Postprint of the NWC 2018 Symposium, Grandly Held in Jinan

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Abstract

The 17th National Conference on Internet and Audio-Video Broadcasting Development and the 26th Annual Conference on China's Digital Broadcasting Television and Network Development were convened in Jinan from April 19 to 20, 2018. The event was jointly organized by the Cable Television Comprehensive Information Technology Branch of the Chinese Institute of Electronics, the Multimedia Professional Committee of the China Federation of News Technology Workers, and the Strategic Professional Committe…

Full Text

Conference Overview

The 17th National Conference on Internet and Audio-Video Broadcasting Development and the 26th Annual Conference on China's Digital Broadcasting Television and Network Development were convened in Jinan from April 19 to 20, 2018. The event was jointly organized by the Cable Television Comprehensive Information Technology Branch of the Chinese Institute of Electronics, the Multimedia Professional Committee of the China Federation of News Technology Workers, and the Strategic Professional Committee of the State Administration of Radio and Television (SARFT) Science and Technology Committee. Co-sponsoring organizations included China Radio International, the SARFT Monitoring Center, the Shandong Provincial Press, Publication, Radio, Film and Television Bureau, and various SARFT Science and Technology Committee subcommittees for broadcasting, television, wireless, cable, and monitoring.

The conference brought together over 300 technical professionals and media practitioners from radio and television bureaus, stations, and cable network companies across China. Distinguished attendees included Du Baichuan, Deputy Director of the SARFT Science and Technology Committee; Qian Yuelin, Chief

Engineer of China National Radio; Dong Nianchu, Deputy Director of the Network Audio-Visual Program Management Department; Xie Shenghe, Chairman of the China Federation of News Technology Workers; Chen Zhijiao, Senior Advisor of the SARFT Science and Technology Committee and former Director of the Science and Technology Department; Sun Xinglin, Deputy Party Secretary and Deputy Director of the Shandong Provincial Press, Publication, Radio, Film and Television Bureau; and Sun Shihui, Party Secretary and Director of Jinan Radio and Television Station.

Opening Ceremony

The opening ceremony was chaired by Executive Chairman and Secretary-General of the SARFT Science and Technology Committee Zhou Zhiqiang. Opening addresses were delivered by Du Baichuan, Sun Xinglin, and Sun Shihui, setting the stage for two days of intensive discussion on industry status, technological applications, and audio-visual program regulation in China's converged media environment.

Keynote Address: High-Quality Development Path for Broadcasting Industry

Policy Context and Strategic Vision

Du Baichuan's keynote speech framed the high-quality development imperative within national policy directives. Citing President Xi Jinping's 19th Party Congress report, which emphasizes building a modern economic system by focusing on the real economy and improving supply-side quality, Du highlighted the need to deeply integrate the internet, big data, and artificial intelligence with the broadcasting sector. The 2018 State Council Government Work Report similarly called for coordinated progress across economic, political, cultural, social, and ecological dimensions, with supply-side structural reform as the main task. At the 2018 National Press, Publication, Radio, Film and Television Work Conference, Director Nie Chenxi stressed accelerating optimization and upgrading to drive high-quality development across the industry.

Three Pillars of High-Quality Development

Du articulated three fundamental requirements for broadcasting's high-quality development: first, the capacity to provide more and better programs and services; second, the ability to effectively compete within the internet, mobile, and IoT ecosystems; and third, the capability for self-driven innovation that leads broadcasting's development. Achieving these objectives demands reform as the breakthrough point, innovation as the driving force, and optimization and upgrading as the focal areas.

Smart Broadcasting: From Media Stacking to Deep Integration

The concept of smart broadcasting requires moving beyond simple media stacking—consuming different media forms simultaneously, which may increase consumption but also risks revenue cannibalization—toward genuine media meshing. Meshing involves using two or more media forms in "synchronization" to complete a service experience. True media convergence is not about stacking but about deep, integrated meshing. This transformation necessitates deepening program supply-side structural reform, accelerating smart broadcasting ecosystem construction, and exploring new products, functions, models, and business formats such as smart home systems, ultra-high-definition terminals, and mixed-reality entertainment platforms.

