

UNIVERSITY OF TAMPERE

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NEW FORMS OF RADIO IN EUROPE AND IN FINLAND

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The aim of this Master's Thesis is to map out, what new and emerging technological advances are made in radio in Europe, what options are there, whether and how it is going to evolve and if this evolution may affect the listening experience and if it will, how. In addition to the technology itself, the technological process is an issue of both politics and economics. From the technological point of view, the study focuses in a limited set of the main new forms of radio in Europe: the digital radios, radio on the Internet and the hybrid radio formats. The predominant debate related to radio's technological process in Europe concerns the radio digitalisation project and whether digital radio format DAB (Digital audio broadcasting) will replace the analogue FM radio network.

The theoretical framework of this study lies in the historical context of new mass media technologies and their diffusion to the society. The future of the radio as a broadcasting technology can be mirrored to its own history but also to several other broadcasting technologies and the socio-economical and political impacts of their introduction and diffusion to the mass media consumption. Also, recent studies and news articles concerning the current state of radio's technological process are an important part of creating a thorough image of how radio is evolving in each of the focus countries.

The methodology of this study is a simplified version of the Delphi method commonly associated to the future studies: The study includes interviews with six experts from different European countries from specific different areas in order to cover all the necessary aspects radio's current state and possible futures. The focus countries represented in the study are the Czech Republic, Finland, France, Norway, Switzerland and the United Kingdom, all with very different paths when it comes to the evolution of the radio.

The findings of the study suggest that out of the six focus countries, five are all on their path to radio digitalisation. Norway is the first one to complete the shutdown of its FM network by the end of 2017. The Norwegian process is observed with anticipation by the countries still in earlier stages of the digitalisation. Finland is the only country within the group that has no plans when it comes to digital radio.

The future of the radio in Europe is believed to be digital but also hybrid as internet-related services and features are introduced in various forms to the radio audiences. The Internet offers an additional service platform but, according to the experts interviewed, is not going to replace the traditional forms of radio. Whether the analogue radio will be completely replaced by the digital radio is still uncertain. It will however not happen before the 2030s.

## **NEW FORMS OF RADIO IN EUROPE AND IN FINLAND**

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## **1. Introduction: The 21st century evolution of radio in Europe**

Why is the radio still here? If earlier predictions had actually been realized, radio as a form of broadcasting would have died at least twice already, slain first by the advent of television then by the Internet. Regardless of the changes in broadcasting media and the world around it, radio has remained seemingly unchanged, though its position in the mediasphere has undergone transitions.

It was not until the very end of the 20<sup>th</sup> century when the actual form of the radio began to change. With the rise of the Internet, on-demand content and digitisation, new ways to listen to the radio have emerged. The ubiquitous analogue radio no longer seems to fulfil all the requirements of its audience.

In Europe, the digitisation boom of the 2000s also affected the world of the radio, and a transition from analogue to digital did indeed take place in many countries. Digital Audio Broadcasting or DAB is currently in use at least in some form in 43 different countries. Norway, the paramount pioneer in radio digitisation, is shutting down its FM network in 2017, while the runners-up Great Britain and Denmark have also heavily invested in digital radio. In comparison, Finland, for example, has completely forsaken the digital radio altogether without ever even introducing it to the public as such. Finland remains the only Nordic country not to have any DAB broadcasts. (Media Trends in the Nordic Countries 2015)

With the aid of the Internet, from the early 2000s onwards the radio programme is no longer tied to the broadcasting schedule. On-demand content has become widely available, and the term “podcast” has established itself as an mp3 format radio programme, downloadable via the Internet.

Still, not even the "timeless radio transmission" has replaced the traditional transmission, but rather it has become an accessory, a new way to distribute content that is produced primarily for the radio.

Services and applications such as the BBC iPlayer have blurred the boundaries between the forms and formats of radio. The same three-hour-long program, which

came in the morning on the analogue radio and simultaneously as a web stream can later that same day be found in its entirety online, and the best parts of it can even be downloaded to a device of one's choosing.

For clarification, it is also good to emphasise the differences between certain terms. In this study, when describing new *forms* of radio, I primarily refer to the different forms of radio content, for example the digital or the analogue form of radio. Formats on the other hand have in most cases more to do with the technical aspects such as the mp3 audio file format. A technical standard represents an established norm or requirement in regard to the different forms of technical radio systems such as the digital radio standard DAB or Digital audio broadcasting.

## 1.1 Background

My master's thesis focuses on the new forms and technical standards of radio in Europe and in Finland. Previously I have covered the subject briefly from the Finnish and global perspective in my bachelor's thesis *Radion uudet muodot Suomessa ja maailmalla* or "New forms of radio in Finland and around the world" (Mervaala 2015A), for which I did an extensive exploratory work specifically on the technical formats and standards. Additionally, findings from my bachelor's thesis in computer science *Podcastin nykytila ja tulevaisuus Suomessa* or "The current state and future of podcast in Finland" (Mervaala 2012) are also present. These findings are the starting point of my master's study.

I also have experience on the subject on the creator's side, having produced and hosted various podcasts and radio shows since 2008; most recently producing the podcast on climate change from a Finnish perspective *Hyvän sään aikana*<sup>1</sup> or "Before the Storm" as part of the social media campaign of the long-form journalism book of the same name and topic<sup>2</sup>.

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<sup>1</sup> Hyvän sään aikana podcast is available on Soundcloud and iTunes.

<sup>2</sup> Hyvän sään aikana. Mitä Suomi tekee, kun ilmasto muuttaa kaiken. Into Kustannus 2017. A long-form journalism book project on climate change from the Finnish perspective.

<https://intokustannus.fi/kirja/hyvan-saan-aikana-mita-suomi-tekee-kun-ilmasto-muuttaa-kaiken/>

## 1.2 Objective of the study and defining the subject

As a future study of sorts, my study's objective is to figure out where radio is going in Europe, whether and how it is going to evolve and if this evolution may affect the listening experience and if it will, how. The digitalisation process and indeed any form of technological process is an issue of both politics and economics. Therefore, I am also interested in figuring out the mechanics of decisions such as investing in the radio digitalisation project.

For the study I have interviewed six experts from different European countries from specific different areas in order to cover all the necessary aspects of radio's current state and possible futures. The focus countries represented are the Czech Republic, Finland, France, Norway, Switzerland and the United Kingdom.

Even though the main purpose of the study is to find out the general direction of radio's evolution in Europe, my study will include a more in-depth look on Finland where the radio digitalisation project has not progressed since the mid-2000s.

The covered forms in this study will be digital forms of radio such as DAB/DAB + and DRM, Internet-based forms of radio such as streaming, radio-on-demand and podcast as well as hybrid forms including RadioDNS. I will introduce the technical formats and standards covered in a streamlined, but detailed enough fashion, to make referring to them as understandable as possible.

As the introduction of new technical formats has brought to the listener even more opportunities to listen to the radio and radio programmes, I will also make a clear distinction between listening to a radio broadcast, a predetermined schedule, and listening to a radio programme, both scheduled broadcast and on-demand *and* streamable content.

In addition, I will also reflect on the relation of radio and the emerging subscription-based radio-like services such as Spotify and Apple Music and other possible future forms of listening.



### **1.3 Research questions and hypotheses**

My main research question for the study is: How is the roadmap for the future forms of radio formed in Europe for the following ten years?

Related to the main question, I will try to more specifically find out what could be the reasons for radio in the select countries to remain analogue or become digital or hybrid. Additionally, I intend to find out what are the main arguments for or against radio digitalisation in the select countries.

With these questions I plan to cover the current digitalisation processes of the radio that are occurring in many countries around Europe but also the emergence of Internet-related services, hybrid radio and also the future state of the analogue FM radio.

Based on my previous studies, my original hypotheses for the future of the radio in Europe is that the radio is eventually heading towards a hybrid form combining elements of the traditional analogue radio with the digital and internet-based services, possibilities and features. Though the destination is set for digitalisation, the countries in focus have had and will continue to have a different, disunited paths in radio development.

## **2 Historical framework**

In this chapter I will reflect on some thoughts of introducing new technology to the world and the mass media audience from a historical point of view, scepticism related to new innovations and how these phenomena relate to developing and introducing the new forms of radio. My primary selection of sources for this chapter are the following works:

*Mediamorphosis: Understanding New Media (1997)* by Roger Fidler, *The Victorian Internet: The Remarkable Story of the Telegraph and the Nineteenth Century's On-Line Pioneers (1998)* by Tom Standage, *Media Technology and Society: A History: From the Telegraph to the Internet* by Brian Winston, *Web Radio* by Chris Priestman

(2002), *When Old Technologies Were New* (1990) by Carolyn Marvin and *Radio in the Digital Age* by Andrew Dubber (2013).

## **2.1 Introducing the new – scepticism in new technology**

As the topic of this thesis is the new forms of radio, some of the forms including changes in the ways the radio content can be consumed by the users, it is perhaps well-founded to revisit some previous evolutionary steps in the mass communication technology.

The new has always been met with both excitement and scepticism and not always without a reason. Each time a new media technology is introduced there has always been a perceived threat to the current forms of media. Photography was supposed to mean the end of painting, film was supposed to end the text-based storytelling, radio was supposed to replace newspapers and television was supposed to be the end of both film and radio. (Priestman 2002, 3)

The digital revolution of the radio is still faced with numerous problems within the European mediasphere even though the experts of the field and the radio industry seem to be congruently in favour of the arguably inevitable switchover from the analogue to the digital.

As with the new forms of radio such as the podcast or the hybrid RadioDNS, it is often the experts, entrepreneurs and tech enthusiasts who first adapt and see the potential in the new technology. The general public may never adapt every single new form of radio; some are bound to die off due to the competitive market or not reaching the critical mass of audience.

Carolyn Marvin, the author of the 1990 book *When Old Technologies Were New*, describes the environment where the new media was emerging at the end of the 19<sup>th</sup> century thusly:

Changes in the functional capabilities of new media of communication were a matter of interested discussion by electrical scientists, engineers, entrepreneurs, and camp followers. Suggestions that the future of these devices lay in the organization of public intelligence systems to promote cultural harmony and perfection by displaying it to one and all were sympathetically received. With new communications techniques, the idealized world of technologists would be extended automatically to the less fortunate periphery—less fortunate because it was at the periphery. (Marvin 1990, p. 192)

It is in no way surprising that these elements are still present in modern technological development. Also, the rather banal yet unavoidable concept of standing on top of the giants has always been a part of progress.

In his book *Mediamorphosis: Understanding New Media* Roger F. Fidler compares evolving technologies to the evolution of species. According to him, successful forms of new media, just as new species, do not emerge spontaneously from nowhere.

*“They have all required links in the past.”* Fidler states that the new media does not emerge independently and spontaneously out of nothing but rather gradually from the metamorphosis of old media. *“And that when newer forms of communication media emerge, the older forms usually do not die – they continue to evolve and adapt”*. This process he calls the mediamorphosis – not so much of a theory but an unified way of thinking about the technological evolution of communication media.

(Fidler 1997, p. 17–25)

Fidler also introduces in his book the concept of the 30-year rule. He credits this term to a “new media forecaster” Paul Saffo, a former director at the Institute for the Future in Menlo Park, California, who thoroughly explained his concept in a 1992 edition of the *Design World* magazine.

According to Saffo it has taken an average of 30 years for new ideas to “fully seep into a culture”. The slow emergence of new technologies seems obvious perceived from a long enough distance. According to Saffo the slowness of change is the rule rather than the exception and for a new technology to reach success it may take more time than “anyone is ever prepared to admit”. The pace may seem faster at the moment, but it does not mean individual technologies are accelerating at a faster rate.

*“More technologies are coming up at the same time. It is the unexpected cross-impact of maturing technologies that creates this powerful acceleration that we all feel.”*

(Saffo 1992, p. 23)

The three decades it takes for an idea to immerse into culture can be divided into typical stages. According to Saffo the first decade is full of excitement and puzzlement, but the idea does not still penetrate the society. The second decade deals with a lot of flux and the product’s penetration to the society is just beginning. During the third decade the technology has already become rather mundane and standard – everyone seems to have access to it already.

(Saffo 1992)

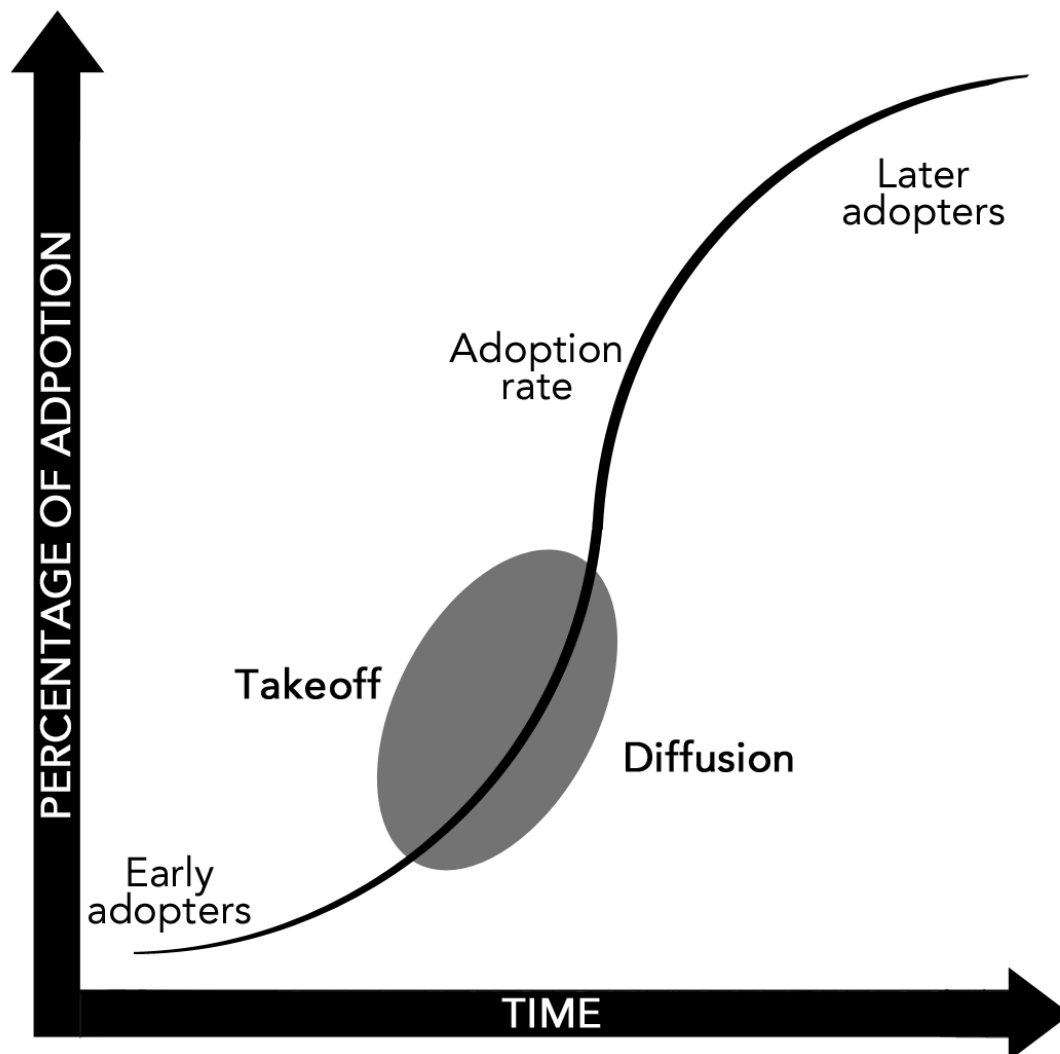
The 30-year-rule is not foolproof and is already almost 30 years old itself, but it can be used to reflect on the introduction and emergence of new technologies even in 2017. Saffo however warns us not to become afflicted by *technomyopia*, a phenomenon that causes us to overestimate the potential short-term impacts of a new technology. If a new technology does not at first immediately meet the high requirements set to it, we then often underestimate the long-term implications. Saffo’s thoughts are partly based on the work of media scholar Everett Rogers. His diffusion theory introduces five attributes of innovations characteristic for ones that are adopted and implemented within a society. The five attributes are: (1) relative advantage, (2) compatibility, (3) complexity, (4) reliability and (5) observability.

