

Nataša Raketić

Faculty of Media and Communications, Belgrade; Radio Television of Serbia – Radio Belgrade, Belgrade, Serbia

The Perspective of Hybrid Radio in the Process of Media Convergence

Abstract: Digitization and the Internet have enabled traditional radio to gain new formats, new listeners, enrich content and make it available globally. Hybrid radio is the result of digitization and media convergence, enabling the availability of programs and accompanying multimedia content to a larger number of listeners thanks to a combination of FM or DAB+ signals and the Internet. Today, listeners expect a radio station to enable listening to the program non-linearly (on-demand, podcast), they expect to have access to information about weather, traffic conditions, news, and information about a song broadcast in various formats (audio, video, or text) and information about the artist. Also, listeners expect to be able to listen to their favorite radio on the same device, via the same application, even when they are not within the coverage area of the program. From an economic point of view, this is a sustainable, cost-effective system, because most stations, in addition to broadcasting on the FM or DAB+ network, already have a program available online. Also, audience growth increases advertiser interest. Although four and a half billion people have access to the Internet, in this paper I will claim that, thanks to the hybrid model, the future of radio is not exclusively in the online sphere, and that in the coming decades the Internet will be an additional tool for increasing the number of listeners and expanding the commercial market.

Keywords: hybrid radio; digitization; internet; user habits; convergence; multimedia; personalized radio.

Introduction

“Today’s listeners are looking for new radio experiences, and hybrid radio intends to bring the medium into the 21st century.”¹

The Digital Revolution, better known as the Third Industrial Revolution, began in the middle of the 20th century and brought significant changes to all areas of

¹ Simon Delaere, senior researcher in media, innovation and technology at the Free University of Brussels in “Bringing radio into the 21st century,” European Commission, October 2020, <https://cordis.europa.eu/article/id/411708-bringing-radio-into-the-21st-century>, acc. on August 21, 2022.

*Author contact information: nraketic@gmail.com

everyday life. Frank Webster states that *information* has become a distinguishing feature of the modern world and that, accordingly, we live in an “information society”², while for Neil Postman, the key term is *technology*, because “[...] new technology does not add or take anything away, it changes everything.”³ The common denominator for information and technologies is the mass media, which, thanks primarily to the Internet and its services, flood their audiences with information in various formats, from news to shows, movies and series. Webster states that we live in a “media-saturated environment which means that life is quintessentially about symbolisation, about exchanging and receiving messages about ourselves and others, or trying to exchange and receive information.”⁴ Internet technology gives special power to the symbolisation and inflation of information circulating on the global network. Marina Gržinić believes that it is the virtual world or cyberspace that makes it possible “[...] to design and discover marking systems that articulate the relationship to the world and to different forms of representation and interpretation.”⁵ In the new media order which is based on the hyper-production of media content in different formats and different analog and digital platforms, radio has undergone a significant transformation in order to survive in competition with completely new or transformed traditional media.

Changes in the media sphere affected the production of radio programs and distribution of content. In the field of radio production, changes include digital recording, computer programs and mobile applications for recording and editing, and simultaneous multi-platform production. In addition to analog, radio began broadcasting programs in digital terrestrial and internet formats. Also, significant changes are taking place in the field of communication with the audience. The audience is interactive, communicates more intensively with the media and influences the creation of content. Also, the attitude towards advertisers and new advertising methods is changing, which is especially characteristic of commercial radio stations.⁶ Digitization has also had a significant impact on giving radio the opportunity to move from local and regional to global coverage, making it available anywhere in the world. This also initiated the creation of international media corporations, and the content acquired a global character instead of a local one. Erasing the borders of the radio signal has produced a large number of global radio stations, which confirmed the emergence of a “new global online media order”⁷. Paul Virilio calls that order “a new world ecology”, in which “within a few hours all the big cities of the planet will be inundated with

² Webster distinguishes five principles according to which it is possible to define the information society: technological, economic, spatial, professional and cultural. Frank Webster, *Theories of the Information Society* (London: Routledge, 2006), 2.

³ Neil Postman, *Technopoly: The Surrender of Culture to Technology* (New York, Vintage Books, 1993), 18.

⁴ Webster, *Theories of the Information Society*, 20.

⁵ Marina Gržinić, *U redu za virtualni kruh* (Zagreb: Meandar, 1998), 221.

