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## **Public Service Media Radio 2.0 ahead**

### **Abstract**

Public service media radio remains strong and will be a power player in the transformation of radio. The challenge will be to formulate and implement a consistent strategy amidst the uncertainty of choices.

A couple of years ago the World DMB Forum incorporated the MPEG-4 HE-AAC v2 audio codec as an additional DAB standard, and called it +DAB, creating new possibilities for digital radio planners. An improved version of DRM capable of reaching into VHF bands is also in a project phase. The introduction of new standards and the results of the Geneva conference 2006 have occurred as changes in other media are happening; terrestrial television is on track for analogue switch-over in 2012–2015; broadband usage continues to grow and stray into content areas; and new end – user devices multiply in complexity and functionality. Radio broadcasters began, by simulcasting their existing stations but soon realized the value of Internet – only as brand extension. Globally it is estimated that there are now over 500,000 Internet radios with 70 million listeners (Lonsmann, 2010). Some years forward would be very important years for digital radio and that will likely reshape its development.

The paper is able to search which possibilities are to choose for PSM radio in these circumstances in terms of transmission technology, content, and audiences behaviours.

**Keywords:** public service media, radio, new media, digital radio, web radio

### **New radio landscape**

Today, we are witnessing the mediamorphosis including two simultaneous waves: the transition from analog to digital and the transition to information technology (ICT). This applies to all operations performed adequately on the information: the collection and storage, processing and distribution. All of them are taking place now in digital technology, in terms of convergence of classical radio and television, telecommunications and IT. In other words – through a combination of attributes as well as radio and television, phone and computer.

Making the technological revolution is so profound that today we are talking about the twilight of the "old" print and electronic media and the emergence of the "new" one. The critical point in the evolution of new media is set by the Internet dissemination in the 90s of the twentieth century, because it is the Internet – a means not a medium, yet powerful information resource – a kind of essence of the new realities of technology and media.

In the radio broadcasting, there is no unique and inevitable future which can be prescribed in advance. It can, however, identify trends and tendencies, as a snapshot of a dynamic development. At this moment technology is one of the most important factors of radio development. Technology changes are accelerating with the growing use of digital technology. As EBU Digital Strategy Group II states: "Digital technology makes new ways to produce and deliver media possible, and brings the wider use of ever more sophisticated multimedia, interactivity, the option of multi-channel services, in-demand services, and the availability of different picture and sound quality options" (Public service media for the digital age, 2006: 15).

Digitalization facilitates a transition of content provision, broadcasting and media consumption. The Group has identified some of the radio development trends:

### **From analogue to digital**

Digital audio takes less frequency space and transmitter power, and allows for a wider choice of offer within the same bandwidth.

### **From flow to demand (from linear to non-linear services)**

Traditional flow radio, formatted or specific programme genres or target groups will be supplanted by a series of on-demand or near-on-demand services, where the listeners can choose the wanted programmes when they suit them.

### **From broadcasting to narrowcasting**

In order to meet the listeners' demands for free choice around the clock, broadcasters must provide a wide range of formats. The same content might be shared or versioned for different channels and outlets – or even automatically repeated in order to serve different listeners at different time slots.

### **From one-platform to multi-platform**

Radio in the future is a multiplatform phenomenon. Radio will be available on a wide range of technical devices, from racks and hi-fi's over stand alone and portables to handheld and pocket receivers. Everything digital – from television

and computers to cell phones, mobiles and PDA's, will be thus able to carry sound and radio along.

### **From one-standard to many-standard**

There will be no single, winning standard for digital radio. DAB/DMB, DRM, DVB all have their strengths and weaknesses, which will mean they need to co-exist. Manufacturers will make dual, triple and eventually multi-standard radio sets for the consumers. And the consumers will not have to navigate through a jungle of frequencies or abbreviations, as the tuners will have easy-to-navigate browsers on displays with the station brands.

### **From passive listening to active choosing**

With a broader range of programme and channel offers, and hundreds of thousands of Internet radio stations, listeners will be able to pick and choose their favourite programmes or channels, possibly aided by electronic program guides or intelligent "radio agents".

The new communications landscape with the participation of the media can be described as moving from a more vertical form, authoritarian, paternalistic attitude to the participation and dialogue of horizontal patterns. A crystallized new communication system, which sets a much wider field of information created by the increasing number of sources, is limited in no small part to a monopolistic position and changes the overall interest of national channels (TV and radio), where customers go in the direction of niche channels. The importance of large media corporations that manage universal channels was invalidated this way. However, in a reflection on the contemporary media landscape, created by new technologies, usually identified with new media technology, thus ignoring the possibility of their symbolic importance and the ability of buyers to negotiate, on decoding and understanding messages. There is a tendency to downplay the traditional media which are still important in the life of the large part of the public.