Fidler exemplifies the five attributes with cellular telephones. The cellular phones offer obvious relative advantage over the wired telephones in mobility and efficiency of use. Their compatibility with the established telephone networks and dialing systems makes them easy to use and their level of complexity is generally quite low. By the end of the 1990s they had also become very reliable with enhancements made to both the devices and the networks. Out of the five, observability seems the most abstract attribute meaning the general exposure of the technology.

In Fidler’s example mainstream media in the 1980’s helped to inform and excite people about the innovation, but the biggest influence for people has been to see early adopters and other people using the new device in their everyday lives ultimately

leading people to change their attitudes about their own needs to adopt the technology. Early adopters perceived to be very important in making the new technology break through to the critical mass delivering a sense of familiarity and trust towards the technology and ideally the initial thrust needed to arrive at a point of take-off.

According to Rogers's research, the diffusion curves (see Graph 1) for new ideas are S-shaped. With a steadily growing mass of early adopters the rate of adoption is slow at first. As the product or service has diffused into 10 to 25 percent of its potential market, the rate of adoption starts accelerating rapidly. (see Fidler 1997, p. 12–16)



Graph 2.1 Adoption curve and diffusion according to Everett's Diffusion theory (Fidler 1997, p. 15)

According to Fidler, the diffusion theory however only partially explains why a new media technology would diffuse into the general consumer market. While early

adopters can and often do encourage a larger mass of consumers to try the innovation, they alone “*have not been shown to provide the energy needed for rapid acceleration*”. (Fidler 1997, p. 17–25)

### 2.1.1 The telegraph

Before the wireless revolution there was the wired revolution of the telegraph. An idea of an electrostatic telegraph first appeared in 1753 via a suggestion by an anonymous writer in the Scots Magazine. The idea took time to grow and develop in the minds of numerous experimenters but by the end of the 19<sup>th</sup> century the world had become for the first time interconnected. The vast electronic telegraph network provided a way to communicate from one side of the globe to the other in almost real-time. The then-new instant messaging changed the way of delivering new information in business, politics and also in personal messaging. The idea of creating such a network utilising under-water transatlantic cables however initially faced plenty of scrutiny, scepticism and disbelief.

In his 1998 book *The Victorian Internet: The Remarkable Story of the Telegraph and the Nineteenth Century's On-Line Pioneers*, Tom Standage describes the atmosphere the plan for such a far-reaching network came to be:

...as much as we regard time machines or interstellar travel today, in the 1850s it was generally regarded as something that was very unlikely ever to come to pass, though it would certainly have its uses if it did. The difficulties facing a transatlantic were obvious. ‘Fancy a shark or a swordfish transfixing his fins upon the insulated wires in the middle, perhaps, of the Atlantic interrupting the magic communication for months’, wrote one sceptic. What is to be done against the tides when they deposit their floating debris of wrecks of human bodies? Even supposing you could place your wires at the lowest depth ever reached by plumb line would your wires, even then, be secure? (Standage 1998, p. 74–75)

The scepticism was not unfounded. The first ever cable across the Atlantic Ocean came to be in 1858. It was costly and it functioned for only three weeks. Though the Atlantic Telegraph Company and the project’s main financier Cyrus West Field lacked the expertise to commission a longer-lasting cable, it was the first of its kind to function in practice. On August 16<sup>th</sup> 1858 the first official telegram sent via this cable was a congratulation letter from Queen Victoria of the United Kingdom to James

Buchanan, the President of the United States. The quality and the transmission speed of the first cable quickly declined to the level of unusability and then was destroyed in September when an excessive voltage was applied to the cable in order to achieve faster transmission. After the disastrous first attempt the following cables were designed by experts and proved to be more durable.

The global telegraph network was hoped to bring peace throughout the Earth. The idealist vision suggested that if all of mankind would be able to communicate with each other without any significant delays, there would be no need for any conflict.

Unfortunately the social impact of the global telegraph network did not turn out to be so straightforward. Better communication does not necessarily lead to a wider understanding of other points of view. The potential of new technologies to change things for the better is invariably overstated while the ways in which they will make things worse are usually unforeseen.  
(Standage 1998, p. 83–104)

As is the case with the modern Internet scams, the new technology gave way to different methods of cheating and hacking in the Victorian world of the telegraph. Those who were willing to were able to cheat the system not yet capable of preventing taking advantage of a new mean of communication. Though in retrospect the misuses of telegraph seem rather benign when compared to the modern cyber-threats, the criminal usage of the telegraph in the stock market or gambling was a serious issue at the time. Hence, the security of the telegraph became quickly an important factor in the communication with ciphers and code implemented in practically all secretive messaging. (Standage 1998, p. 105–109)

There is nothing wrong with healthy scepticism regarding the costs, usability and security concerning any new forms of communications and media. The series of inventions and innovation to achieve the full potential of the telegraph took little over a century after which it was replaced almost completely during a single century. The peak year of the telegraph was 1930, when 211 million telegrams were exchanged in the United States. The last telegram was sent in 2009. (Kovarik 2011, p. 208)

The wireless transmissions and the telephone could not have, however, evolved as such without the world of communication first evolving to the state ready to accept

such revolutionising innovations. With the telegraph, Samuel Morse's prediction from February 15<sup>th</sup> 1838 had become reality:

*“It would not be long before the whole surface of this country would be channelled for those nerves which are to diffuse, with the speed of thought, a knowledge or all that is occurring throughout the land, making, in fact, one neighbourhood of the whole country”*

As Standage puts it, the telegraph lives on within the communications technologies that have subsequently built upon its foundations: the telephone, the fax machine, and, more recently, the Internet (Standage 1998, p. 205). It is therefore one of the best examples of a mediamorphosis process spanning over three centuries.

### **2.1.2 The radio**

Radio has truly been a revolutionary medium and, as with the telegraph, it was predicted to provide mankind aid of exceedingly absurd proportions. As Priestman (2002, p. 10) puts it, radio was thought to *“be much more than a gadget for mere diversion or entertainment; it would be a force for good, for liberation, for unification and democratization.”* Some claimed it was like discovering a new continent. Some even believed radio was thought to have a fertilising effect that would help speed up crops in fields. Media theorist Marshall McLuhan commented the radio to have a “re-tribalising” effect, creating an electronic return to oral culture and representing a departure from literacy. It truly was greeted with a sense of real expectation. In its first century radio became a part of our everyday lives being available practically everywhere and to keep us company when we were doing other things in situations where video would be too distracting. (Kovarik 2011, p. 210–235)

According to professor Brian Winston of the University of Lincoln, the radio is the clearest example in these histories of a machine already in existence – ‘invented’ – but not recognised as such. (Winston 1998, p. 67). The invention of radio was a slow process involving, as many inventions do, various scientists from James Clerk Maxwell to Heinrich Rudolf Hertz, from Alexander Popov to Guglielmo Marconi. Indeed, originally there was never a set plan to develop radio into a broadcasting



medium. Yet, by the end of the 19<sup>th</sup> century the invention was ready to start the wireless revolution.

Though advancements were made, radio did not reach its full potential for a while. The wireless telegraphy had awed the world with the possibility of sending telegraph messages from ship to shore and back. Innovations and improvements were made public with demonstrations such as Nikola Tesla's display of a radio-controlled boat in Madison Square Garden in 1898. The first ever transmission of speech by radio was demonstrated by the Canadian-born inventor Reginald Aubrey Fessenden in 1900. Six years later he also conducted the first two-way radiotelegraphic communication across the Atlantic Ocean in 1906. The new era of broadcasting as a new mass media still had to wait for over decade.

*"It must not be forgotten that, when the receiver market got off the ground, radio had been delayed for at least a decade, given that the technology was available by 1907 and the first 'broadcasts' did not take place until 1919. Only four of these years can be accounted for by the war",* Winston writes. Though improvements were made on the radio during the First World War, such as the appliance of the first vacuum tubes to the radio transmitters and receivers, a patent war over the valve and a dispute considering its "inventor" further prolonged start of larger scale radio broadcasting. (Winston 1998, p. 78)

In the process of becoming a mass medium, radio had to wade through drastic global change including world war and reconstruction, widespread industrialization and rapidly accelerating urbanization and the start of the Age of Consumerism, individualism and the fragmentation of audiences. (Priestman 2002, 14)

According to Hans-Jürgen Kleinsteuber (1943–2012), a renowned professor of political science and journalism at the University of Hamburg, the evolution of radio broadcasting can be seen to have happened in three distinct phases. (Kleinsteuber 2007, p. 224–225)

The first phase of the radio as a mass medium began in the early 1920s when radio stations went on air based in the amplitude modulation transmission (AM). As with

all forms of new media, the radio revolution became soon also a political issue. The programming was organised by the national governments or public organisations. In addition to the content of radio programmes being regulated, the arrival of the new medium also caused reactions in the competing forms of media.

For instance, as radio had become a mass medium in the 1920s in the United States, the American Newspaper Publishers Association (ANPA) wished to restrict radio's access to news. Being the owners of the wire services, they were able to simply close off the easiest source. The hostility of the ANPA diminished in the mid-1930s as they realized the new medium was not going to wipe out the old.

(Winston 1998, p. 86)

Not surprisingly there was also competition already inside the technology of the radio even in the 1920s. Since the first widespread radio system relied on the AM an introduction of the frequency modulation (FM) based format, was seen as a threat by the AM stakeholders. Considering the vast investments already made in the AM and the global economic disaster of the late 1920s the superior technological competitor was seen as unwanted. The noisy AM radios worked well enough for the time being. The signal travelled very long distances but offered relatively poor sound quality.

(Winston 1998, p. 78–84)

It was not until the early 1950s when the time was ripe for the second phase of the broadcast development. The expansion of the radio to the FM introduced much higher frequencies providing the basis for a multichannel environment. In 1961 the stereo was introduced providing yet another incentive to switch from AM to FM even though FM signals were able to travel shorter distances. Public service providers were able to offer more regionalised programming. In the coming decades radio evolved to serve both a broader and more specialised audiences.

In Europe in particular, the adoption of the new broadcasting systems and standards was also influenced by politics and policies and, to some extent, the outcome of the Second World War. The post-WWII Germany had very few AM frequencies, and in Finland the AM reception was ruined by the powerful Cold War era propaganda stations. These kind of developments helped pave the way for the introduction of new

FM radio. In the United States and in Japan, the leading manufacturer of new transistor radio sets, the FM radio did not become commercially significant until the late 1960s. (Ala-Fossi 2016, p. 267)

In most of Europe in the 1980s commercial radio stations were introduced with more audience-oriented format radios. The old AM had become finally obsolete, at least in technical terms. It should be noted that AM radio still does exist and is used globally for a cost-efficient way of lower-quality radio broadcasting. It has not been wiped out by the FM and it is unlikely that it will be.

Starting from the early 1980s, the current third phase is the era of digitalisation. From a purely technological viewpoint digital radio offers effective forms of compression allowing much more economical use of the bandwidths. In the digital world more channels can be included in the same bandwidth where there was previously space for only one. The digital signal is more flexible and robust compared to the analogue and offers also a better quality of sound.

In Matteo Campostrini's thesis he introduces a set of affordances provided by the analogue radio: a set of societal, historical and cultural factors, a set of innovations and technological developments within the field, and a set of power relationships negotiated by and through business and political interests. According to Campostrini, the affordances provided by the digital radio are dramatically different. Data compression and audio quality have become flexible variables as well as the more efficient usage of the frequencies.

When expanded to the Internet, on-demand content has also freed the listeners from the broadcasting schedules delivering an option of time-shift. With the digital shift, also the traditional one-way distribution is going through some changes with increased interactivity made possible by interactive Internet-based platforms. (Campostrini 2015, p. 20–23)

Looking back at the diffusion theory by Everett Rogers, it does not seem to adequately explain radio's stages of evolution. (see Fidler 1997, p. 18) Winston's thoughts are appreciated also in Roger Fidler's *Mediamorphosis*. For a more

comprehensive explanation of how new media are born and developed, one needs to take into account also a strong cultural perspective with the history of media technologies.

As shown by previous examples, social, political, and economic forces play major roles in development of new technologies. The new innovations and technologies are not diffused into the society without the help of other factors than just the advantages of a new technology. *“There must always be an opportunity as well as a motivating, political, or economic reason for a new technology to be developed”*. (Fidler 1997, p. 18–19)

The examples of FM radio’s delayed success and the radio’s transformation from a mass-audience medium to a niche-audience medium in the age of television is rather an illustrative example of Fidler’s mediamorphosis.