⁶ Marija Karan, “Radio i radijski auditorijm u globalnoj mreži – kontinuitet i transformacija,” *Zbornik radova Fakulteta dramskih umetnosti. Časopis instituta za pozorište, film i radio televiziju* 36 (2019): 102.

⁷ *Ibidem*.

several million copies of a single poster”⁸. The beginnings of radio date back to the period between 1900 and 1920, when AM (amplitude modulation) technology for signal transmission was developed.⁹ Later, the FM network¹⁰ (frequency modulation) came into use and became the most widespread network. Using frequency modulation, to transmit high-quality, stereo sound, the FM signal is receivable in cars, on mobile devices, and radio receivers. The digitization of radio is a process that began several decades ago and there are two directions in which this process is carried out. The first is the digitization of traditional radio and broadcasting, and the second process is digitization through convergence with the Internet. The digitization of broadcasting began before the advent of the Internet, in the 1980s. However, even four decades later, this process has not been completed. Digital Audio Broadcasting (DAB) is a standard initiated as a European research project in 1980. The world’s first DAB channel was launched by the Norwegian Public Media Service on 1 June 1995 (*NRK Classic*). The difference between FM and DAB is that the digital format can offer multiple radio programs at one frequency. DAB or DAB plus is not the only digital format used in the world. In 2012, there were three other wireless radio systems: DRM (*Digital Radio Mondiale*), Japanese ISDB-T, and HD radio, a system implemented in the United States and Arab countries.¹¹

All these digital formats should not be confused with Internet radio, which can only be accessed *online*, or it is a *stream*¹² of a program that is broadcast linearly, in real-time, via a network of transmitters. While retaining its traditional features (intimate, personal, immediate, invisible), radio took advantage of the Internet, digital platforms, and services and thus became even closer to the audience and two-way communication with them. Content is diverse, multimedia, and personalized. The first radio program to be broadcast on the Internet was *Internet Talk Radio* in 1993. Its founder was Carl Malamud. Only a few years later, numerous FM radio stations started streaming their program on the Internet and broadcasting specialized Internet radio programs¹³ soon thereafter. Today, the number of radio programs that can be listened to over the Internet is estimated at over 120,000.¹⁴ Thanks to the Internet, ra-

⁸ Paul Virilio, *Informatička bomba*, trans. by Nenad Krstić (Novi Sad: Svetovi, 2000), 47.

⁹ Due to the nature of propagation of ST and CT waves, this technology enables the coverage of territories thousands of kilometers away from the transmitter itself. The sound quality cannot be compared to the FM signal, but, on the other hand, AM modulation is unattainable with regard to the area it covers.

¹⁰ FM network – frequency band from 88 to 108 MHz which is used to broadcast terrestrial programs of radio stations in Serbia.

¹¹ The European Broadcasting Union states that in 2020, 1697 radio stations broadcast in DAB+ format, and according to Statista.com, there are 51 DAB and DAB+ radio stations in the UK and only eight which are broadcasting on FM network. In Norway, FM radio has been completely shut down.

¹² Technology used to distribute content to computers and mobile devices over the Internet without the need for downloads. Streaming content is available before downloading the file.

¹³ Already in 2000, there were about 20,000 internet radio stations in the United States alone. Gabriele Balbi and Paolo Magaudda, *History of Digital Media* (New York: Routledge, 2018), 206.

¹⁴ Sarah Perez, “TuneIn launches a discounted audio subscription for Alexa owners and prime members,” Techcrunch, March 2018, <https://techcrunch.com/2018/03/29/tunein-launches-a-discounted-audio-subscription-for-alexa-owners-and-prime-members/>, acc. on August 21, 2022.

radio has been “transformed and upgraded from a one-dimensional to a multi-dimensional medium”¹⁵. The convergence of radio and the Internet has developed hybrid radio in the last decade, and the automotive industry is particularly interested in this fact. This format allows the broadcaster to increase the number of listeners and advertising space. The format follows the new user habits of the audience; however, the listeners have not given up on traditional radio yet. Namely, radios, cars, mobile phones, or other devices with integrated hybrid radio are not cheap and therefore not sold on a large scale. In addition, the cost of the Internet as well as the bandwidth quality vary and impose new costs on listeners. Undoubtedly, hybrid radio could become the dominant radio format in the future if listeners had minimal costs for its purchase and use. Until then, the traditional FM radio will remain the dominant format, which, with the help of the Internet, will offer additional media content for a more demanding and discerning audience.¹⁶

