GSE, VSAT, 1-way CAS/DRM, Cube Agent

All STB hardware to support:

VSAT filtering in tuner, HDMI

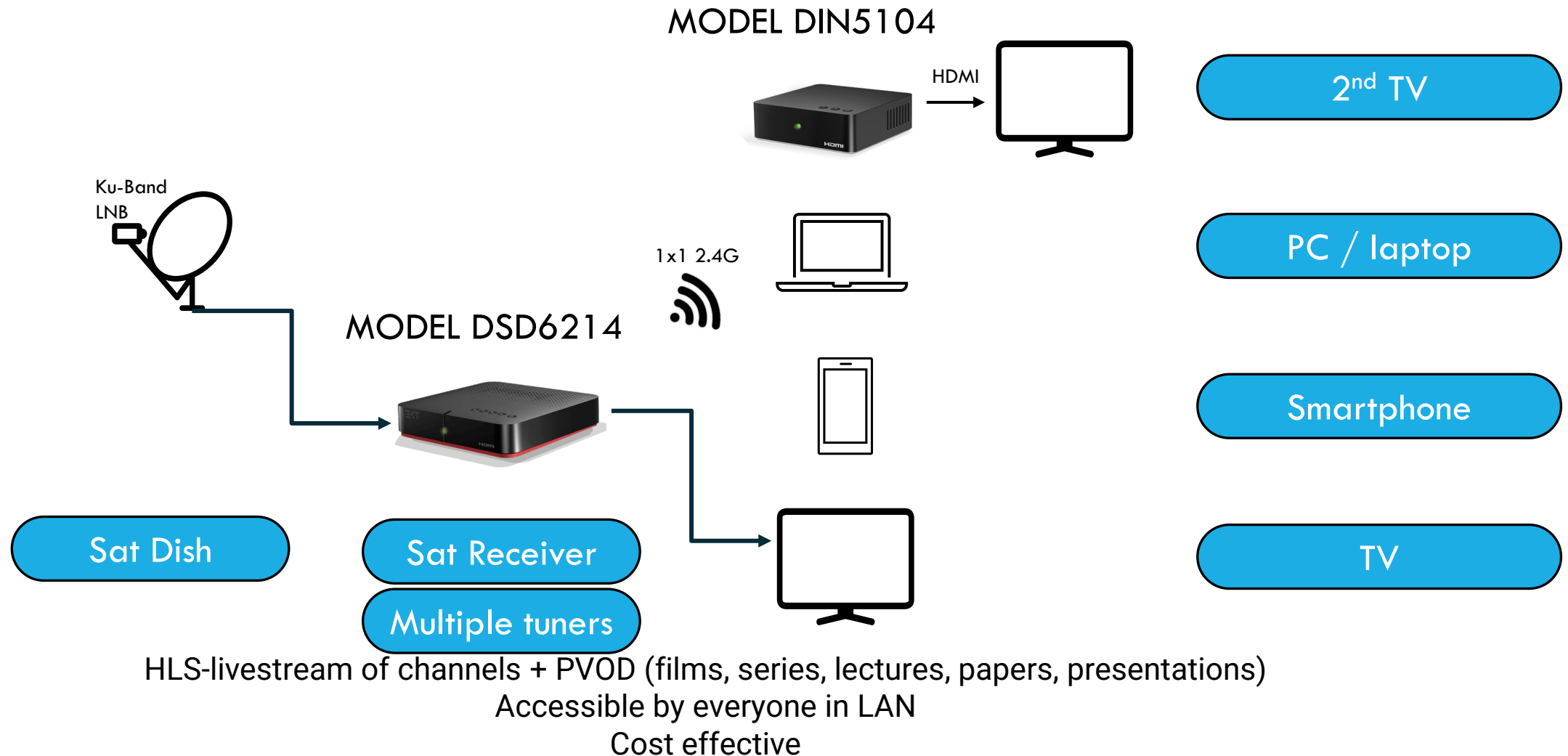


USE CASE 1 – HOME USE (40MBITS, 3-5 DEVICES)