*“As TV began its grand ascent, general-audience radio went into a steep decline that led some analysts to predict the eminent death of the medium. But radio didn’t die. Nor was AM entirely subsumed by FM”* (Fidler 1997, p. 19–25)

## **2.2 The recent radio evolution in Europe**

The logic of the computer, which always worked digitally, is gradually taking over all aspects of the production, distribution, consumption, and storing of broadcast messages. What sounds like a purely technical process has strong effects on all aspects of the media, including politics and economics, the production process itself, as well as programme content.  
(Kleinstauber 2007, p. 223)

The digital radio has come in many forms over the years in Europe with several attempts to replace the analogue transmissions. In the year 1990 the first technology of digital transmission via satellite became available in Germany, distributed via the cable network. The Digital Satellite Radio (DSR) offered 16 channels of mostly pre-existing public service programming and classical music in uncompressed full CD-quality. The DSR was however discontinued in January 1999 by the Deutsche

Telekom as unsuccessful. By that point only approximately 150 000 decoder boxes were sold. The first introduction of digital radio to Europe had failed.

Introduced in 1995, the Astra Digital Radio (ADR) is commonly thought as the successor to the DSR: The ADR required a receiver box and provided few programmes for different markets. Approximately 40 of the radio programmes provided were in German. In 2005 the Astra satellite company offered around 410 analogue and digital radio programmes all around Europe. Similarly to the DSR, the audience's response to the ADR remained rather weak. The cable and satellite based digital radio delivery has not been a success in Europe.

The most likely successor to the FM radio in Europe is the Digital Audio Broadcasting or DAB. The technology was fully developed and introduced for regular service in 1999. The first countries to offer regular DAB broadcasting were the United Kingdom and Germany. According to Kleinsteuber, in 2005 the new digital radio was available in practically all Western and most Eastern European countries. (Kleinsteuber 2007, p. 228–230).

In the year 2006 the standard developer WorldDAB Forum released an upgrade to the technology and by 2016 the new DAB+ had in many ways replaced the older format. Still, due to the vast investments made in the older version, many broadcasters continue to offer both DAB and DAB+ service.

DAB or digital radio is of course not the only way the radio is turning digital. In addition to other technologies and standards the Internet has opened a vast variety of new radio forms. It is not at all certain that Europe will see the rise of another technological standard of radio as unifying and as widely spread as the FM.

Ten years ago professor Kleinsteuber asked the fundamental question:

*“Does the European broadcast audience actually want digitalisation, and if so, does it really believe in convergence or does it perhaps prefer a diverged future?”*

*(Kleinsteuber 2007, p. 223)*

## 2.2.1 Different paths

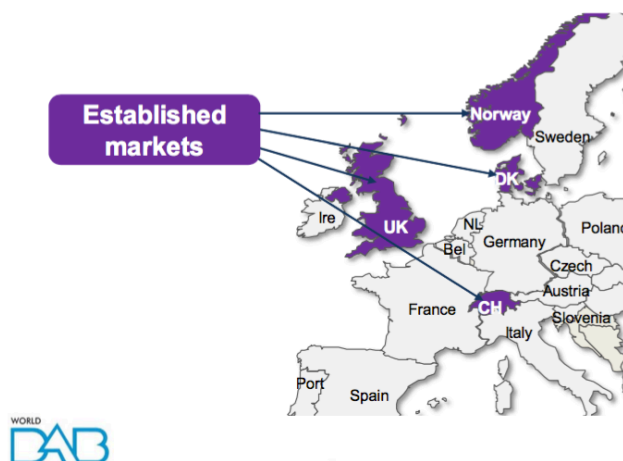
Out of the six countries represented in this study, five are still on their paths towards a digital radio. The Czech Republic, France, Norway, Switzerland and the United Kingdom all are, however, very different when it comes to their approach to the future of the radio.

Along with Denmark, the United Kingdom, Switzerland and Norway represent the early first establishment of the DAB market in Europe. On June 1<sup>st</sup> 1995, the Norwegian Broadcasting Corporation (NRK) launched the first DAB radio channel in the world, NRK Klassisk. Though the

DAB receivers became available to the Norwegian audience very early on, only 300,000–400,000 of the eight million radio devices sold between 1998–2008 were digital. By the end of 2008 Norway had two DAB multiplexes covering seven regional coverage areas. (Campostrini 2015, p. 48)

In Switzerland the first DAB radio services launched in 1999 when the public broadcaster SRG SSR went on air. The first ten years of Swiss digital radio development consisted mainly of experiments, measuring and tests with little private sector interest.

The UK was the first country to adopt DAB as digital radio standard. The UK's public service broadcaster - the BBC - started its digital services in September 1999 with transmission of its five existing stations in digital format. In the UK the most densely populated areas became areas with the most digital radio service. In 2001 in London there were 40 different DAB programs, and in the following year the BBC launched their first digital-only radio station 1Xtra.



Picture 2.1 First wave of DAB in Europe (WorldDAB 2016)

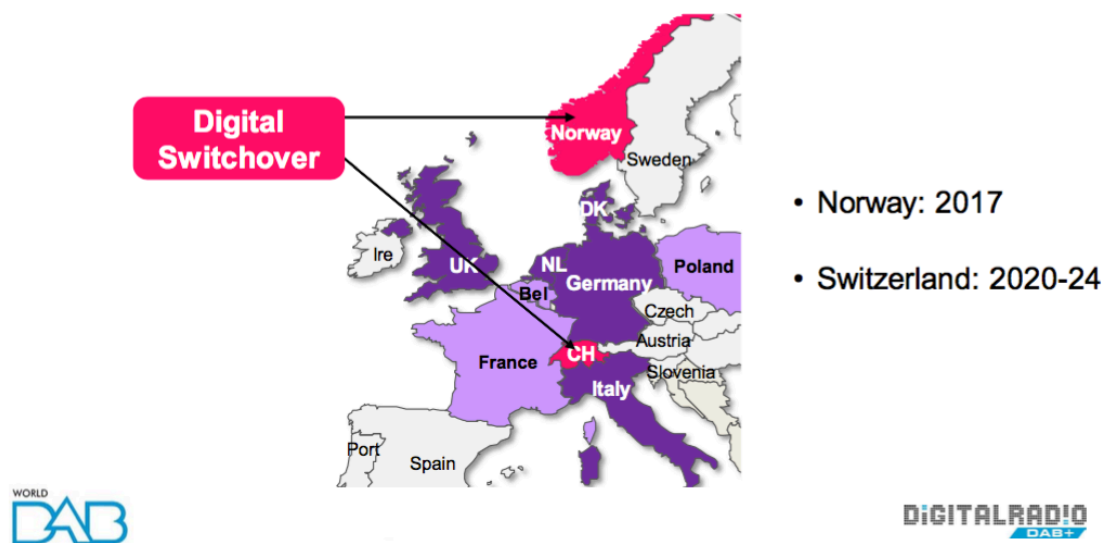
In 2005 a large research was carried out in the UK concerning digital radio. Though the UK had invested heavily in DAB a large part of the research respondents did not believe DAB would be overthrowing FM in 2015 terrestrial radio broadcasting. (Campostrini 2015, p. 40–43)

After its launch in 2006 the more advanced technical standard DAB+ has begun replacing the older version of DAB. In Switzerland the DAB+ service began already in 2008. In Norway first DAB+ stations launched in 2010 and in the UK the first tests begun in 2013 with the regular services launching in 2016. (Country Information 2017)

In the UK, the DAB+ coverage has grown steadily and is expected to be identical with the FM coverage in the coming years. The digital radio field is still dominated by the BBC with more than half of the commercial radio stations having not begun digital transmission. For most cases the cost is too high to provide digital coverage also. The state of digital radio in the UK continues to remain in a state of flux and uncertainty. (Lax 2014, p. 14)

Currently, 32 million people tune in to digital radio each week in the United Kingdom. Radio listening via digital platforms was at 45.5 percent in late 2016: 71 percent was DAB, 18 percent online and 11 percent TV. According to a recent EBU report (Digital Radio 2017 Market Insights 2017), at the current growth rate, digital should overtake analogue by 2018, the year the criteria for the switchover are likely to be met.

Norway and Switzerland are the first countries moving towards a Digital Switchover from analogue FM to digital DAB. Historically Norway will be the first country to complete the process already during the year 2017 and Switzerland has set its timeframe to more a loose window of 2020–2024. (Digital Radio 2017 Market Insights 2017)



Picture 2.2 The Digital Switchover (WorldDAB 2016)

By the end of 2015 listening to digital radio went ahead of analogue radio in Norway with 60 percent of Norwegians using digital radio on a daily basis. In Spring of the following year it was confirmed that in 53 percent of radio listening is digital in Switzerland marking the first time digital radio surpassed the analogue radio in listenership in the country. (Digital Radio 2017 Market Insights 2017)

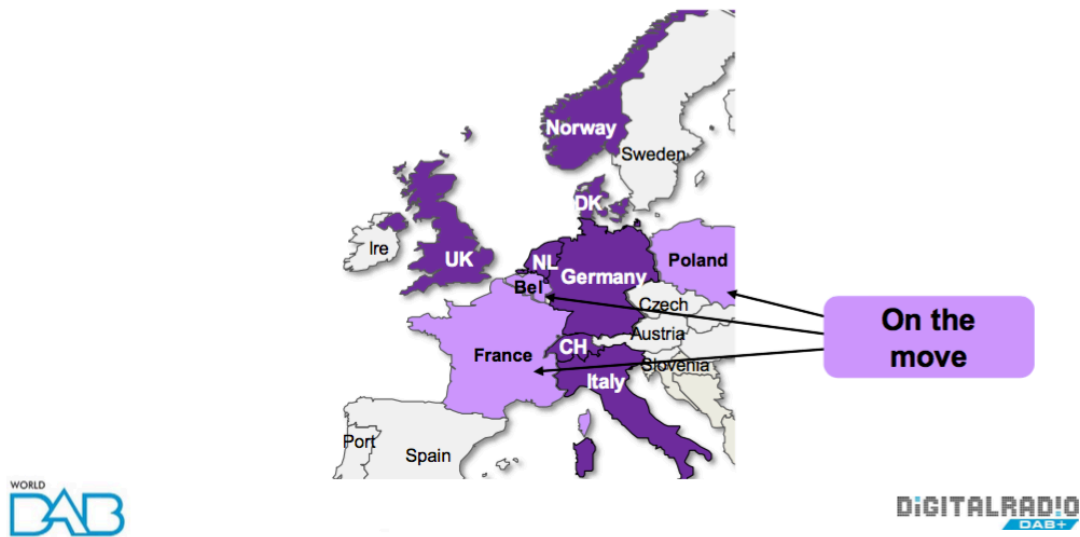
According to the EBU’s report on Digital Radio 2017 Market Insights (2017), though the reach of digital radio has increased to 64 percent, in terms of listening time, FM still ranked above DAB+ (43percent compared with 40 percent), with 635,000 listeners relying solely on FM. Small local stations may continue to broadcast on FM for at least another five years. A decrease in radio’s reach and in listening time is expected in 2017, but all metrics are set to recover in 2018.

In Switzerland there are currently more than DAB+ 100 services, ranging from 16 in the Italian-speaking part of the country to 60 in the German-speaking part. In November 2016 Switzerland switched off DAB definitively, making DAB+ the only digital terrestrial system in the country. (Digital Radio 2017 Market Insights 2017)

In France the digital radio was postponed from the original rollout date from December 2009. After delays the French Superior Council of Audiovisual (Content Conseil supérieur de l’audiovisuel) or CSA finally set the launch for digital radio for

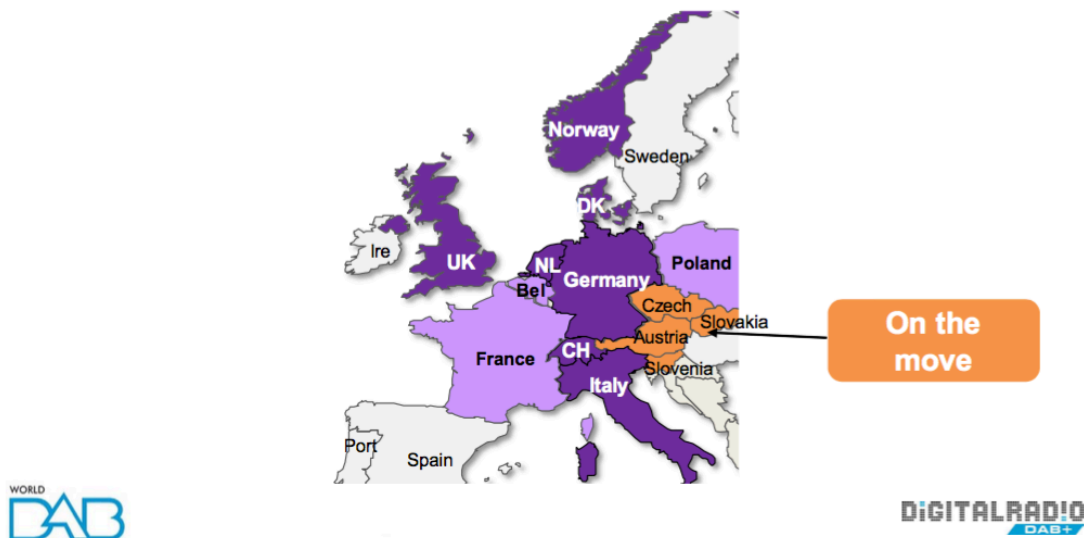


authorised radio stations in Paris, Marseille and Nice regions for June 20<sup>th</sup> 2014. The three city areas offer over 100 different services on air with only one of them in the old DAB format.