Hybrid radio as a product of media convergence

Media convergence has been discussed intensively for the last five decades¹⁷ and it is a continuous process of changing and adapting the media to technological innovations. Media content was previously available in independent formats (books, radio, television, print, photography), and today, thanks to the Internet, it is available in different formats at the same time. Thanks to convergence, new industries, new media, and media content have emerged. Convergence has enabled traditional media to become multimedia and hybrid media and has contributed to separating content from classic methods of distribution.¹⁸ In addition to technological convergence, Katarzyna Kopecka-Piech indicates several other models of convergence: convergence of technological devices, the convergence of solutions, the convergence of networks, economic convergence, and corporate convergence.¹⁹ Hybrid radio took advantage of convergence opportunities with the Internet and connected “existing technologies, industries, markets, genres and audiences”²⁰. Henry Jenkins adds cultural convergence, global and “social or organic”, to the list of convergences. In

¹⁵ Karan, “Radio i radijski auditorijum u globalnoj mreži,” 104.

¹⁶ About 92% of Americans listen to radio in the traditional way, via FM or DAB plus networks. Brad Kelly, “Audio Today 2018, How America Listens,” Nielsen, April 2018 <https://www.nielsen.com/wp-content/uploads/sites/3/2019/04/audio-today-report-apr-2018.pdf>. Acc. on August 21, 2022.

¹⁷ “Old Media New Media,” Media Convergence, December 2011, <https://mconvergence.wordpress.com/category/history/#:~:text=With%20technological%20advancements%20that%20made,capabilities%20far%20beyond%20prior%20efforts>, acc. on August 21, 2022.

¹⁸ Apple, known for producing computers and smartphones, has become the world’s largest distributor of music content, and Google with its search service has become a key tool in audience access to news and TV content. Mirko Galić, ed. *Leksikon radija i televizije* (Zagreb: HRT i Naklada Ljevak, 2016), 259.

¹⁹ Katarzyna Kopecka-Piech, “Media Convergence Concept,” *Media Studies* 46, 3 (2011): 6–12.

²⁰ Henry Jenkins, “The cultural logic of media convergence,” *International Journal of Cultural studies* 7, 33 (2004): 34.

addition to the converged medium, the concept of hybrid radio represents a metamorphosis of traditional radio because it originated from existing broadcasting systems. According to Roger Fidler, all radio channels coexist and retain the dominant feature of radio-audio broadcasting.²¹ Hybrid radio broadcasts radio program using FM, HD, DAB or DAB+ signal and thanks to the Internet (WiFi, 3G, 4G, LTE) it connects radio program with multimedia content and interactive communication services. Hybrid radio uses *RadioDNS* standards or the *Xsperi* platform²² to distribute programs and related content, providing a single interface for the best way to follow the radio content, and, for now, these services cover Europe, North America, Russia, and Australia. The concept of hybrid radio was first presented at the *WorldDMB Technical Committee* in Munich in 2008, and the first official meeting mediated by the European Broadcasting Union was held in Geneva in October 2009. Radio theorists, including Stanisław Jędrzejewski, believe that “technology is currently one of the most important determinants of radio”²³. Hybrid radio, therefore, meets all the required criteria of media convergence: it uses digital sound that requires less frequency space and offers more content, in addition to the traditional program, it offers a range of on-demand services, the same content can be shared through different channels and formats, it is available on a variety of multi-standard devices, and listeners have the option to communicate interactively. In addition to technology, the habits and needs of the audience are important for the successful convergence of radio with other media. The linear program in hybrid format does not depend on the broadcast time and location, but the listener can be connected to personalized on-demand media content from any location. This is important because, as Ana Martinoli states, “if the audience is denied what they want, they will find a way to get it elsewhere, where and when they want it.”²⁴ That is why the convergence of radio and the Internet offered the public content in various formats which, “on multiple media platforms and with the cooperation of different media industries, enabled the migration of audience anywhere in search of entertainment.”²⁵

Today, the audience expects all media to be available on one device. Radio is no longer listened to only at home, but much more on the go (car, mobile phone, iPod, tablet) and delayed. According to statistics, about three billion people listen to

²¹ See: Roger Fidler, *Mediamorphosis: Understanding New Media* (London: Sage publications, 1997), 29.