The increase in the information needs of individuals, local communities, individual communities as a consequence leads to the abandonment of an asymmetric relationship between broadcasters and audiences. The hierarchical system is characterized by the unilateral flow of information: "top - down" is replaced by a horizontal structure which respects the subjectivity of participants in the communication process, and assuming the interchangeability of their roles. It is all about activity, availability, commitment and desire for flexibility in relation to how, where and when it comes to consumption of media coverage. While in the traditional media message was delivered to the mass audience without its participation, in the case of new media it is the most important

element of interactivity and active participation in community site, "creative efficacy (called agency) consumers' sense as consumer-citizens, and members of the co-founder" involved, independent media culture "and described such neologisms as prosumers, and producers' viewers (Gorman, McLean, 2009). There are needed here to two concerns. First, the mass audience is not as passive as it is assumed in the theory of "mass society". However, in the context of new media, any statements about the involvement, interactivity and its consequences must be considered in the framework of the possible, fundamentally changing "real" user experience. Increasingly so, ordinary people, customers, transform the "only-buyers" into the content providers, publishers, broadcasters, such as bloggers, participants in forums, discussion groups, members of online communities, and even radio broadcasters and publishers, and television. Note, however, that does not appreciate the importance of the so-called media structures mainstream, the weight of professional experience to their staff, their professional skills, while alternative media and ignores media-type community, thus reinforcing a very optimistic belief about the possibilities and realities under which the participatory process in the media follows.

Admit however, that many social networking becomes the subject of choice, and many weak, variable, in fact, social relations are motivated by common interests, or lifestyle, and are built more than hierarchically. They represent a clear challenge to the conventional representation of the auditoriums, conceived as a mass, the community and basic social group. New technologies, in general, have the following properties: the use of digital recording and signal processing, interactivity, integration of different networks, and dispersal. Interactivity between users produces information feedback. This means that the broadcaster's and receiver's roles are interchangeable here, and interactivity gives you complete control over the pace, structure and content of communication. The integration of the network or networking is the integrated transmission of all program elements, such as video and audio data and metadata. Dispersion is breaking the current, existing analog technology, the relationship between content production and distribution. These two phases of development, transfer and distribution of media (text, data, image, sound) are decentralized and individualized by the new technologies. In the course of search for technology and software related to new media there was created a new quality: multimedia and hypermedia, and the space you can create, it's cyberspace, defined as a communication space, open to operating on a global scale, endowed with the ability to link to each and data transmission, computers. In addition to basic services in telecommunication networks, such as telephony, fax, widespread use of digital is that employ so-called broadband networks. access networks, which in turn, using various transmission media and signal processing techniques allow signals to

be conveyed repeatedly megabit, including the transmission of visual information such as video conferencing, multimedia e-mail, editing documents. A fixed part of the media landscape for new services on interactive multimedia, more and more individualized, such as video and audio on demand, pay television and radio, computer games, teleshopping, banking, ticket booking, educational services, medical consultations, and many others. Provision of becoming possible thanks to technological convergence and the development of broadband Internet access and standardization of network devices using IP (Internet Protocol).

Today audio is being consumed in new and different ways across a variety of platforms and devices. New listening behaviours are being formed and needs and expectations are being shaped by developments across all medium, the Internet and the consumer electronics industry. 65 million people listen to the radio 95 min/day. Three in 10 listen to the radio via Internet; one in 5 – on a MP3 player, one in 8 via a mobile phone, nearly 1/5 of radio listening is via new platforms (Konstantinova, 2009: 2).

Let's see how the modern radio uses some of these new technologies.

## Digital radio

Even in the mid 90s it seemed that the only digital technology, which determines the development of the radio transmission system will be 147. Eureka DAB would be a natural successor to FM, as well as a proven technology and solid foundations to ensure its widespread adoption.

Currently, the DAB is no longer the only such technology of audio to carry and transmit. All of them – new digital radio technologies or those which can be used by radio can be set out in four groups:

- terrestrial radio (DAB audio, DAB+, DRM, IBOC)
- terrestrial TV (DVB-T)
- mobile multimedia (DVB-H, DMB)
- systems not dedicated to radio broadcasting (satellite radio, web radio, advanced mobile systems, broadband, podcasting, hybrid systems).