Picture 2.3 Countries on the move 1 (WorldDAB 2016)

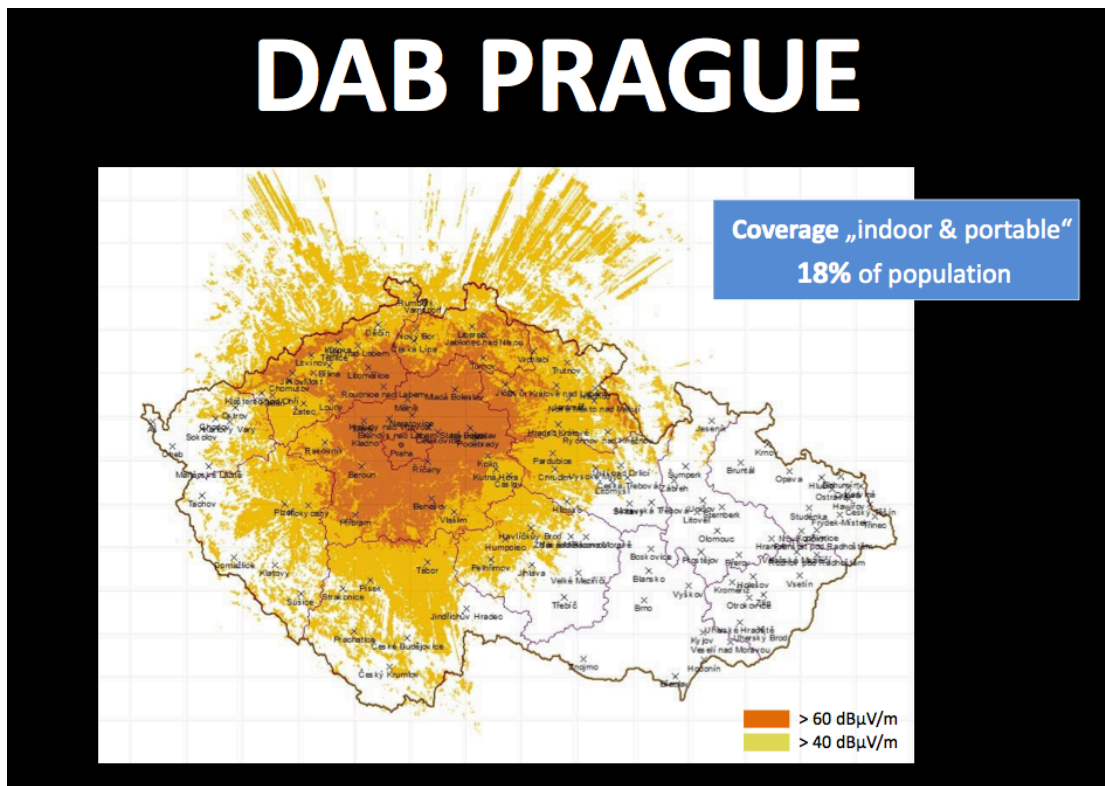
In late 2015 the CSA published a timetable for the rollout of digital radio across the whole country. More cities are joined the digital radio front as following a June 2016 call for application 96 radio stations were been selected for Lille, Lyon and Strasbourg regions. In 2017 the regions of Bordeaux, Besançon, Orléans and Clermont-Ferrand will follow. (Country Information 2017)



Picture 2.4 Countries on the move 2 (WorldDAB 2016)

In the Czech Republic the market is crowded with over 100 private radio stations with 78 percent of the market share and the public service broadcaster Czech Radio (Český rozhlas) having 24 radio channels with a 22 percent market share. The Czech Radio

plays the role of an active pioneer in digital radio. Most of private radio is against the digitalisation with only some small channels being part of local DAB MUXs.



Picture 2.5 The DAB Prague coverage (Czech Radio 2016)

Currently operating DAB+ services are the Dynamic Label (DLS) and the Slide Show (SLS) with weather forecast, traffic announcements, camera snapshots, now playing and qr-codes and links still in development. Though still in development, the target for digital radio is reaching 50 percent of the population of Czech Republic and 80 percent of highways in Czech Republic by the year 2018.

The biggest problem at the moment is the legislation; for regular DAB service in Band III there is none. Currently it is only in trial mode set on non-final frequencies and with very small powers. The DAB Prague is the only real DAB available with 20kW final frequency 12C but in legal terms it only has a status of an experiment. According to the Czech Radio, the only barrier to start DAB platform in Czech Republic is the legislation. (Czech Radio 2016)

In 2016, the government decided to wait for new developments and postponed approval of a national digital radio strategy until 2021. For the time being, only the

switch-off of Český rozhlas Regina DAB Praha is expected, although its other six exclusive services might also be threatened. (Digital Radio 2017 Market Insights 2017)

### **2.2.2 The evolving radio in Finland**

When the developing of the DAB begun at the end of 1980's, Finland was also interested and involved from very early stages. Representatives of the public broadcaster Yle participated in the First International Symposium on Digital Audio Broadcasting held in Montreux in June 1992.

In the early 1990s Finland experimented in DAB broadcasting on the higher frequencies of FM broadcast band later to be operated on by the national commercial station Radio Nova. Also the future telecommunications giant Nokia did serious research on Digital Audio Broadcasting technology as mobile data delivery platform with Yle. Nokia however had lost its interest and abandoned the DAB project already in 1996. The reasons were DAB technology's modest data transmission potential and limited multimedia possibilities.

According to adjunct professor Marko Ala-Fossi of University of Tampere, the withdrawal of Nokia was an essential factor in DAB's failure in Finland. In a small country a decision by such a large company had to have an impact. It is likely that originally it was Nokia that was supposed to produce and provide DAB receivers for the Finnish market. After Nokia pulled out Yle was left in an awkward position since more affordable DAB receivers were to arrive on the market as late as 2003. (Ala-Fossi 2012, p. 123)

Nokia moved to another projects developing the Digital Terrestrial Television (DVB-T) and subsequently its mobile counterpart the Digital Video Broadcasting-Handheld or DVB-H in close co-operation with the international commercial broadcasting companies operating in Finland. In fact, DVB-H was considered as a significant option for digital radio in Finland. (Ala-Fossi et al 2008, p. 12)

In the end Yle was left alone to develop DAB networks and carrying its national and regional stations. Only Yle has provided DAB services in Finland. The official decision to digitalise radio broadcast was made already in the May of 1996. The digital services became available in October 1998. Radio Peili was made available also via streaming on the radio channel's web page on whichs much of the channel's content was also offered as on-demand content. At best Yle was able to offer 12 different radio channels in the DAB format within the most populated areas of Southern Finland. From the private channels' perspective DAB was labelled strongly as an Yle project leaving private and commercial radio broadcasters outside. (Ala-Fossi 2012, p. 114–118)

According to Radiomedia's Stefan Möller (2015), the then-used old version of DAB was "*clumsy, heavy and expensive, despite being digital*". It comes as no surprise that Nokia decided to end the development of the technical standard but the impact of the decision did not promise good for the future of DAB in Finland.

The digital radio project in Finland also affected new broadcasting licences. New channels Radio Nova and Nelonen Media were originally obligated to invest in digitalisation. The years however passed and commercial radio stations had no interest in digital radio resulting in, on renewing its analogue licence in 2001, Radio Nova successfully negotiating away its obligation to transmit on digital. (Jauert et al 2010, p. 107)

The popularity of digital radio was very low and the DAB coverage ultimately reached only around 40 percent. In 2001 the board of Yle decided not to expand the DAB network. By 2004 less than a thousand DAB units had been sold and on 31<sup>st</sup> of August 2005 Yle ceased to broadcast content in DAB format. (Lax et al 2008, p. 154–155)

There is evidence though that a successful digitalisation process is achievable in Finland. The television's digital switchover was completed in Finland in September 2007 and the analogue television broadcasts ended by the end of February 2008 (Björkman 2007). While Finland was among the first countries in Europe to complete

the digitalisation of television, Yle became the first to completely abandon the digital radio. By 2004 Yle had sold fewer than a thousand DAB receivers.

The decision to shut down the DAB network was done in August 2005 after a total of seven years of service. Since 2005 Finland has completely forsaken the digital radio altogether without ever introducing it to the public outside Southern Finland. It is indeed rather disappointing when thinking back to the original 1997's vision of World DAB Forum of being able to drive from the west coast of Portugal to Lapland in Finland being able to listen to a continuous digital radio network. Yle sees little future in the digital radio technology and is more focused on the development of Internet services. (Lax et al 2008, p. 159–160)

As for other new forms of radio, only web streaming and podcasts seem to be somewhat positively received by both the industry and the audience. However, as told by the Yle head of development Anne Haaja whom I interviewed for my bachelor's thesis on Finnish radio forms, the number of podcast downloads is so low that in fact Yle does not even keep count on them. The on-demand and streaming platform Yle Areena has instead proven to be very popular both as a web browser and smart device application. (Mervaala 2015A, p. 20–21)

Quite recently, though, there has been some positive development in podcasting in Finland. Some of the country's leading newspapers, Helsingin Sanomat and Suomen Kuvalehti among others, have begun producing their own podcasts. At the end of 2015 a Finnish podcast enthusiast Olli Sulopuisto predicted the year 2016 to be "*the year of the podcast*" (Frilander 2015). In many ways it was true. A new generation of podcast creators and listeners have indeed emerged.

### **3 The new forms of radio**

In this chapter I will introduce the new forms of radio examined in my research. The purpose of these introductions is to offer a glimpse of the history behind some standards and also a brief description of the technical aspects of the standards in order to distinguish the various formats from one another. The knowledge of some of the technical aspects and the historical context are also explained in order to make the interviewees' answers more understandable.

New forms of radio in this context refer to the new technical standards and formats that have been introduced to either accompany or replace the traditional analogue FM radio. During the past two decades a variety of new ways to listen to and to produce radio programmes have emerged.

#### **3.1 The digitals**

Radio in the digital age is still just radio to the extent that we think of it as being radio. There may well be aspects of its production and distribution chain that remain analogue. The context in which it is situated, the tools with which it is created, the political economy that shapes its institutions and the ways in which we consume it may differ. But fundamentally – and tautologically – radio is radio.  
(Dubber 2013, p. 175)

##### **3.1.1 A brief history of digital radio**

In Europe, the digitalisation boom of the 1990s affected both television and radio. The transition from analogue to digital radio started to take place in many countries during late 1990s and early 2000s, and it still remains as the on-going trend in Europe.

As detailed in the previous chapter, what is currently meant by the term digital radio is that the radio broadcast is delivered in a digital form rather than via the analogue radio transmitters. Though the FM and AM networks of the analogue format have existed and served us well since the early 20th century, the digital radio offers both more efficient bandwidth usage and better sound quality among other things. The

supplementary features implemented in the different forms of digital radio intend to bring the traditional broadcast to the new millennium.

So far however the analogue radio still stands with far-reaching networks, reasonably low maintenance costs and the easiness of availability for the common user. The digitalisation movement is at the moment the strongest in Norway where during the year 2017 the switch from analogue radio to digital is happening as the first country in the world. The FM broadcasts will end in Norway by the end of the year 2017.

### **3.1.2 DAB – A success story or a project doomed to fail?**

Originally Digital audio broadcasting or DAB was intended to replace European analogue FM radio completely. In 2017 FM radio is still very popular while the progress of DAB has stagnated. Some large broadcasting companies are still pushing the DAB format to replace the analogue FM radio. The old DAB is still used in some countries but it is slowly being replaced by the newer, updated version DAB+ released in 2007. Currently DAB is in use in 43 different countries at least in some form.

The history of the DAB can be said to have begun in 1981. The development project began as a collaboration between research and development institute Institut für Rundfunktechnik (IRT) for the German broadcasters ARD, ZDF, ORF and SRG/SSR and the research institute of France Telecom and TDF, the Le Centre commun d'études de télévision et télécommunications (CCETT). The IRT had pioneered an audio compression system and the CCETT had created a new form of radio frequency modulation system called COFDM. (O'Neill & Shaw 2010, p. 32)

In 1986 a new pan-European organisation for research and development coordination EUREKA was established by 17 European states and the European Commission. The organisation commenced projects with a set goal of defending European electronics industries against Japanese and other advanced countries from the Far East increasing in dominance in the consumer electronics sector. In December of the same year a

development project Eureka 147 was launched with the intention of “the drawing up of a new digital audio broadcasting standard”. The DAB development continued as an Eureka project. (Ala-Fossi 2016, p. 272)

The first public demonstration of Digital audio broadcasting system was given in Geneva during the World Administrative Radio Conference of 1988. The original DAB included MPEG-1 Audio Layer II (MP2) codec developed as part of the Eureka 147 launched two years earlier. The development of DAB included only public service broadcasters and electronics manufacturers during the two phases of Eureka 147 in 1987–1991 and 1992–1994. (Ala-Fossi 2016, p. 274-275)

DAB became the first standard based on the Discrete Multitone modulation providing transmission of data via various bandwidths simultaneously without interference. Currently the technology is used in most of all digital communication systems. The digital format also offered the possibility of adding metadata such as programme descriptions to the audio transmissions.

During the 1990s another digital broadcasting system was also developed in Europe. The project for Digital Video Broadcasting or DVB was launched in September 1993. The digital broadcasting solutions developed for the DAB were utilized for the new broadcasting standard resulting in DVB terrestrial digital television having many technical similarities with DAB digital radio. According to Ala-Fossi (2016), the strategy of creating two complementary digital broadcasting systems led to an internal race of standards by the end of the 1990s. DAB was losing a competition with DVB over political and industrial support. (Ala-Fossi 2016, p. 274)

DAB was introduced to the public in 1993 with pilot broadcasts launched in several countries in 1995. Though Norway was the first country to launch a radio channel based on DAB, the UK was the first country to develop large quantities of DAB content. The DAB receivers came available to the public in 1999. At that time the head of Digital One Quentin Howard claimed that because all media is digitalising, it would be unrealistic to think that analogue radio could stand its ground after ten years (Lax et al. 2008, p. 158). By 2001 UK had over 50 commercial and BBC produced services that were available in the London area.



After almost a decade leading the DAB revolution, the popularity of DAB in the UK has started to diminish (Lax 2014, p. 14–17). In 2014 the culture minister Ed Vaizey stated that the time is not ripe enough for a complete analogue-to-digital switchover. Vaizey said: “It’s a big ask for people with five or 10 FM radios in their house to go out and buy ten digital radios.” On the potential switchover, he commented: “We want all the building blocks in place before we make a final decision.”

(McCarthy 2015)

The switchover from analogue to digital is indeed problematic. First of all, as minister Vaizey also pointed out, the public does not wish to spend money to purchase new equipment every time a new format or technical standard is introduced. In the late 1990s people interested in digital radio might have bought their new DAB receivers. Twenty years later, with DAB+ the same people are less willing to purchase new ones, since the old receivers are not forwards compatible. Nevertheless, the superior format DAB+ has so much more to offer more efficiently than the old format that the broadcasting houses are to replace the old DAB eventually.

So why change to DAB? After all, the FM radio is widely used, cost efficient and it works. Most commonly the answer lies with the efficiency of digital broadcasting. The digital broadcast stream comes in the form of digital blocks of multiplexed (mux) broadcasts. One mux is equivalent of one FM radio station frequency but fits approximately ten DAB channels to the same space via digital compression. Again, if all radio channels inside the mux are in the DAB+ format, it can contain over 20 channels. Being digital media, the DAB+ also has the option to transmit more than only audio data such as music cover art pictures or information about the show.