²² RadioDNS is a non-profit organization that supports hybrid radio globally and, among other things, manages Internet-based technologies that can connect hybrid radio stations to stations that provide content such as audio URL streaming. It is possible to implement similar services in Xsperi or Radioplayer VRAPI, which are more complete, but have a commercial model. More information at <https://radiodns.org/>, acc. on August 21, 2022.

²³ Stanisław Jędrzejewski, “Radio in the new media environment,” *Radio: The Resilient Medium*, ed. by Madalena Oliveira, Grażyna Stachyra, and Guy Starkey (Sunderland: Centre for Research in Media and Cultural Studies, 2014), 18.

²⁴ Ana Martinoli, “Convergence and Digitization of Media – New Roles for Audience and Media,” *Media dialogues* 4, 2 (2011): 9.

²⁵ Henry Jenkins, “Welcome to Convergence Culture,” *Confessions of an Aca-Fan (blog)*, June 2006, http://henryjenkins.org/blog/2006/06/welcome_to_convergence_culture.html, acc. on August 21, 2022.

terrestrial radio every week²⁶ and, in addition to listening to programs, many of them participate in commenting on topics. Radio stations then shape and share this content on their platforms. Hybrid radio focuses on three basic user experiences: improved search, additional engagement, and research of new content. Because it is connected to the Internet, hybrid radio takes into account the media habits of users which are obtained through metadata and which remain recorded after each activity on the Internet. Thanks to that, in addition to the linear radio program that is heard all over the world, the listener also has access to high-resolution photos as well as videos, a rich guide to the program, 'on-demand' or 'delayed' listening, information about artists and songs, song descriptions, reviews, voice control and media content personalization (the listener chooses what he/she likes to listen to, which is used by the algorithms to further personalize the content).

The criteria according to which the success of the digitization process of media is measured are coverage, price, content, cooperation, and communication. Digital radio includes costs related to media content production and distribution but also its reception. When it comes to hybrid radio, the costs of content production are changing in the organizational sector, because it requires the additional engagement of people who will fill the accompanying services with music, information, photos, video material, and texts. It is necessary to equip all these services with certain metadata, which will be pulled by the algorithm at intervals provided and made available on devices that have the option of using a hybrid radio. The broadcaster itself, depending on the amount of data that needs to be processed and adjusted to the hybrid radio, determines the number of people who will be engaged in these jobs. In any case, it must be a team of multi-specialists who also have journalistic, editorial, musical, and technical competencies, since all data must be adapted to the device on which they will be placed. For example, the length of text for hybrid radio on a smart TV and a car radio console is not the same. Internet connection and presence on the global network are already implied, so in that sense, it does not represent an additional cost for the broadcaster. When it comes to content placement, there are no increased costs for broadcasters here either, because they use the existing infrastructure for both classic broadcasting and the Internet. Costs increase when it comes to the reception because hybrid radio requires receivers that can combine FM or DAB+ signals with the Internet. Newer mobile phone models already have this feature integrated into the device, while additional investment is needed when it comes to the automotive industry, which is most interested in integrated media platforms with hybrid radio.²⁷

²⁶ "38 Staggering Radio Listening Statistics 2022," Soocial, <https://www.soocial.com/radio-listening-statistics/>, acc. on August 21, 2022.

²⁷ Audi, Volkswagen, Porsche, Mercedes, BMW are working on integrating the hybrid radio. There are currently two operational commercial services implemented in Audi and Mercedes vehicles. Mercedes' solution uses Xsperi or DTS AutoStage. Audi is developing its solution for the implementation of hybrid radio and Xsperi. Several companies are trying to position themselves on the hybrid radio market in the USA and beyond – DTS Connected Radio, Radioline, Radioplayer. Randy J. Stine, "Hybrid Radio Picks Up Momentum," Radioworld, September 2020. <https://www.radioworld.com/tech-and-gear/hybrid-radio-picks-up-momentum>, acc. on August 21, 2022.