Today, none of these technologies is dominant. Some of them probably will disappear, others will in future be subject to a process of convergence, creating the next generations of digital standards.

The growing number of standards is tending to outpace the ability of national regulators and broadcasters to thoroughly evaluate them and the implications for their national digitalization plans.

## Internet as the essence of new media

Internet is not unprecedented in the history of media and communications. It is not only communication superlattices, but also an extremely rich, incom-

parable to any other, global information resource. But there is something more. Thanks to the activities of users, there is being vigorously developed a new communication and information technology. It was born, as it is aptly demonstrated by K. Krzysztofek (2010), even in the circle of logic "rationalism machines". Currently, in accordance with the logic of the network, it entered its second phase of development, and remains – in the words of O'Reilly – in the circle of "architecture of participation". It is estimated that worldwide in 2010, the Internet access was ca 2 billion users, i.e. 1/3 of the world population. Generally speaking, the rise of the Internet was due to the expansion of network access, a growing number of Internet users, especially those who use broadband connections enabling transmission and reception of multimedia content. However, in the world in 2008, broadband Internet access was only 23 per 100 inhabitants. Opportunities offered by the Internet allow everyone to become content providers, and therefore all users of the Internet may become the next recipient in the chain of individuals and institutions whose activities are largely free from any regulations. But the Internet also brings risks. They can be considered in several dimensions. First, the unequal access to resources and services offered by the network. Almost in entire Africa. Internet access is Africa's population of 0.2% and 60% of all users in Africa lives in South Africa. In the Middle East, despite rapid development, Internet access in 2007 was only 17.4% (for comparison: in North America – 70%). In Asia, despite the prevalence of the Internet in China's Internet, users represent 12.4% of the population of Asia. Second, most host computers are located in the United States and Europe, where there is most Internet content. The main language of the Internet is the modern "lingua franca" – English, spoken by 380 million people or 30% of all users, but recently the number of users speaking the Chinese language has increased incredibly (about 185 million, i.e. 15% of all users). The third major threat is the production and dissemination of harmful content, easily accessible to children and adolescents. Finally, another threat to the development of the Internet remains a fact of continuous compromising network security by virus attacks, hackers, littering, such as e-mail, *via* various types of spam, etc. Efforts are being made by many companies, programming strategies and tools to combat this threat, but the ineffectiveness of these treatments can be defined as "digital Pearl Harbour". There were even ideas that it does not fight, but simply replaces the affected equipment, risking loss of data collected in previous devices.

The technological revolution that was begun by a personal computer, was based on the fact that the PC "invited" to generate a computer-related innovation, while generatively it was understood as "the ability of technology to cause an unforeseen change caused by a number of different and uncoordinated audiences". The same was true of the Internet. Both of these technologies were



generative or generate other technologies and applications. In this sense, it fostered the development of other communications and information technology. The Internet has become not only a way of building the network, but due to the competition of large network operators like AOL or Comp.Serve, efficient communications network, and vast information resource, serving very different purposes and functions. New media remain an arena for the struggle between the owners and operators of communications networks and the Internet, and various specialized applications of information technology and the main functions of a personal computer. In this battle victorious are, as it seems, the Internet and personal computer, because these two technologies working together proved to be generative, that is flexible enough and developmental to encourage the development of other technologies and innovation. In this process – says J. Zittrain – “there is no end, just as there is no end to the Internet” (2008: 34). Therefore, any discussions on the regulation of the Internet, on the other side of its business model, have little meaning. They are still at new applications, new tools, also created by amateurs (partly absorbed by a professional company), and all treatments of the regulatory authorities to this medium – non-media are always late and remain in the sphere of “wishful thinking”.

The Internet is currently in the phase after a period of stabilization, and it becomes a generic term generativity, i.e. the phenomenon or process in which any device, tool or service has possibilities for development. The concept in this area are not only opportunities and development opportunities, but their opposition – a number of disadvantages and drawbacks, which hamper development. It is so-called tools and services “related”, i.e. it is not enough that they do not generate new solutions and innovations, but in addition they tend to momentary dominance. All this leads to restrictions on the development of such innovations and technological solutions that facilitate the introduction of some form of inspection and supervision. What’s more, equipment and services do not generate new solutions and even help to regulate the Internet. Bring to the stage where regulation goes beyond the strict regulatory issues, instead of allowing regulators to implement such regulations, which allow to freely use new technologies. Thus, generative systems are most at risk, paradoxically, due to their own successes, and the cause of these threats is the lack of understanding or a disregard of certain axiological standards both for new users and those who are not involved in the system and can instantly find the safety of their interests.