Efficient and high fidelity audio that is what DAB has to offer. But is that enough? Is it even what the public needs nowadays? Music (even high quality) is now more available than ever with services such as Spotify, Tidal and the likes. Also the resistance to shut down the FM network is very strong in many countries such as Sweden where the government made the decision to stop the transition from FM to DAB last summer. The Culture and democracy minister Alice Bah Kuhnken named amongst the reasons, for example, the importance of FM frequencies during

emergencies and disaster situations and the difficulty of setting up a nationwide service network (Kuhnke 2015).

By 2015 Norway has surpassed all other countries when it comes to digital radio. In April 2015 Norway's ministry of culture stated that the country will be shutting its FM network by the end of 2017. All main broadcasters NRK, P4 Group and SBS Radio will end their broadcasts starting January 17th 2017 and ending December 13th 2017. (Radio Digitalization happens in 2017 2015)

In the DAB community, all eyes are now on Norway. The pressure to succeed is also acknowledged by the Norwegian broadcasters. According to the CEO of Digital Radio Norway Ole Jørgen Torvmark, Norway has over 20 years of experience with digital radio, hence they have the means and confidence to finish the process with a very low risk of failures. Time will tell if after a successful switchover other countries will follow. (Torvmark 2016)

### **3.1.3 Digital Radio Mondiale – Europe's digital gift to the world**

The other "big" digital radio format – Digital Radio Mondiale or the DRM comes from a different angle to the digital market. It was originally intended to digitalise the AM frequencies up to 30 MHz in the early 2000s. The first technical definition DRM30 was published by the European Telecommunications Standards Institute (ETSI) in 2001 and the ceremonial first broadcast happened on June 16<sup>th</sup> 2003 at the World Radiocommunication Conference organised by the International Telecommunications Union (ITU) in Geneva, Switzerland. The technical standard is freely available from the ETSI and also the ITU has sanctioned its usage in around most of the world.

In 2005 the DRM expanded to function over VHF frequencies and became known as DRM+. The frequency now varies between 30 and 300 MHz. The new standard also supports MPEG Surround. When compared to FM or AM the DRM offers broader technical capabilities: a better sound quality can be achieved via DRM using various

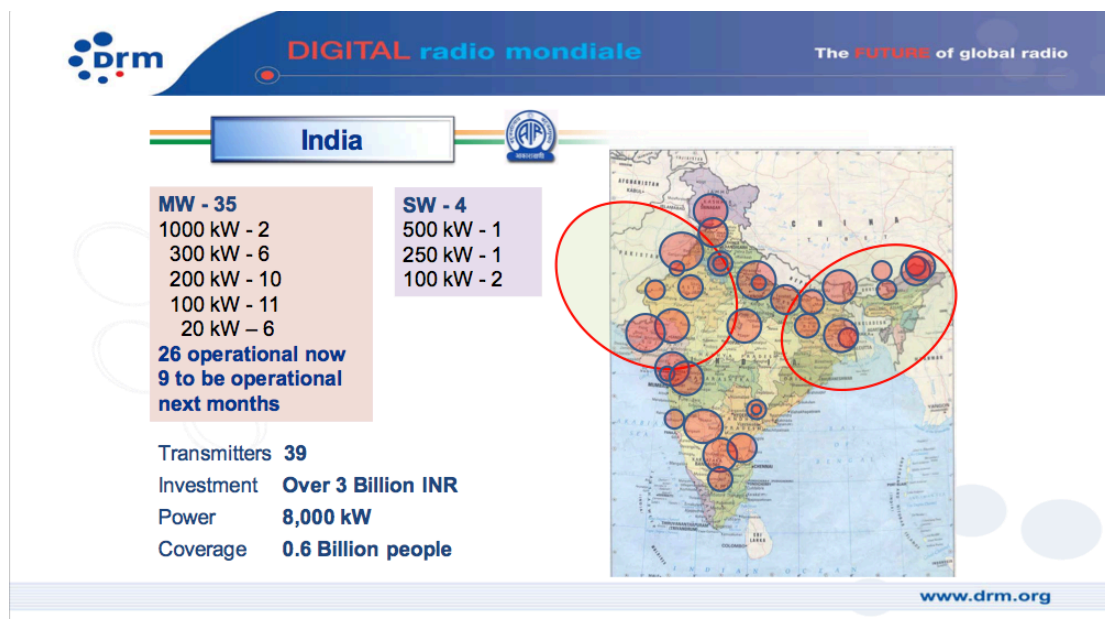
MPEG-4 audio codec formats, and, being a digital format, DRM allows transmitting also other kinds of data than audio.

For receiving DRM broadcasts one needs either a special DRM receiver or an AM radio plugged into a computer. A special decoding application is needed in order to listen to a DRM broadcast on a computer but the processing of the digital signal does not require much processing power so even cheap and old home computers are able to code and decode the DRM broadcast.

The DRM consortium includes various broadcasting and networking companies and representatives, transmitter and receiver manufacturers, universities, broadcasting unions and research centres with over 100 members from 39 different countries.

Though its origins are in Geneva, recently the DRM format has gained popularity in South America, Africa and Asia. There are have also been DRM+ trials in St. Petersburg, Russia in 2015, and in the same year South Africa started their own transmissions.

At the end of May 2015 a very powerful DRM transmitter started broadcasting for Radio Kashmir in Jammu, India covering the whole region. Currently in India there are 39 DRM transmitters covering areas populated by 600 million people.



Picture 3.1 DRM coverage in India (DRM 2016)

In Europe, the most active DRM usage is in France, French-speaking Belgium and Germany. In Sweden and Norway trials on DRM+ were held. Most complete DRM+ tests were completed in the United Kingdom in Edinburgh in 2011. DRM workshops were organised in Romania and Hungary in September 2015. Also Turkey's public broadcaster has organised several DRM presentations and workshops. (DRM 2016)

## **3.2 Radio online**

In 2017, the concept of the digital radio is also at a turning point. The whole definition of digital radio is debated, and some indeed include Internet radio to the digital radio spectrum. Web radio and its various forms have of course become a very important aspect of radio in the past 30 years.

### **3.2.1 A brief history of radio on the Internet**

It was not until the very late 20<sup>th</sup> century when the actual form of the radio began to change. New ways of listening emerged as the Internet introduced concepts such as on-demand content and web streaming. The ubiquitous analogue radio no longer seemed to fulfil all the requirements of its audience.

The origin of the Internet radio can be dated to the spring of 1993 when Carl Malamud founded the first Internet-only radio station – the Internet Multicasting Service. The original Web standards were not however developed for transmitting sound. (Priestman 2002, 6–7) Back then, neither the audio formats nor the speed of the Internet connection were sufficient to provide a fluent, radio-like listening experience. Three minutes of uncompressed audio could be 50 megabytes in size that would take up to two hours to download via the fastest Internet connection available – 56 kilobits per second.

The technology subsequently improved with the introduction of audio compression standards making the files downloaded or streamed much smaller compared to the uncompressed audio. The breakthrough compression format MPEG-1 Layer 3 or the mp3 was introduced in 1993 and soon after free audio compression software became

available capable of squeezing an audio file of 50 megabytes to a mere 5 megabytes. With the increasing speeds of the broadband connections and the growing global network of the World Wide Web, audio files and streams quickly became easily accessible to most Internet users.

(Kovarik 2011, p. 233–235)

After the birth of the Web in 1995 an American company Progressive Networks made available a software package called RealAudio that enabled digitised audio streaming from one computer to another. Though the quality was only slightly higher than an ordinary telephone conversation, Chris Priestman compares this moment equivalent to the first radio transmission of speech by R. A. Fessenden in 1906. The online streaming radio was born. (Priestman 2002, 7)

In the late 90s and the early 2000s the common modem connection speeds were 14.4, 28.8 and 56 kbps. Though the audio quality was nothing like the modern lossless audio streaming, it was already possible to receive AM radio quality sound for mixed speech and music with as little as 20 kilobits per second. (Priestman 2002, 59)

From early 2000s onwards the radio programme has no longer been tied to the broadcasting schedule. With the increase of speed in broadband connections and content availability, on-demand content has become widely available. Additionally some Internet-based radio channels have produced content to be shared only via their Web archives and on-demand streams.

The compressed audio formats such as the mp3 have made it possible to download radio-like content via the internet. Regular audio podcasts are now accompanied by other formats such as the enhanced podcast that enables the producer to add visual content such as a slideshow to be performed in sync with the audio material, and video podcasts that are essentially just video files distributed by the same method as the audio podcasts.

Major broadcasting houses have launched their own streaming services and podcasting productions, also Finland's Yle, which began its podcast production in the year 2015. Services and applications such as the BBC iPlayer in the UK and Yle

Areena in Finland have blurred the boundaries between the forms of radio. The same three-hour-long program, which came in the morning on the analogue radio and the simultaneous web stream can later that same day be found in its entirety online, and the best parts of it can even be downloaded to a device of your choosing.

(Mervaala 2015, p. 4)

### **3.2.2 Podcast**

The podcast is often thought of as a sibling product of another popular communication phenomena of the 21st century, the Internet blog, since it combines the instant information distribution capabilities of the blogs with audio and video files. (Morris et al. 2008, p. 11–12)

The history of the podcast can be thought of begun in the 1990s when both the compressed audio format mp3 and the blog feed format Rich Site Summary (RSS) were developed. The RSS offered an easily subscribable feed for blogs to which then the audio format was attached into. The format was created by RSS feed developer Dave Winer in cooperation with former MTV Video Jockey Adam Curry who created the parts of the RSS code that allow the attaching of the media files and the automatic downloading of the podcasts.

To put it simply, the definition of podcast is a series of audio and/or video files that can be downloaded to the user's device by subscribing to the podcast's RSS feed. The individual episodes are downloaded either by the user's choice individually or automatically after updating the feed whenever a new episode is published.

“The fundamental principle is that, rather than having to visit a website regularly to see if it has updated content, an individual can use an online or software feed reader to receive new information automatically, via an Extensible Markup Language (XML) document, as it becomes available. The innovation of adding an enclosed media file within that XML document allows for the file to be automatically retrieved by subscription.”

(Dubber 2013, p. 56–57)

This is an important distinction to make when it comes to the term's usage: a podcast is always a combination of the downloadable file and the feed. Therefore the files that are downloadable or streamable but are not distributed via an RSS feed or similar are not, by definition, podcasts. This is often forgotten by labeling any downloadable web series a podcast.

Unlike the digital radio or the online streaming radio, the podcast is distinctly a "timeless format" when it comes to radio broadcasting and other transmission schedules. Podcasts gives the choice to the listener who gets to decide when one wishes to listen to the show. Hence, as a distribution format podcast has nothing to do with traditional broadcasting. The individual episodes can of course be released according to a set schedule but this process is not part of any broadcast programming. One cannot have any specific time slot if the show is "timeless".

Podcasts basically come in two different forms. Either they are produced directly in the podcast format for the podcast audience or they can be versions of content produced for another media format such as the podcast versions of radio shows. The latter forms of podcast can be, for example heavily edited compilation of the best bits of a morning radio show with all the copyrighted music and commercials removed. If there is no actual need to do any edits, the podcast version can be identical to the broadcasted radio show.

The Internet makes the podcast a global format. The regional barriers are not applicable to the podcast feeds. The same show can be distributed all around the world without restrictions and can create whole new kinds of international and multicultural audiences and communities. Dubber reminds however that the podcasts produced outside the traditional broadcasting environment may vary in quality and may not maintain a certain routine when it comes to the content or the production values. (Dubber 2013, p. 57–59)

The podcast format begun its rise to popularity midway through the 2000s, though the format initially began gaining recognition as an independent amateur radio format sometimes compared to the pirate radio. Since creating a show needed little more than

a microphone, a computer and an Internet connection, a multitude of “indie podcasts” emerged all around the world in various languages and covering various topics (Mervaala 2012, p. 3).

The Apple iTunes store became quickly the world’s largest directory of podcasts, offering the option to subscribe and download the podcasts directly to the music player software and then to transfer them to a portable music player such as the iPod. Though similar in name, iPod had nothing to do with the birth of the term “podcast”. Nowadays podcast is commonly known to come from the words “portable on demand”.

Since then, during the past decade many professional broadcasting companies have made their mark in the world of podcasts from national broadcasting institutions such as the BBC in the United Kingdom or the Yle in Finland. Though podcasts remain by default a free format to listen to or to watch, some podcast producers have also begun charging for their content. For example the New York Times has begun selling their newspaper in podcast form with an annual subscription of \$69,95.

In Finland the format has never really caught on and after the initial excitement in the second half of the previous century the indie podcast community has diminished significantly with the national broadcaster Yle remaining rather a passive supporter of the format. Only in the past two years has the Finnish podcast scene show new signs of life with the emergence of new amateur podcasting communities and audiences. Also Yle has reacted to this with the start of a handful of podcast-only productions. A new interest in indie podcasting is also on the rise in Finland with semi-regular podcaster meetings organised in Helsinki starting late 2016.

According to the author of *Revolutions in Communication* (2011) Bill Kovarik, “*these developments probably spell the end of the traditional radio broadcasting station.*” Kovarik sees that the people, formerly-known as “the audience”, will no longer need the “intervening broadcast medium” as they are able to pick and choose their own music playlists and talk programs. “Once again, a circumventing technology was used to undermine a monopoly.”



### 3.2.3 Streaming and downloadables

While podcasts are often also downloadable as individual audio or video files, they are always delivered with the aid of an RSS feed. If the subscribable feed is removed from the equation, the format is then a normal downloadable file. Many content providers offer nowadays the option to download their produced content via the Internet from their websites or for example separate audio streaming websites such as Soundcloud.

The content can however be made available for downloading by some unofficial entity via such services that are not always able to monitor everything uploaded and downloaded inside their network. One can for example use a browser plugin to download television shows from YouTube without the permission of the content provider.

Like with podcasts, the downloadable content has no limits of broadcasting schedules and can be produced either directly for the purpose of a downloadable web content or as a version of content originally produced for a different purpose. Podcasts and other downloadable content are downloaded in their entirety to the device and can then be used as the user pleases.

This is not the case when it comes to streaming. When a video or audio is streamed, it is played as it is downloaded bit by bit in digital blocks. The streamed material is not downloaded and saved entirely in the device hard drive meaning the content is buffered constantly. After the buffering is completed the material can be played while the next bits of the content are buffered to produce uninterrupted streaming. If the buffering of the next part is not completed before the previous part ends the content will stop and then continue again when the buffering is completed. In order to stream high quality video without interruptions a high speed Internet connection is required for buffering the content fluently.

With the rise worldwide video streaming service phenomenon YouTube, media companies have also started providing their content to be streamed on their website

creating their own platforms and applications to watch and listen to their content. Such services include among many the BBC's iPlayer, Yle Areena and the subscription-based streaming services Netflix and Amazon Prime.