Car manufacturers see the reasons for improving the radio content offered in new user habits – radio programs are mostly listened to in the car, not only because of the music but also because of the news and service information.²⁸ However, the costs related primarily to the Internet should be considered because video files require better bandwidth than audio and textual content. The Internet is still not free, and the price of the bandwidth and the amount of data used depend on the provider and the country. However, practice shows that, if the development of the industry is carefully planned, the economic effects may be greater than expected. This means that development must be linear and simultaneous from the broadcaster through a distributor to a marketing, sales network, and end user. It is precisely the synchronized production and distribution, as well as quality marketing campaigns that can motivate listeners to accept new technologies. For economic viability, it is necessary to connect with the industry that produces radio devices, and it is also important to legally regulate broadcasting in this format, primarily due to copyrights, and obtaining broadcasting licenses, because they currently cover terrestrial broadcasting, but not Internet broadcasting. Other important factors are reliance on well-known brands, product strategy and not platform strategy, motivation for digital listening, and lower transmission costs.²⁹ At the root of all these criteria is money. Global coverage brings a larger market for advertisers, advertising seconds are more expensive. Digitization has made both production and marketing of media content cheaper, and the Internet has become a synonym for the “new economy” which is associated with “very specific economic interests”³⁰. If the Internet gave the impression of openness, equal accessibility to all, democraticity at its beginnings, according to Lovnik, the new economy has significantly changed that position and imposed a new ideology in which there is no public sphere. Namely, he points out that potential clients have become interesting to corporations because of their “market profile”, while the once-open networks are now accessed via user accounts. Unlike traditional FM radio, whose program can be listened to free of charge and anonymously, hybrid radio works on the principles of a closed network, as it has the option of personalizing the media content, which is enabled by opening an account and adjusting the settings according to personal habits such as radio listening time intervals, favorite shows, music genres, types of information, etc. This means that it is possible to plan the costs of media content production in those areas where the algorithms recognize the most interest. The listener thus loses anonymity, but receives personalized content, voice, or music, while the radio station is able to use human and technical resources efficiently.

²⁸ The car remains the most popular location for listening to radio, cited by an average 89% of respondents, followed by 75% who listen at home and 39% who listen at work. Rosie Kendrick, “Radio Rules In-Car,” Radio DNS, November 2021, <https://radiodns.org/news-events/news/2021/11/09/radio-rules-in-car/>, acc. August 21, 2022.

²⁹ “Digital radio guide,” World Broadcasting Unions, June 2017, <https://tech.ebu.ch/docs/digitalradio/WBU%20Radio%20Technologies%20Guide.pdf>, acc. on August 21, 2022.

³⁰ Hert Lovnik, “Je li internet zamjena za nebo?” in *Moć / Mediji / &*, ed. by Jovan Čekić and Jelisaveta Blagojević, (Beograd: Fakultet za medije i komunikacije, Centar za medije i komunikacije, 2011), 365, 366.

Traditional and/or hybrid radio

Traditional radio is one-dimensional because it can only be listened to, a one-way medium – radio program addresses the audience, but the audience has very few ways to address the radio, it is mostly passive. Traditional analog radio is also a linear medium because it can be listened to in real-time and continuously, without the option to rewind the program, the program is intended for a wide audience, the means of expression used are speech, music, sound effects, and silence. On the other hand, or, better said, as an upgrade of the classic radio, thanks to the Internet, hybrid radio has been developed which is much more than traditional program broadcasting or streaming. Hybrid radio has advantages on three levels: technical, commercial, and regulatory. In technical terms, hybrid radio is an upgrade in the distribution of radio programs because it combines FM or DAB+ signal with the Internet, signal transmission costs are fixed regardless of the area covered and the number of listeners, there are no restrictions on listening as in the case of Internet radio (user account registration, subscription, etc.), frequency band or broadcasting spectrum is regulated by law and, unlike the Internet, availability of radio stations is simpler, there is less competition, and the sound quality on the frequency is protected. Also, a multimedia format, such as hybrid radio, has the ability to precisely personalize content, so, unlike traditional radio, which addresses a larger number of listeners, hybrid radio can be tailored to individual listeners.³¹ This is also achieved by creating authentic user profiles that can be synchronized with all devices which have integrated hybrid radio. As disadvantages, users cite uneven distribution of the Internet signal and its instability as well as delays in switching from the linear sound coming from different sources – FM, DAB+, or the Internet, which creates a problem in synchronizing upgraded content retrieved from the server. Also, hybrid radio receivers are not cheap, and in order for someone to have all the services that the hybrid radio offers, an additional investment and a new device are needed. The US National Association of Broadcasters (NAB) also points to a problem with URLs used in hybrid radio, primarily for security reasons.

