

IP-Based Broadcast Core Network: Converging Broadcasters with the Connected World



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A little bit about me...





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Dr Jon Montalban works as a Senior Researcher and Assistant Professor at the University of the Basque Country since 2016. He has been part of the TSR (Radiocommunications and Signal Processing) research group for more than ten years. He has held visiting research appointments at Communication Research Centre (CRC), Canada, and Dublin City University (DCU), Ireland. He was part of one of the international groups that developed the Layered Division Multiplexing technique, currently part of the ATSC 3.0 standard. His current research interests are in the area of wireless communications architectures and networking for 5G and beyond. He is the corecipient of the Scott Helt Memorial Award to recognize the best paper published in the IEEE Transactions on Broadcasting in 2019. He has served as a reviewer for several renowned international journals and conferences in the area of wireless communications and currently serves as an Associate Editor for the IEEE Access and the IEEE Transactions on Broadcasting.

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The path towards the connected-world





It is enough with a bigger and more intelligent pipe?





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It is enough with a bigger and more intelligent pipe?





New services data demand (Media): ٠

- 8K-UHD Video delivery (91 Mbps);
- Next-gen 360 Video (50 to 200 Mbps);
- 6 DoF video or free-viewpoint 200 to 5000 Mbps;
- Coverage problems in non-urban areas and mmWaves; ٠
- High costs for Internet access relative to income; •

Exabyte per Month



Population coverage by type of mobile network, 2015-2020*





Percentage of households with Internet access at home and with a computer, 2005-2019*

Different means of transport are required !











(*) https://dvb.org/

(*) Michael, L.; Gómez Barquero, D. (2016). Bit-Interleaved Coded Modulation (BICM) for ATSC3.0. IEEE Transactions on Broadcasting. 62(1):181-188.

DTT: An older player for new use cases

- Nevertheless,...
 - ... it lacks of a **network intelligence** for new business models;

Society



Converging Broadcasters with the Connected World



- Define a **Broadcast Core Network** that **SHOULD**:
 - ✓ Supply the broadcasting chain with **network intelligence**;
 - ✓ Define new/emerging services, such as datacasting (IoT, Connected Car, Digital signage, Tele-Education, Tele-Agri, etc.);
 - ✓ Accommodate, harmonize and facilitate those new business models for broadcasters;
 - ✓ Help the integration of different "broadcasting networks/applications": Studio-Production, Program Distribution, Studio-to-Tower Link, Inter-Tower Communications, ENG.
 - ✓ Interact with other networks (WiFi, 5G, Satcom, Cable/IP TV);
 - ✓ Be flexible for a modular growth;
- Define an **Broadcast Core Network** that **SHOULD NOT**:
 - **X** Propose substantial changes in the traditional broadcast business model in the short term;
 - **X** Focus **only** on the **interconnectivity** with other networks;
 - X Propose any change to existing **5G** standard;

Converging Broadcasters with the Connected World



• Expose the broadcasting infrastructure for other services through a BCN;



Takeaways



- 5G by itself might not be able to digest all the internet traffic during the following years;
- The broadcasting ecosystem as a delivery mechanism is a fundamental piece of the future of media consumption;
- BCN will be a key factor and will enable and harmonize the delivery of datacasting services in the broadcasting ecosystem;
- Datacasting opportunities can have a wide range of applications:
 - IoT (Internet of Things) connectivity
 - Autonomous vehicles
 - Smart cities and Smart agriculture
 - Geo-targeted emergency alerting
 - Programmable advertising
 - Distance learning
 - Forestry and mining

- ...