What essentially combines all the aforementioned web based forms is the concept of time-shift. According to Andrew Dubber, the author of *Radio in the Digital Age* (2013), the time-shift feature (in podcasts) transforms the concept of the traditional radio but is very useful and alluring for the listener.

Dubber divides the time-shift feature into three main functions. Firstly the audience can listen to the show whenever they want to. The shows can be listened again and again without a limit if they are downloaded to the user's device or are available to be streamed. This also eliminates the need for reruns.

The second function of time-shift is that the programme can be stopped anytime and be later returned to whenever and wherever. In addition the user is often given the option of skipping over parts of the programme.

And finally, time-shift changes the production of the shows. Planning the programme scheduling blocks becomes much freer and simultaneously the concept of time is changed. The breakfast show might not always be listened to during breakfast hours. This on the other hand has created a new set of pressure for the content producers. (Dubber 2013, 51–55)

### **3.3 RadiodNS and other hybrids**

The hybrid radio formats try to offer a compromise between traditional FM radio and the Internet by embedding the latter's benefits and features into the analogue format. Rather than predicting its replacement by either digital radio or Internet based formats some believe it is more likely that the radio will evolve to include the elements that the new technology is able to deliver.

Hybrid radio is by no means a new invention. In the early 2000s some projects were developed for example in Finland with similar characteristics to those that are nowadays commonly associated with the hybrid radio offering. (Sipilä 2016)

For the past ten years the development of hybrid radio in Europe has created a promise of a combination of broadcast radio and online content. The RadioDNS project already has coverage and test usage in a handful of countries within the European Union. In January 2016 Radio DNS had a 46 percent coverage in Germany, 92 percent coverage in the United Kingdom, 49 percent coverage in France and 87 percent coverage in Spain. Out of the Nordic countries Sweden was the leader with 79 percent coverage followed by Norway with 66 percent. (RadioDNS 2016)

What RadioDNS Hybrid Radio essentially does is that it includes the Internet Protocol address (IP) into the FM, DAB or HD broadcast stream. Within the IP picked up by the RadioDNS receiver can be basically any online content such as the station ID, album cover art, lyrics, weather forecast, pictures, websites related to the broadcast, anything clickable on the receiver. Putting it simply: the hybrid radio has the potential of bringing the Internet to radio.

In order for such a service based on metadata to work, the broadcasters will need to provide metadata for their content consistently and widely. The manufacturers need to be sure that minimum elements will be consistently provided in order for the receiver to function properly.

The RadioDNS technology has been available for a few years in the form of special receivers, but in the past two years it has also began to penetrate the smartphone and tablet market. For example, Samsung has already a handful of popular smartphone models such as the Galaxy A3 that support RadioDNS as a default. Also, devices developed for cars have been introduced in open conferences with presentations from Audi, Alpine and Visteon. Currently it is estimated that in the EU market there are already an estimated 21 million units of RadioDNS devices. (RadioDNS 2016)

## **4 Research methodology and material**

In this chapter I will introduce the research methodology and material used in this study. This will include the description of the original Delphi method and its simplified version mixed with a traditional focused interview and the introduction of the interviewees and other sources utilised during the process of this research.

### **4.1 Introduction to research methods used**

In this study I use a simplified version of the Delphi method mixed with a traditional focused interview with a series of 10 invariable questions accompanied with additional, interviewee-specific questions. In the next two subchapters I will describe the methods and interview structure in more detail.

#### **4.1.1 The Delphi method**

In future studies, the Delphi method is commonly used to evaluate and predict the possible future of social and technological development. It is a structured communication method relying on a panel of experts of the study's specific field. The panel consists usually of 15 or more experts. In most common cases, the Delphi method consists of two or more rounds questionnaires answered by the experts. After a completed round the conductor of the study provides the expert panel members an anonymous summary of the previous round followed by a new questionnaire based on the previous answers. Then, after the final round the whole study results are analysed and then published.

(Kuusi 1993)

The Delphi method is a fitting choice in relation to the topic of my research, because the process method can be used to sound argumentation options for the future and pave the way for policy choices (Linstone & Turoff, 2002). Although the aim of the group process is generally considered to be a consensus, it is not a necessity in either using the method or regarding my study's theme.

According to the futurologist Osmo Kuusi (1993), the typical Delphi study follows the following structure:

1. Framing and defining the objectives of the study and the research problem
2. Assembling a research team to conduct the research
3. Assembling the expert panel
4. Compiling, testing and adjusting the survey for the first round
5. The first survey round, executed either in writing (computer-assisted) or as an oral interview
6. Analysis of the first round of responses
7. Compiling, testing and adjusting the survey for the second round
8. The implementation of the second round of questions and answers assessment
9. Reporting of the results of the study

The ingredients of the Delphi questionnaire can be divided into the problem, the argument and the perspective. As this study has no direct or irrefutable right answers, it is necessary to include panel members as representatives of many different fields. Without being aware of each other, the panel members may give completely different answers to the same questions, which leaves some space for interpretation while compiling the conclusions during the analysis phase of the study.

The Delphi method's questions are often presented as an argument, a statement or an opinion that can be true or false. While this would enable a very simplified and polarized yes-no-series of answers that would be easy to analyse, it does not leave room for the interviewees to expand on their answers. For this reason, after each statement the interviewee is able to present his or her reasoning for the answer.

Osmo Kuusi (1993) divides the future study into four different strategies according to the expert panel members:

1. **The bystander's approach**, from which the development is monitored while trying to keep one's own desires separate from the estimates. At the same time

the expert assesses which development strand is likely to take the lead. This perspective represents the possible future visions, such as the hybrid radio.

2. **The future creator's approach** outlining developments on whose behalf one is willing to work. Such a future is desirable and within the limits of the possibilities. The work done in favour of it does not go to waste according to the expert's estimate. Through this perspective one can process, for example, DAB radio and other already obsolete formats, which are still, however, at some level kept alive, sometimes only because so much resources has been invested in them.
3. **The precautionary approach** to threats, which, in turn, outlines the future, in accordance with Murphy's Law, everything that can go wrong, will go wrong. This precautionary operator will be able to turn threats into opportunities. Perhaps this could be equated with themes, such as the replacing the DAB with DAB + standard.
4. And finally, **the opportunity based approach** where it is seen that the technical and other developments offer opportunities, which by daringly grabbing the outlined future can be realized. However, there is considerable risk that outlined the future will never come true. The hybrid radio bridging the gap between analogue and digital radio can be seen as an example of this approach. The Internet-based features of the hybrid radio can at least partially remove the scarcity of extra features previously unattainable by the analogue radio listeners.

Another option would be to divide the experts in the manner proposed by Linturi (1998) indicatively into administrative, researchers, production level and dissident representatives. In both categorisation systems exists the problem of the small amount of actual panel members, hence I decided to include a combined analysis of the panel utilizing both systems and also not limiting a panel member to be only a member of one category.

### **4.1.2 The simplified Delphi method**

Since the Delphi method is commonly used in much larger scale studies, I intend to utilise the technique in a simplified form. For the expert panel, my intention was to include approximately 10 media industry professionals and experts from selected European countries. I have also simplified the structure of the study in order to be more suitable for a master's thesis.

The simplified structure of the Delphi study:

1. Framing and defining the objectives of the study and the research problem
2. Assembling the expert panel
3. Compiling, testing and adjusting the survey for the questionnaire round
4. Completing the survey round either in writing (or computer-assisted) or with oral interviews
5. Analysis of the round of questions answers
6. Reporting the results of the study

As shown above, my study consists of only one round. The possible following rounds may be implemented in future studies, but for my master's thesis, only a single-round study is necessary.

### **4.1.3 The interviewees**

According to the future studies researcher Osmo Kuusi, the expert suitable for inclusion with the Delphi method must 1) be at the forefront of their field, 2) be interested in different disciplines, 3) be able to see the links between national and international and current and future development, (4) be able to examine the problems from an untraditional point of view, and (5) be interested in doing something new. I have chosen the interviewees in accordance with these criteria, but have left room for interviewing, for example, experienced radio professionals, even if they have not necessarily met all the criteria in the field.

Even though I had gathered and contacted many of the interviewees via email already during the autumn of 2015, my main focus regarding the forming of the panel was the tenth general assembly of RadioDNS on February 9<sup>th</sup> and the Digital Radio Summit 2016 on February 10<sup>th</sup>, both held at the European Broadcasting Union headquarters in Geneva, Switzerland. After attending the event and examining the newly gathered research I was able to make my decisions on the final panel.

I decided to approach the new forms of radio in Europe from the point of view of a select group of countries and standards. The countries represented are Norway, Finland, France, Czech Republic, Switzerland and the United Kingdom. The criteria the group of countries were chosen by were, among others, their relationship to the digital radio and other new forms of the radio.

Norway and the UK have been for years the European leaders of radio digitalisation, whereas Finland is quite the opposite with no digital radio whatsoever. In France, the digital radio broadcasts begun in 2014. Czech Republic has basically completed the test broadcasts and the infrastructure has already been developed to the point the digital radio could be implemented in the state radio and its only hindrance is the local legislation.

In addition to the countries, some experts represent also a certain form or format of radio, such as digital or hybrid radio formats. For example, two of the interviewees represent also a specific technical format of radio such as the hybrid forms of radio RadioDNS or Digital Radio Mondiale.

The interviews were conducted during the year 2016 starting from February and ending in August 2016. Due to time constraints and the busy schedule of some of the interviewees I had to make adjustments to the preliminary plan of conducting all the interviews during the spring of 2016.

The first interview was conducted via Skype already on March 4<sup>th</sup> with the CEO of Digital Radio Norway Ole Jørgen Torvmark. The interview covered both questions related to Norway and to the digital radio standard DAB.



For the second interview I flew to Paris, France where I interviewed the deputy director and head of innovation at Radio France Digital Matthieu Beauval during the Radiodays Europe conference held from March 13<sup>th</sup> to March 15<sup>th</sup> in Le Palais des Congrès de Paris. The interview took place on March 15<sup>th</sup> at the conference.

The third interview was done via Skype on March 18<sup>th</sup> 2016 with the chairperson at RadioDNS Nick Piggott, who in this study represents both the hybrid radio standard RadioDNS and the United Kingdom.

The interviewee for my fourth interview I had already met briefly in Geneva during the EBU Digital Radio Summit. I interviewed the vice chairman and executive board chairman of the Digital Radio Mondiale (DRM) Matthias Stoll regarding both the DRM as a standard and the digital radio in Switzerland on July 12<sup>th</sup> 2016 via Skype.

For the penultimate interview I visited the Czech Radio headquarters in Prague on August 4<sup>th</sup> 2016. My interviewee Karel Zýka, the technical director and the interim director general at Český rozhlas, provided insights on how the radio digitalisation project is proceeding in the Czech Republic.

My final interview was with the CTO and Head of Technology and Development at the Finnish national broadcasting company Yle Olli Sipilä with whom I discussed both about the radio digitalisation project in Finland or rather the nonexistence of it. The interview took place on August 9<sup>th</sup> 2016 via Skype.

After completing these six interviews I decided I already have a plethora of expertise and knowledge on record to commence the analysis process.

#### **4.1.4 The interviews and the questionnaire**

I am interested in the stories behind the radio and its development and therefore I want to give the interviewees enough time and space to share their opinions. Due to my background in radio and my interest in the stories, I conducted the interviews either face-to-face or via Skype.

Though the original length of the interview was hoped to be a compact 10–15 minutes, after the first Skype-conducted interview I realized the original time limit was very optimistic. After the first interview I decided to extend the interview time to 30 minutes per interview. This again was exceeded in some interviews with the longest one spanning to nearly an hour of talk on the topic of radio.

The core interview consists of the same ten questions for each expert panel members followed by a handful of specific questions that vary according to the interviewees' expertise, usually to emphasize for example the represented country's history of radio development.

In the tradition of the Delphi method, the first ten questions are presented in the form of a true or false statement after which the interviewee is to explain his or her point of view. The statements are designed with the knowledge of some possible overlapping. The accessory questions are more direct questions intended to cover areas not dealt with during the statement-phase of the interview.

The core ten statements are:

1. The future of the radio is digital.
2. The future of the radio is on the Internet.
3. The future of the radio is hybrid.
4. Analogue radio will not be replaced by digital radio.
5. Political support from the state is necessary in order for the radio to evolve.
6. Support from the private and commercial market is necessary in order for radio to evolve.
7. Radio has to evolve in sync with the listenership.
8. The Internet has changed the way of listening to the radio.
9. On-demand, streamable and downloadable content is eating away the listenership of regular, transmission-based broadcasts.
10. Europe is leading the way in radio's evolution.

During the interview I have also explained some statements if necessary. For example the statement no. 7 was at first difficult to answer for one interviewee.

Below are some examples of the accessory questions used:

*Where do you see the future of radio going in Your country?*

*How were the new forms of radio introduced in Your country?*

*Have the production values of radio changed in the Internet era?*

The accessory questions are not locked but rather a set of them is prepared before the interview and the additions and changes are made to them according to the information gathered during the statement-phase.

## **4.2 Other research material**

In this chapter I will introduce the other research material used for my analysis and for the initial background research.

In addition to the aforementioned interviews, in my final analysis I also decided to utilise my previous interviews I conducted for my 2015 bachelor's thesis with two Finnish experts on the subject: the the adjunct professor at the University of Tampere Marko Ala-Fossi, the CEO of Radiomedia Stefan Möller who also acts as the head of the Association of European Radios (AER) and the planning chief of Yleisradio (Yle) Anne Haaja.

I will also include among my source material some relevant scientific articles and publications and the media articles related to radio's development in the focus countries. The more scientific articles include, for example, a few research articles by Stephen Lax and Marko Ala-Fossi but also a master's thesis "*The Social Shaping of European Digital Radio*" by Matteo Campostrini (2015). The media articles vary from updates on newspapers like the Norwegian Dagbladet or more radio-oriented publications and websites like the Radio Magazine.

I gathered some additional material such as the presentations from the RadioDNS general assembly of 2016 and the Digital Radio Summit 2016 both held in the European Broadcasting Union headquarters in Geneva in February 2016. Some of the presentations are available online, some only on my own recording devices. The materials from the event also include some demonstrative visualisations of the digital evolution of radio from the European point of view.

## **5 Findings**

According to the current trend, radio in Europe is slowly but steadily digitalising. It is, however, not yet entirely known where this progress will lead eventually. There is even some debate as to what is considered digital radio. Most commonly digital radio is understood as regular radio broadcast distributed digitally excluding the use of the Internet. The digital radio transmission standard most commonly used in European countries is Digital Audio Broadcasting – DAB. In Finland, however, due to the omission of digital radio broadcasting, the term is associated with the use of the Internet.