Conclusion

Radio has entered its second century of existence. As social relations and technological processes developed, this medium adapted to current media and information practices and managed to maintain an important position in the media system. Technological acceleration began in the first decades of the 20th century when the “transfer from the letter and the book to the telephone and the radio was made – today, the spoken word is withering away before the instantaneity of the real-time image.”³² In order to retain the power of the spoken word, through the process of convergence, radio has become a multidimensional medium that uses different means of

³¹ “Broadcasters,” Radio DNS, <https://radiodns.org/introduction/broadcasters/>, acc. on August 21, 2022.

³² Paul Virilio, *Informatička bomba*, trans. by Nenad Krstić (Novi Sad: Svetovi, 2000), 73.

expression – in addition to sound, hybrid radio uses photos, videos, and text. The development of new information and media technologies, and therefore of hybrid radio, is under market pressure. Frank Webster states that the goal of corporations is to make a profit and not to use cultural and media products as a public good. In this sense, he points out, among other things, that the ability to pay will be the major criterion determining the provision of goods and services, while market criteria – i.e., whether something makes a profit or a loss – are the primary factor in deciding what is made available.³³ Three elements are important for the further development of hybrid radio: integration, harmonization, and user engagement.³⁴ In all three areas, experiments are still performed involving services that originated from the digital infrastructure. From the above, it is clear that hybrid radio is an improved version of traditional radio that makes the program available outside the territory of terrestrial coverage because when the FM or DAB+ system is lost, the program is heard thanks to streaming on the Internet. In addition, a whole range of services is available on the multimedia interface such as road conditions, weather forecasts, high-quality photos, information about the artist, shows, and news. Thanks to the data left on the Internet by the user, radio stations have access to a whole range of data which enables content personalization. The auto industry is particularly interested in hybrid radio because research shows that most drivers want to listen to the radio instead of listening to music on another audio recording medium. In addition, the Internet provides much more media content than a classic radio receiver, and one of the possibilities is voice control, which can be useful while driving. For radio stations, hybrid radio brings the benefit of opening a new channel for advertising and publicity and increasing the number of listeners who can tune in through their phones, car consoles, Hi-Fi systems, smart speakers, and any internet-enabled device with audio capabilities.³⁵ User habits are changing towards increased content personalization and availability on different platforms. So far, mobile phones and multimedia car consoles have proven to be the most suitable for hybrid radio. Admittedly, mobile phones integrate hybrid radio to a much lesser extent, although in the younger population listening to the radio is most attractive on a mobile phone (64.7 percent), while 8 out of 10 mobile listeners say that they would like to have hybrid radio pre-installed on their phone.³⁶ According to the analysis of listening habits so far, hybrid radio has a perspective for those listeners who do not listen to the radio only because of music, but also receive multimedia content on different platforms thanks to a single user account. These are mostly news on demand, information about traffic, weather, and locations. Referring to the mentioned above, further program development strategy remains the key question for the broadcaster,

³³ Webster, *Theories of the Information Society*, 268.

³⁴ “Bringing radio into the 21st Century,” European Commission, October 2020, <https://cordis.europa.eu/article/id/411708-bringing-radio-into-the-21st-century>, acc. on August 21, 2022.

³⁵ “Is anyone listening to the Radio Anymore?” CloudRadio, October 2021, <https://www.cloudrad.io/radio-listening>, acc. on August 21, 2022.

³⁶ *Universal Smartphone Radio Project*, Presentation to EBU Digital Radio Summit, February 2015, <https://tech.ebu.ch/publications/the-universal-smartphone-radio-p>, acc. on August 21, 2022.

both in terms of availability and in terms of the amount of content it offers to listeners. The main question for manufacturers of devices with integrated hybrid radio is how to encourage customers to invest in a hybrid radio receiver, while for listeners, the main issues, besides the purchase of a device with pre-installed hybrid radio, are the internet package price and the mobile data bandwidth quality. There will certainly be no shortage of content.

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