## Web 2.0

The second wave of the technological change has enabled creation of social networking websites, and big projects arranged by the users and based on content created by them. This phenomenon is socially beneficial in the sense that

it encourages the involvement and cooperation. There are even opinions that can become a challenge for the major media monopoly on the production, binding and distribution of the cultural heritage. However, in addition to revealing the advantages or disadvantages. While on the one hand the message created by users can be a challenge for mainstream media, on the other hand, these media have learned to exploit this phenomenon for their own benefit, as a source of free content. Large media companies unrelated to encourage media professionals and experts to create new content and use the existing media in new ways (the BBC, in 2005 the band formed for user-generated material, in 2006, CNN launched to enable the service to send your iReport materials; Fox News Channel uses iReport; and Sky News invites viewers to supply their photos and videos). In this context, there are broader questions related to intellectual property and protection of the creators of the Internet media. The "network" makes them independent of the entity to control access to information and knowledge, but of course media corporations try to control the content and their distribution, stopping or delaying development of culture and technology. However, various technical barriers, economic and political lose their importance, and uncontrollable social content creation networks calls other social processes, the most important are: the organizational revolution, the crisis of authority and old institutions, and nomadic mobility, migration network. So people, Internet users not only have the right, indeed an obligation, but also prevent appropriation of the public nature of the Internet. One such action is inspired by the concept of free software Creative Commons license. Generally speaking, this concept allows consumers content: their free transfer, copying and use of derivative works, provided they maintain the same, and what's more, non-commercial distribution method created in this way, content and conduct of information about the author of the work. It's enough – claims P. Gawrysiak – "to develop mechanisms that can operate a global repository of knowledge – ideas, published" under protection "Creative Commons licenses are available to all and thus can become a haven of new knowledge" (Gawrysiak 2010: 99).

The very notion of "Web 2.0" first appeared in 2004 as a slogan for the company's Media Live International organized conferences for various media companies. For Web 2.0 – if it is not just another way of using the network – the most important is interactivity and user involvement, the sharing of data and content, common platform, the potential for innovative development through the exchange within the network community and support of the activities of the software. Examples are blogs, forums, tools, wikis, other open source projects and the release of source code. API (Application Programming Interface) allows you to create hybrid applications known as mashups. It's also another way of participation in culture up to date under the influence of new technologies, especially



the Internet, but also under the influence of a phenomenon that H. Jenkins describes as pop cosmopolitanism. It is also possible to develop new forms of culture, which is the struggle to attract new customers changing old ones. These achievements can be considered as the next stage of development of the Internet, which has a growing user-generated content (called user-generated content), fast-growing social networking sites like MySpace, Facebook, Twitter, Bebo, and easy ways to receive individualized Internet content (such as RSS – Really Simple Syndication).

## **Blogs**

Dynamic growth and popularity of blogs and social networking sites is one aspect of the social use of Web 2.0 that emerged through the development of infrastructure, faster access to the network and the ever increasing number of computers and other equipment to facilitate direct contact, such as cell phones and PDAs. Blogs have emerged in the late 90s. This term is a shortened form of the English word web log, meaning regularly replenished, an online journal or diary where the newest entries appear at the top (in other words, your elbow in order from newest to oldest).

The first blogs consisted mainly of giving links to other interesting “blogger” sites – thus constituted a register (called log) great parties – and required some technical skills, including knowledge of HTML. Soon, the software was created to facilitate the creation and blogging, and the form itself has evolved, giving rise to such formats as a photoblog, video blog (vlog), mobile blog (blog written by a mobile phone or PDA, from the English mobile phone – cell phone, MP3blog (blog from music) and microblog (with very short entries). Another feature of blogs is that they tend to interact (most of the comments makes it possible), and arouse a sense of belonging to a community (encouraging people with similar interests for subsequent visits).

## **Social networking**

Equally rapid increase in popularity as blogs was experienced by the social networking sites. The largest number of users of these services are young people – using the phrase of M. Prensky – “digital natives”. According to data presented in Wikipedia, in January 2008 there were 97 such sites, most popular of which can boast unusually high number of registered users. Popular in the United States, Great Britain and Australia, MySpace had 217 million registered users, popular in Brazil and India, Orkut had 67 million, Facebook – 75 million, Friendster – 50 million, hi5 – 50 million, and Bebo – 40 million users.