When it comes to Finland, it is widely known in the radio-related academia that Finland has practically forsaken the digital radio. Though recently launching its own podcast production, the national broadcaster Yle has been very limited in developing its radio network outside the FM broadcasts and the Internet. The lack of process in radio digitalisation is rather surprising and may eventually end up leaving Finland behind in comparison to other European countries. For now, however, there are reasons why Finland should not adopt digital radio anytime soon.

### **5.1 The future is digital**

Generally, all of the interviewees believe the future of the radio is digital. The exact technological way for the radio will become digital as well as the timeframe of such switch however varied according to the interviewees.

When the question about whether the future of the radio was digital was asked from the interviewees from countries that have an on-going DAB radio digitalisation project, the question was understood in relation to that specific context. In Finland, however, this was not the case. Yle's Olli Sipilä agreed that the future of radio is indeed digital, and that all the radio production is already digital but the distribution is still analogue. Of the interviewees, Sipilä does not exclude the possibility of eventually replacing the "old relics" of analogue distribution with digital distribution.

*"Firstly, the analogue equipment will eventually get old and has to be replaced. At that moment we will have to make decisions on how we want to replace it. Secondly, the listening preferences will eventually inevitably change so that radio or audio is used mainly digitally. But what would be the time-frame for that – that's another question."*

In the other focus countries the radio digitalisation is very much a current trend, and the interviewees share similar thoughts as to why radio digitalisation is necessary. According to Norway's Ole Jørgen Torvmark it is absolutely necessary for radio to go digital because *"radio cannot survive as an analogue island in a digital media world."* Also, he pointed out that radio has to go digital in order to be able to develop to offer new content and new experiences to the listeners.

RadioDNS's Nick Piggott believes the switch to digitalisation is inevitable and necessary and that the benefits of digitalisation drastically out-weigh the short-term complications of transitioning people from analogue to digital. Radio France's Matthieu Beauval had very similar opinions. He has confidence in the digitalisation project even though the France is not that far in developing the DAB services.

Karel Zýka from the Czech Radio on the other hand believes the main reason why analogue radio would in the future be switched to digital was that the analogue frequencies are full.

*"It is so crowded there is no space for any new service any new channel new radio. You cannot start a new radio in analogue – it is absolutely full, there is not one free frequency."*

Not all believe however that the change to digital will be a complete one. For example Digital Radio Mondiale's Matthias Stoll thinks the future of the radio is not completely digital as long as the analogue distribution is still so strong.

*“Our experience shows in the past ten years that as long as the analogue radio is covering all the needs, there is no will on the consumers' side to change to the digital reception.”*

This point played an integral part with Norway's plan to complete the radio digitalisation. Without any pressure the switch from analogue to digital may not however happen as fast as one might hope. According to Torvmark, if countries like the UK want to wait to set a date to end the FM network until a certain level of use has been achieved with the digital radio, it will go slow. Without a set date and knowledge of what is going to happen, *“the listeners, the related industries such as the car industry and the electronic trade are all going to be unsure of what's coming”*. In order for the process to run its course fluently, there should be no question whether the future of the radio will be digital or not.

If there is uncertainty, the digitalisation process will take a lot of time and it will cost the radio industry a lot because they have to keep up the double distribution which is the most expensive thing for the radio industry and that will of course make it more difficult to create new content which, according to Torvmark, is the one of the most predominant reasons for people to buy new radios. This will create a “vicious circle” which is hard to break out of if one does not have a clear plan.

In Norway a set time was given when the FM network is going to be cut off and both the people and the industry accepted it. Torvmark says it was not until they had a very clear plan to proceed that actual progress started to happen.

*“That's for sure the way to do it for us. I'm not saying that's the right answer for every market but I think it's at least for Norway the right way to go.”*

### 5.1.1 The Norwegian plan

The interviewees seemed to agree on that both political support and commercial support are necessary for radio to evolve. In countries where there is public service broadcaster or where the state has a regulatory role, the state intervention cannot be avoided because they are already involved not only economically but also in broadcasting and technology.

The state and government cannot however pursue the technological development unilaterally. According to Piggott (2016), all the benefits of the digitalisation need to be realised by all the broadcasters and on a timeline that fits their business model.

The timeline for each country will be different because each market is different when it comes to regulations, the economy, the geography and the topography of the country. Norway's Torvmark emphasises it is important for each country to make their own timelines and their own decisions on the digitalisation of the radio.

Currently only two countries in Europe have a set timeframe. In Switzerland the radio digitalisation switchover will start in 2020 and is estimated to finish by the end of 2024. In Norway the process begun in January 2017 and will be ending by the end of the year.

Like most interviewees, Torvmark believes that in Europe we are going towards a digital radio market and that eventually the analogue radio will be replaced by the digital radio but it will take time. *“There are a lot of stakeholders to make a shift like this possible – and then you need a plan that has to be a result of collaboration between the industry and all the related industries and the politicians”*, Torvmark says.

The key to Norway was a plan that made it possible to invest in new networks that in turn made it possible for producers and manufacturers and stores to start selling new radios after which radio stations could launch new stations. The listeners' reason to buy new radios and go digital is that they get more – more radio, more content, but

also better quality. The main incentive advertised for the public is the more radio, more choice.

*“Collaboration is the word that best describes the history of the digital radio in Norway. That’s what made it possible. We have had a really strong collaboration between public service and the commercial players throughout the years and that’s the key”*, Torvmark states.

The digitalisation process can be reflected on Fidler’s mediamorphosis concept, Everett Rogers’s diffusion theory and the various affordances introduced in chapter 2.1. The change in affordances is on the face-value positive for the listener. It can be said that in order for such a project to be realised, a societal shift had to have had taken place already. The group of early adopters had been growing steadily since the introduction of the DAB standard from 1990s onwards.

The technological developments had lead to the implementation of the more advanced DAB+ standard and, with support from the political institutions and the various industries related to the radio, a critical mass was eventually reached. In Norway, the process is already in the latter half of the 30-year-rule by Saffo. As Torvmark sees it, it has taken a lot of time and effort:

We have had digital radio in Norway ever since 1995 more or less. We have tried to develop digital radio for many years and we experienced early that we will need a complete switch-off to really be able to make the digital offer as good as it needs to be. Norway has vast sparsely populated areas and really challenging topography, so for us to build radio coverage it is really expensive and to say so our networks are comparable to the networks for example in the UK but we are only five million people and so it has been impossible for us to have a long period of dual transmission.

The radio industry has been very clear that we have needed a switch-off date for a long time. We have been discussing this with the government through the years and there has been a lot of taskforces and whitepapers which have failed to give us such a switch-off date, but we had a breakthrough in 2011 when we got this whitepaper that stated that radio will be digital and gave us the fine conditions which we then again met in 2015. That whitepaper in 2011 was the game changer for us. (Torvmark 2016)



### 5.1.2 “There is nothing wrong with analogue”

Despite Norway’s promise of a DAB success story, most interviewees still see analogue as a prevailing radio broadcasting medium for the time being.

The most common reason why the analogue radio will not be replaced by digital radio was that the current analogue network works so well. As Karel Zýka puts it “*there is nothing wrong with analogue*”. In fact, the Czech Republic has even launched new talk radio stations utilising the AM technology because of the fact that the FM frequencies are full.

Also Switzerland’s Matthias Stoll views the analogue radio as an existing and the well-established distribution channel without strong competition:

Either it will be included in this hybrid model or these other formats will have to bring more variety to shift the listeners. At the moment it is the number one distribution channel and, if there’s no regulation or a replacement with similar attributes, it will remain the top radio distribution – and the easiest one for the broadcaster and also for the listener. Radios are very cheap and there is a fine variety of radio programmes available. (Stoll 2016)

In Norway the switchover from FM to digital is currently on the way. During the time of the interview with the CEO of Digital Radio Norway Ole Jørgen Torvmark the transition was still a year away. Being the pioneer, when it comes to digital radio, the whole world is paying close attention to Norway.

We certainly feel the attention. Of course it’s a little bit scary to be the first and this is a really big technology shift, but I think we have the possibilities. We have done this for a few years now. It’s not like we introduced this technology last year. We have been working with digital radio for more than twenty years and I think we are really ready to make the switchover, but it’s challenging. Nobody has done this before and it’s a lot to think about, but hopefully we will do most of it right. We will for sure do some of it wrong, but I think we will succeed of course and hopefully it will be inspirational for countries and markets around us. (Torvmark 2016)

According to Finland’s Olli Sipilä, the Norwegians are taking a rather big risk in switching of the FM network. Switzerland’s Matthias Stoll believes it might even be dangerous from the regulation point of view as he thinks there will still be some existing FM radio stations that will try to keep the network working on the private and

local side.

In the Czech Republic, Karel Zýka sees the FM switch-off definitely happening but in the far future because “*there’s no point in supporting two formats*”. Even though it is not a question of technology anymore, there is no reason for the Czech Republic to do the switch-off yet, definitely not within the next ten years.

In his opinion it is also a marketing question and whether the public will feel they no longer need the FM network when the DAB network has been made available. He believes DAB was designed to replace the analogue FM. People should not find any discomfort in the switch in due time.

The Czech ministry of culture has postponed the decision of starting the DAB service to the year 2022. The DAB process has been an on-going topic in the Czech Republic’s broadcasting scene for over 10 years. Zýka reflects on the “*crisis of television digitalisation*” when he was a stakeholder in the negotiation process.

According to him, the forced nature of the switch-off created some conflict on the market and the private radio stations used that conflict for their advantage by promising not to make any trouble and accept the digitalisation process if the state would fix the radio channels’ licences until the year 2025.

It was business, because the licenses are for five or six years and after that it must be again renewed. That was 2009. They suggested that if we prolong the licences to 2025, they would accept the transition to digital without any trouble. It is not written down exactly as I said, but now it does not look like they will give us the analogue licence and switch to digital. It means the first start of DAB as a regular national issue will be in 2021. So I would say that for at least fifteen years it would be impossible to stop analogue. (Zýka 2016)

Zýka sees that any kind of digital radio broadcasting is good for people for two crucial reasons. Firstly, it is a much wider place for services. He sees value in the fact that the digital scene is not fixed only for several broadcasters to use. According to him a bigger place for competitors creates plurality and is good for democracy.

The second thing is that it’s cheaper for the environment also, one frequency could have maybe fifteen or twenty channels with the same energy. It needs more

transmitters because the waves are shorter and we need maybe three or four times more transmitters compared to analogue. But at least it's five times cheaper and five times less energy than analogue. (Zýka 2016)

Norway's Ole Jørgen Torvmark believes that the rest of the Europe is also going to the direction of digital radio, but it will take many years before the whole Europe is digitalized.

We see good development in several countries and I hope that we soon will see some changes from the government as well as from the EU making this switch easier for the people and the industries that are involved by stating that all radio sets in Europe should be both analogue and digital. I think that is the most important thing to ensure the future of radio in Europe. It is really important that we get digital so we can still be relevant for the audience and not lose the fight on people's time, to be sure that we can compete with other media entertainment and all the other stuff that now claims people's time. We really need to develop a better radio offering and for that we need digital radio. To make that easier for every country and every listener I really think the EU could make a difference by saying that all radio sets should be analogue and digital. (Torvmark 2016)

The digitalisation process is often seen as inevitability. Broadly speaking, every analogue technology will ultimately be replaced by a digital one. All the interviewees agree on this. Nick Piggott attributes the benefits of the switch to the efficiency of digital data: *"All analogue technologies will be replaced by digital technologies because the cost-benefits of transferring to digital is always positive if you look at it over a long enough timeline."*

### **5.1.3 The Internet – a dance with the Devil**

*"The future of the radio is already on the internet"*, as Radio France's Matthieu Beauval put it in his answer. Radio on the Internet is indeed already an integral part of all major radio broadcasters' strategies. Most channels have their own web stream and produce at least some of their content also in podcast format. Some interviewees, especially Finland's Olli Sipilä, believe that the Internet plays also a big part in the radio digitalisation process. It opens up a huge amount of possibilities but does not come without responsibility.

Matthieu Beauval believes the radio service providers must remain relevant, independent and free in the connected world. He sees the huge private companies

controlling the Internet, especially when they come from the United States, a potential threat to the sovereignty of radio broadcasters online. *“The main point is to learn to dance with the devil.”*

He emphasises the meaning of quality and content to be able to stand out from the immeasurable amount of data online. Without content, he believes, the radio stations are nothing.

Norway’s Torvmark has similar views. He thinks making radio what it is today is largely due to the content but also the properties of broadcasting. *“It is the broadcasting that has formed radio for decades, it makes radio available everywhere – free, easy to use and for millions of listeners to listen simultaneously. I think radio is very much connected to broadcasting for many years to come“*, Torvmark says.

According to Torvmark the future of the radio is also on the Internet but not on the Internet alone, at least not for a long time. He believes the Internet has not yet changed the way people are listening to the radio. In Norway only 10 percent of all radio listening happens through the Internet and it is usually in form very similar to the listening of regular broadcast radio.

Olli Sipilä believes the Internet is already eating away the listenership of the traditional broadcasts, especially when it comes to the younger generations. *“10–15 years ago we thought the on-demand was a future phenomenon. Well, now it’s the reality”*, Sipilä states.

He broadens the effect to audio consumption in general and how the Internet-based listening and on-demand services have directly impacted for example the audio recording industry. *“This kind of development is taking listeners away from especially music-based commercial radio stations in a big way. We can see the effect already. Playing music is just not enough anymore.”* (Sipilä 2016)

Nevertheless, the majority of the interviewees believe there are no visible signs of Internet-based listening having a diminishing effect on the listenership of the regular broadcast radio in a larger scale. The popularity of podcasts and other Internet-based

forms of content offered is increasing but compared to the broadcast listening it still is very small.

It's another kind of listening and entertainment when you use a podcast. It's more like on-demand-TV, more like Netflix, when you really want to lean in and listen to a programme and you choose carefully what you are listening to. Ordinary radio is more like a friend that follows you through the everyday life. (Torvmark 2016)

Torvmark says radio should however use all the possibilities on the net. In that sense radio's future is hybrid. He says it is difficult to say how much of radio listening in the future will be via the Internet and how much will be via regular broadcast.