Next-Generation Internet Infrastructure

A 2018 ITU symposium on "The Future of Cable Television" examined socio-economic, technological, business, and regulatory changes, proposing to redefine cable television across these three dimensions. Future comprehensive services will encompass video services, video-on-demand, internet access, cloud storage, and IoT services such as smart metering.

The deployment of IPv6 represents a critical evolution. The State Council's Action Plan for Promoting IPv6 Scale Deployment aims to establish an independent next-generation internet technology system and industrial ecosystem within five to ten years, creating the world's largest commercial IPv6 network. The "Snowman Project," led by the Next-Generation Internet National Engineering Center, has established IPv6 root servers globally, with China deploying four—including one primary and three secondary roots—fundamentally breaking China's previous absence from the root server system. This development means broadcasting-Internet integration must target future internet architectures, not just current models.

Tactile Internet and Emerging Applications

In 2017, the IEEE established the 1918 Tactile Internet Working Group to define frameworks for this rapidly evolving field as a 5G and beyond-5G application, with completion targeted for 2018. Tactile internet enables remote operations through haptic feedback, representing a profound shift in internet capabilities.

Mobile Internet and Network Transformation

Mobile internet is driving next-generation network transformation. Future networks will employ unified protocols for wired and wireless integration, built upon a universal resource pool independent of underlying transmission technologies. Key components include Network Function Virtualization (NFV), Software-Defined Networking (SDN), and network slicing, which allows operators to create parallel networks within the same infrastructure tailored to specific service requirements.

IoT Integration: A Three-Step Strategy

With Gartner projecting 20.4 billion IoT devices by 2020—128 billion in the consumer sector alone—the broadcasting industry's central challenge is business integration: consolidating diverse services onto unified platforms. Broadcasting's entry into smart homes, communities, and cities should proceed in three phases: first, integrating audio-visual gateways with existing set-top boxes to enable home entertainment system networking; second, integrating smart home applications such as security, energy management, and lifestyle assistance onto these gateways, incorporating environmental sensing and artificial intelligence like machine learning; and third, evolving the smart home gateway into an intelligent home assistant that serves as a true smart home control center, connecting households to the broader broadcasting ecosystem through cloud services.

Voice Interaction as Disruptive Integration

Gateway, set-top box, router, and APP integration represent one approach, but voice integration constitutes another disruptive platform following OTT. Projections indicate that by 2020, 30% of internet browsing sessions will be screenless, with average human-machine conversation time exceeding human-partner conversation time. Voice interaction devices will become crucial for future service integration.

Big Data and AI: Cross-Domain Applications

Spanning the internet, mobile networks, and IoT requires comprehensive big data analytics and pervasive artificial intelligence to achieve intelligent broadcasting network management. The three operational spaces—physical (IoT, vehicle networking, human networking), cyber (WeChat, internet expression, mobility), and social (families, communities, cities, politics, economy)—must achieve precise meshing. Applications include public opinion monitoring and guidance, targeted poverty alleviation, and the digital economy.

Big data and AI already permeate the broadcasting industry: robot news writing and content selection in production; intelligent media clouds and big data analytics in integration; intelligent routing and network resource scheduling in transmission; intelligent distribution in delivery; and intelligent reception, operating systems, terminals, and recommendation systems at the user end. Media entertainment sensors encompass audio, temperature and thermal imaging, motion and vector, optical, proximity/position, pressure, magnetic, and liquid/chemical/gas sensors—areas where broadcasting possesses strong foundational capabilities.

Conclusion

Du Baichuan concluded that only by adopting advanced concepts and technologies can broadcasting achieve high-quality development, building a comprehensive, intelligent, and converged "pan-media" platform that integrates resources

from collaborative sensing, data preprocessing, and analytics to application promotion, ultimately enabling precise fusion across all three operational spaces.

Note: Figure translations are in progress. See original paper for figures.