Users of social networking sites give them their personal details and create their own circles of friends. For example, users create personal MySpace profiles that let you customize them according to their preference and where you can upload different types of materials (photos, music, videos), create a blog, and subscribe to different groups. Musicians are on their profiles to present their songs in mp3 format and share them with others. Users are able to access *via* mobile phones (this service offer such operators as AT & T and Vodafone), a talk by an internal instant messaging and tracking new entries *via* RSS feeds.

First-ever social terrestrial radio stations to launch completely powered by the social web will be Jelli in Las Vegas. The listeners will be able to choose in real time every song that plays on the air via Jelli's website or Jelli's free iPhone app. The listeners (users) can vote for songs, share songs on Twitter and Facebook, discuss what is playing with the other community members and use two unique Jelli power-ups, a Rocket and a Bomb, to further influence what will play next. In addition, users will be able to access a much broader selection of music than is typical on the radio, and connect with other music fans being managed special nightly segments.

Wikipedia is, of course, the crowning example of the social networking sites. Its phenomenon lies in the fact that the encyclopaedia built tools based on "wiki" for the joint preparation and editing of passwords by users. This is an example of a change in the creation of the media, where most of the work is done not by recognized media organizations, but the users, which is attributed to the creativity and commitment based on the example of Wikipedia – the site, which has managed to keep the generative, evolving nature thanks *inter alia* to internal harmonization boundaries and external control mechanisms – you can formulate some rules that favour the success of a given technology or service and its recognition as generative:

- information technology ecosystem functions best with generative technology as its basic element,
- generative technology initiates a blueprint for action both inside and outside the information technology ecosystem,
- proponents of generative systems ignore the drawbacks of these systems and are successful owing to, for example, said Wikipedia.

## The exchange of recorded music (P2P)

An increasingly popular and effective, especially in the exchange of music files between fans of the music on the network becomes peer to peer exchange of music files. The exchange of music files is primarily associated with the introduction of MP3 as a file format that provides optimization of sound quality, and

as a portable, personalized electronic device. USB flash memory (using small headphones) is powered by batteries, which also provide copying files on a personal computer.

Conditions of P2P registration determined by the editorial units and suppliers are defined more precisely than those contained in the radio network (web-radio). First of all, there is a standard for recording a computer through its IP number. Furthermore, if P2P need to enter your name and password is not so frequent. As a result, the content is limited to the inner circle of people. Safe places are, therefore, a kind of privilege of acting against fraud or by blocking access for users of containment from the fees. In P2P one can record the user's individual preferences, and sometimes offer him the music menu tailored to those preferences. He did it in such a way as Amazon.com, selling books in the mail order system. Replacing the music is basically free. Attempts at its transformation in commercial transactions came later and are generally successful.

## Podcasting

The fee for the purchase of music gave rise to another technology – podcasting. Podcasting is a form of audio content distribution, periodically received by the computer on a subscription basis (for a fee), or attachable to the existing list of podcasts, thanks to special software called feeds and shared, as in the case of public broadcasting, free of charge.

After this first phase, about 2004 podcasting as a new technology primarily used the radio stations in order to provide users with some free radio. This technology will also apply various cultural and political organizations to deliver specific content to its members and supporters.

Radio stations, promoting the simulcasting, adapt podcasting, maintaining the current trend of development to exceed the limits of time and space. In other words, they form on-linear services, going beyond the limited effects of a traditional antenna and schedule. In this case, podcasting (even if today we are talking about more than the audience of subscribers) is a way to extend the coverage of the impact of the station and the strengthening of the commitment and loyalty of the listeners. It also allows students to mix genres and receive them in a mobile way of iPods and similar devices. But for now, podcasting can offer the ultimate mode of consumption of the radio. In the years 2004–2005, most European broadcasters began podcasting. In 2007 Radio France reported 350,000 loaded in the week, RAI – 200,000 (*Public radio in Europe*, 2007: 24–25). This activity includes especially young listeners, who are also active users of MP3 players. Most podcasts are offered by public stations for free, and still focus on the speech based programs.

Is podcasting the future of radio? Is there a missing element in the relationship between radio and the network which could not be filled by the Internet radio stations? Is the technology really revolutionary, or just a culturally passing trend? And in the end, is podcasting a more democratic system of the media means or just another tool to be utilized by the international music industry?