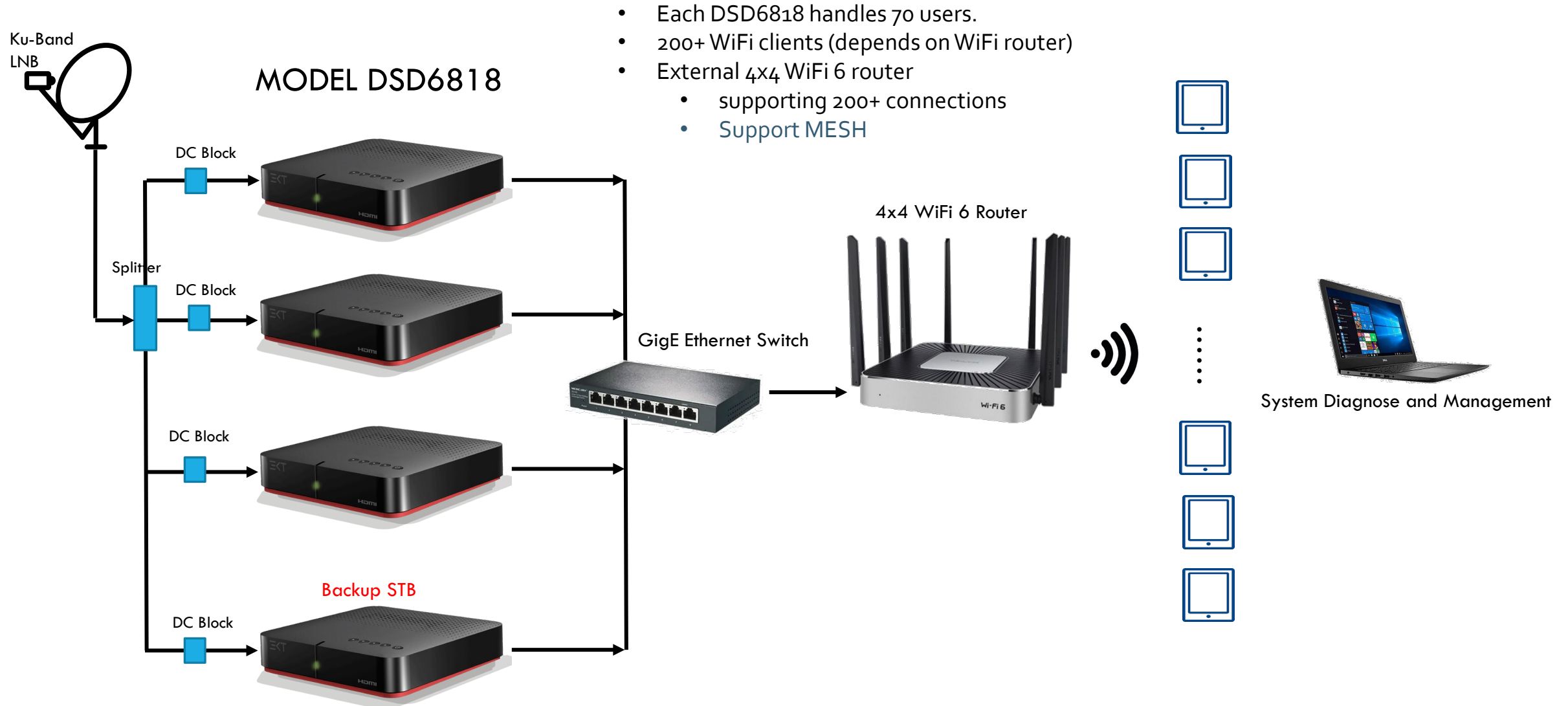


HLS-livestream of channels + PVID (films, series, lectures, papers, presentations)
Accessible by everyone in LAN
Cost effective

USE CASE 2 – HOME USE (70MBPS, 5-10 DEVICES)



USE CASE 3 – PROFESSIONAL USE (200+ DEVICES)



LIMITATIONS OBSERVED

Assumptions

- 36MHz transponder
- DVB-S2X with 5% roll-off (elliptical dishes); May need 10% roll-off for circular dishes
- Therefore 65Mb bandwidth

Standards

- HLS as HLS is compatible with all mobile devices
- AV1 can be supported but HEVC used as AV1 not well supported on mobile devices
- Single profile of 720p30 to cover TV and Mobile devices
- Preferred DRM is MS Playready (One-Way DRM is possible through proprietary Skyflow solution)

Good results tested

- Normal HD channels @ 720p30 HEVC HLS @ 1 Mbps ABR
- Sports HD channels @ 720p30 HEVC HLS @ 3 Mbps ABR
- = 60 HD channels possible per transponder
- In future more channels could be possible with VBR (not tested yet)

SUMMARY

End to end DVB-NIP ecosystem comprising:

- Content management
- Content transcoding, encoding & packaging
- Multi DRM
- Unicast (DASH or HLS) to multicast ABR
- DVB-NIP & DVB-I compliant, plus *extra hot sauce!*
- PVOD, P-Advertising
- DVB-T2/S2X modulation with GSE or MPE
- Various Gateway STB models for different use-cases, with optional legacy DVB support
- Streaming to mobile devices
- Mobile apps

Available now