On the basis of only several years of experience and observation we can now attempt to give at least cautious response to the last two questions. Currently, podcasting is not yet an effective means of developing democracy. However, because it is valued and used by the record industry and radio stations and by political and cultural organizations, it is the largest part of their promotion and strengthening ties with listeners, supporters and consumers (e.g. as a form of subscription).

## Conclusions

As I've shown above, today's audio is being consumed in new and different ways across a variety of platforms and devices. There was clearly demonstrated the strong and continued belief in traditional strengths of radio: mobility, easy access, real-time broadcasts, integration with the community, personalities, entertainment, traditional journalistic and artistic audio programming. The challenge is to transpose these strengths and unique attributes into the new media environment.

And the threat to radio is that other media and new devices can potentially substitute some of these areas. The threat may not be immediate: for example, in Europe radio consumption through mobile phones remains marginal and the rise in Internet radio listening has not been shown to significantly diminish broadcast radio consumption. On the other hand, many listeners' first experience with digital-only radio channels has been through digital TV platforms. The way people are satisfying their needs is changing and they naturally seek the easiest and least costly alternatives to meet them.

Few doubt that radio will persist as a medium. Certainly other media will become radio-like in certain respects (e.g. newspapers) and it is also inevitable that radio will exhibit characteristics of other media (visual inserts) but the distinct and defining features of radio will likely remain.

PSM radio digital and Internet strategies have been driven by their culture of innovation and technical progress. With rare exceptions, public service radio broadcasters have been the driving force for digitalization and cyberspace from technical testing to content provision, to marketing and promoting the platforms. Perhaps most importantly, PSMs are charged with responsibility to provide the benefits of digitalization to citizens. They must act as a social force to

extend coverage and services to social groups or regions that purely advertising-funded radio would tend to neglect, implying higher costs for PSM radio entities. Hence, many countries must first create the market before commercial operators will join them. Except for the UK, Europe's private sector broadcasters have generally lagged behind public broadcasters in commitments to digital broadcasting. Outside a few countries, again the UK, commercial radio has been reluctant to move towards digitalization. From the point of view of shareholder value this is probably the correct attitude. In the short-term digital radio requires greater investment without revenue opportunities. As the EBU formulated, the challenges for public radio broadcasters in the near future will be: "to support open standards, secure provision of adequate spectrum, secure PSM's free access to digital platforms, secure digital content rights including music rights, provide distinct and competitive content on all platforms, increase availability of programmes in a convenient form, and create new forms of intriguing, innovative, involving and interactive radio formats" (*Public radio in Europe*, 2007: 196).

The environment for media delivery is changing, and radio broadcasters need to understand, adapt, and respond to these changes. The fundamental public service mission for radio broadcasters will not change, but the means of providing it must follow the environment. Technology today holds out its hand and offers a large range of options. Radio broadcasters must grasp those which will best serve the public service mission. The success of PSM radio in the competitive digital environment depends on whether they are able to provide the content people want on convenient platforms in an accessible, customized and easy-to-navigate way.

## References

- Gawrysiak, P. (2010), *Wolne idee kontra "świat copyright"*, In: S. Jędrzejewski, P. Francuz (eds.), *New Media and Visual Communication*, KUL Publisher: Lublin.
- Gorman, L., McLean, D. (2009), *Media and Society into the 21st Century*, Wiley-Blackwell: London.
- Konstantinova, R. (2009), *Radio content on the web*, PP presentation in ECREA Radio Conference Limassol, 14 October.
- Krzysztofek, K. (2010), *Internet uspołeczniony. Web 2.0 jako zmiana kulturowa*, in: S. Jędrzejewski, P. Francuz (eds.), *New media and visual communication*, KUL Publisher: Lublin.
- List of social networking websites, <http://en.wikipedia.org/wiki/> (17.03.2008; 23.04. 2008).
- Lonsmann, L. (2010), *Radio Future*, Denmark Radio: Copenhagen.
- Prensky, M. (2001), *Digital natives, digital immigrants*, Horizon MCB University Press, vol. 9, no 5.
- Public Radio in Europe* (2007), SIS EBU: Geneva.

*Public Service Media for the Digital Age* (2006), EBU, Geneva.

O'Reilly, T., *What is Web 2.0\_Design Patterns and Business Models for the Next Generation of Software*, <http://www.oreilly.com>

Zittrain, J. (2008), *The Future of Internet and How to Stop It*, Yale University Press: London.