What we experience here in Norway and in several other countries is that if people have a choice, as in Norway we have had both DAB and Internet radio for 20 years, and people are choosing broadcasting. Everyone in Norway can access the Internet. We are a very advanced country when it comes to smart phones and tablets and having Internet connection available everywhere. We've had Internet radio for as long as we have had DAB, but the figures tell us that people are using the broadcasting and digital broadcasting more. There are several times more times of listeners on broadcasting than we have on the Internet radio. And the same goes many other countries like the UK for example. (Torvmark 2016)

The broadcast radio is seen more like a part of daily routine and it can be a secondary form of entertainment in the background: *"Those two are different. I don't think podcasts or on-demand-listening will replace live radio, but I think they fit perfectly together and they increase the offer the listeners receive from the radio industry."*

In the Czech Republic, the situation is quite different. Karel Zýka thinks it might take up to twenty years before an Internet coverage wide enough would be available for the Internet radio to be even comparable to the current free-to-air broadcasting.

According to him, part of the problem is in the technology:

Internet is based on single service to single person. If I listen to some radio station and you listen to some radio station it will be served via two wires and two data flows, but the new format of the Internet, which is not used so much now, is that the system recognises that we are in the same cell, the same territory and it will charge us by the one-way. But it is only in small cells, it's not like one powerful broadcaster that could cover many kilometres. (Zýka 2016)

Matthias Stoll believes the Internet cannot cover *"the complete chain which" is the human being listening to radio*". According to him a person working in an office

might be able to enjoy the Internet services without interruption, but if the connection is bad for example in a crowded situation, the amount of Internet traffic would not allow uninterrupted listening. In those kinds of moments the large amount of radio programme data would simply not get through. *“The traditional radio broadcast remains the only way to cover and to reach all the people. The future of the radio is not on the Internet, but maybe a shared pie on some areas”*, Piggott predicts.

Nick Piggott also believes that the future of the radio is not *only* on the Internet: *“Technology and distribution should be appropriate for the application and there are more technologies available than just IP over either fixed line or mobile so broadcast is a relevant technology for a number of applications of which radio is one.”*

The Internet is seen so that it has added some things to the traditional radio listening rather than replacing it as a broadcast distribution medium. Some believe multiple distribution technologies are the most efficient way to manage costs and to get the right quality of service between the broadcaster and the user so hybridisation is a feature of combining together different technologies to use them most appropriately and most cost-efficiently.

Most of the interviewees feel that Internet has changed the listening of the radio but to varying degrees. According to Piggott there are some correlation between radio digitalisation and the popularity of the Internet radio: *“In the countries where the radio industry has engaged with the digitalisation actively there is far less demand for Internet radio listening than in those countries that has refused to get involved with digitalisation”*

#### **5.1.4 RadioDNS and DRM – parallel possibilities**

The conversation on the evolution of the radio in Europe is often dominated by the radio digitalisation and the Internet-based forms of radio. Perhaps because of this, the impact of other existing new technologies such as the hybrid RadioDNS is often bypassed in the discussion.

According to Nick Piggott, RadioDNS is always positioned as an incremental function to the traditional analogue broadcasting. RadioDNS is not promoted separately because the addition of hybrid is about users receiving a better experience. There are no plans on creating a consumer-facing brand for it. There is no consumer-based promotion of the technology, only the benefits.

*“What people will be focused on is the extra features they get. The fact that that’s been powered by hybrid kind of isn’t important to the listener. It works like a radio but it looks much better.”* (Piggott 2016)

The RadioDNS hybrid radio is open for any broadcaster to use. The promotion work is more about education for the radio stations about the technology that can be used to enhance the value of the station’s broadcast radio.

Piggott also notes that different countries react to hybrid radio differently. In countries that have invested heavily to DAB the idea of might not be as appealing because they may not want the difference of the listening experience between digital and analogue radio to shrink. It is not all binary though, and there are a lot of different factors at play.

From a manufacturing point of view there is not much resistance in making the hybrid radio a part of the devices since generally all manufacturers want to improve the functionality they are offering in their devices. If the feature offers a better experience and it is not hard to implement in the devices, the manufacturers are interested in doing it. The primary objection according to Piggott is that there needs to be enough radio stations providing hybrid content so that the users actually can see the difference.

*“If they do all this work to make radio work better and then none of the radio stations provide enough metadata to demonstrate that, there’s no point. They’ve just wasted their time. There is always this kind of scenario that the broadcaster wants the manufacturer to go first and vice versa.”* (Piggott 2016)

The main objectives for RadioDNS and their Project Logo are firstly to educate the radio stations to understand the technology and deliver the metadata and secondly to getting the stations connected to technology providers and service providers who can do it for them to avoid the project becoming a technological burden.

Yle's Olli Sipilä compares the development of the Visual Radio in co-operation with Nokia to the current development of the RadioDNS: *"It was like the poor man's DAB. We took the FM broadcasts and then we brought other media content like still photos and commercials and such via the mobile network. I've been laughing about the RadioDNS that we tried that thing also at some point."* (Sipilä 2016)

All the interviewees believe the radio will in the future be more hybrid and RadioDNS may have a potential role in the way European radio industry will come to comprehend possibilities of a hybrid radio.

When it comes to the development of "the other digital radio", Digital Radio Mondiale, the future does not look as promising in Europe at the moment. There is on-going growth in the usage of the DRM but, as mentioned in chapter 3.1.3, more progress is made in Asian and African countries.

The European problem is quite clear to DRM's Matthias Stoll. According to him the DRM's position in Europe is difficult by a large part because there are no more signals on air that could be switched from analogue to digital.

I think for DRM there is not much usage for radio programme broadcasting. We see that in this technology there are possibilities in other kinds of usage, maybe data transmission or niche radio or coast guard – general information distribution. For Europe there are no more broadcasters really there to make an audio broadcast available all over Europe from this side. For the DRM technology I think it's a technology for data transmission and special audio programmes. (Stoll 2016)

### **5.1.5 How will the radio evolve in Europe?**

According to the interviewees it is rather obvious that the radio has to evolve with the listeners on principle as radio cannot evolve without its listeners and the support and



understanding of what is perceived as good. The commercial world's argument that one has to study what the client likes is valid. In Nick Piggott's view an ideal way would be to lead the clients or the listeners to new things before they start demanding them from you.

Many of the interviewees believe Europe is leading the way when it comes to the evolution of radio when looking at primarily the engagement with the improving of broadcast radio. According to Piggott, Europe is doing the most to maintain the model that is open and free and ubiquitously available to everyone. He believes in the future there will be a strong radio industry because there is a demand for audio-based media.

*“I think what we call radio will change now will change but the fundamental of it which is ubiquitously available, free-to-air audio stream will still be a very relevant business and broadcast a very relevant technology in ten years time.”* (Piggott 2016)

For the final statement considering Europe leading the way in radio's evolution, Ole Jørgen Torvmark did not consider himself an expert for all aspects of the radio, but he believes the statement it is true when it comes to the digitalisation of the radio. He mentions that the United States is an also important market also for the digital radio.

Finland's Olli Sipilä on the other hand thinks that Europe is not necessarily the pinnacle of radio development. When comparing to the development made in North America, he believes the United States has for example made much more radical decisions when it comes to the distribution market. Still, the development has had similar faults on both sides of the Atlantic.

In both Europe and the United States innovation got stuck to the idea of replacing FM radio with something else that would implement “a fun and cool slideshow as something amazing and new. But then came the Internet and mobile Internet that has taken the world into a totally different direction, especially the younger generation and their consuming preferences.

Sipilä gives credit to the European public broadcasters for being able to stay on track with the listenership's preferences and also moulding the system into its current form. Nevertheless, he thinks the situation might have already become reversed in the last few years and that it is now the consumer who gets to determine the direction the

media companies are taking, also in technology.

According to Sipilä, the survival of radio so far is largely due to the public broadcasting companies, and especially in Europe they are the institutions that are keeping the radio alive also in the future.

New technological advances are happening in Europe, and Matthieu Beauval would call Europe a test lab when it comes to radio development, but not the only one in the world. He brings up an interesting point that, when it comes to radio development, Europe might be too focused to technology in oppose to west from Europe and east of Europe being more focused on the usage and the content.

*“The move we have to make here in Europe is to be better observers of the listeners – not only compete in technology. It’s not a problem of engineers anymore – it’s a problem of traders, of inventing the right content and a marketing problem. On the internet, we have to be found.”* (Beauval 2016)

Beauval mentions Serial, the popular podcast by This American Life, as an example of something that could have been also invented by European radios but was instead created by a private American company. According to Beauval, Serial has transcended the basic concept of what a podcast can be to a *“whole new universe of content”*. The United States can also be seen as a natural market for podcasts: the country is divided into different time zones but united by the same languages. The time-shift feature of the podcast eliminates the problem of different broadcast times across the country.

Even though technological innovations in radio, even in Europe, are not that common, Matthieu Beauval gives an example of a future radio innovation developed in Radio France: a 3D audio standard called NouvOson. The broadcasting happens via IP and in the future also via DAB+, and the 360-degree sounds and music can be experienced with a special set of headphones. The surround and binaural radio broadcasting technology is unique in France.

## 5.2 The new forms of radio in Finland

As described in earlier chapters, Finland's direction in radio development has been somewhat opposite to the rest of the focus countries. The DAB project has been non-existent in Finland since 2005 while the rest of the focus countries are all moving in the direction of radio digitalisation. Since there is no active DAB service, there is absolute silence when it comes to a possible FM switch-off. In its own way, Finland's radio evolution is currently the odd-one out in European radio development with no intention of moving out of FM and mainly focusing on internet services. Finland is also unique not only in having little faith in DAB—as well as in DRM—but also because very few people elsewhere saw DVB-H as a significant option for digital radio (Ala-Fossi et al 2008, p. 12). These unique and rare characteristics make the current state of Finnish radio development an interesting one.

In my interview with the Head of Technology and Development (CTO) of Yle Olli Sipilä declared that the radio is doing surprisingly well in Finland at the moment and that it has always been a very powerful medium. He believes radio will have a strong future in Finland in the coming years.

*“Radio has survived the black-and-white television, colour television, digital television, so many turning points. It seems that the Finns are a radio nation”,* Sipilä describes.

Finland has not pursued the development of the digital radio in 12 years. When discussing the possible future of the Finnish radio, I also asked about the reasons why digital radio was not developed any further in Finland. According to Sipilä, there were three main reasons:

Firstly, the distribution contract of the test network was ending and we had to think whether we wish to continue and under what conditions. It all boiled down to three factors. The first was that we did not really have any political support. Back then, and even now as far as I know, the Ministry of Transport and Communications concerned DAB radio to be something doable if the radio industry would be able to find consensus over it and broadcast licenses would be granted to the commercial stations if they would want them. At that point none of the commercial stations were at all interested in DAB.

This meant that the Ministry of Transport and Communications (MINTC) had no interest to support and further develop the DAB project. Sipilä thinks that the timing was also a bit off since the television was also being digitalised at that time which was a much bigger issue for the officials at the MINTC. The project simply lacked political support.

The second issue he believes to have been the unwillingness of the commercial radio broadcasters to participate in the digital radio project.

We established that the commercial radio did not want in any form begin to digitalise the radio. In their perspective it was more about the bare survival of the industry and whether there was enough revenue. We must remember in that time the commercial radio was living in quite a big turbulence. Franchising was budding and small local radios were disappearing. (Sipilä 2016)

Sipilä believes there were simply not enough financial resources to begin a double distribution on neither the commercial nor the public side. During the interview Sipilä stated that losing Nokia as a research partner in the DAB project in 1996 had no impact on the decision.

*“Nokia was never involved in our DAB project. Our decision had nothing to do with Nokia. I know it because I myself have signed those documents then”,* Sipilä states.

The third factor was that there was a very limited amount of available DAB receivers. In addition, they were surprisingly costly and did were sold by only a few retailers. According to Sipilä it was a chicken-or-egg problem. In order for the DAB project to go further the commercial radio should have been involved and the network should have been expanded to cover a much larger area. The coverage at that time was limited to *“the pizza triangle”* of Helsinki, Tampere and Turku.

*“So at that time we decided not to further the project anymore and went to this wait-and-see mode to see whether the DAB would become a success anywhere.”,* Sipilä comments.

The strategy was then and still is that Yle wants to wait what will happen in other

countries such as the neighbours Sweden and Norway. As Sweden has gone back and forth with their decision to set the FM switch-off date, the most interest lies in the development of the on-going Norwegian switch-off process.

As discussed in the previous chapter, the future of the radio is going to be digital also in Finland but the timeframe for such digitalisation process is not yet known. At the time when the analogue distribution network's technology will be too old and has to be replaced, DAB may be once again introduced to the Finnish radio scene.

Sipilä believes that digitalising the radio network is much more difficult than the television digitalisation process, which was a success in Finland despite being a mandatory transition. According to him, the challenge comes mainly from the much greater amount of receivers when compared to TV sets. Since there are approximately two million households with approximately 5–7 radio receivers plus all the other receivers adds up to 15 million receivers – an amount that is in Sipilä's opinion very challenging to exchange to digital receivers.

*“Also, the single unit of a radio receiver is like buying three cans of Pringles from the shop. The television digitalisation was substantially easier as a project. Radio is hell of a lot more difficult – it's too simple a device to be switched.”*, Sipilä compares.

Another great challenge is how the future generations will be using radio or audio. Sipilä sees that the world has become immensely more visual in the past five years with the services made available by the increased availability and quality of the mobile Internet.

The challenge is quite big for the radio. I myself believe that radio will remain as a medium but the way people consume it will be fragmented. At the moment many media companies will have to choose where and how to invest and what kind of solutions they will make in their production. I think the consuming will change but it will take a bloody long time. Bottom line is that we will still need a linear distribution for a long time. (Sipilä 2016)

Even if the radio will not be digitalised in the same fashion as for example in Norway, Sipilä believes the radio will in any case be digitalising via the Internet usage, especially the mobile Internet services. If at some point it would however turn out to

be a strategically well-founded option to make another attempt with DAB, Sipilä believes it would be rather easy.

*“At that point, if needed, we would definitely be able to start up a DAB service rather quickly even”*, Sipilä assures.

In the interview Sipilä did not mention any concrete examples of Yle pursuing a more hybrid offering in their radio services apart from previous projects that are no longer active.

### **5.3 Four scenarios for a possible radio future in Finland**

In this chapter I will describe four different scenarios of radio digitalisation in Finland and the possible effects on Finland’s national public-broadcasting company Yle. In the analysis the political, the technical and the financial aspects are taken into account and related to the recent history of the Finnish radio development, as described in chapter 2.2.1, and current and possible future trends of the European radio scene. The possible formats to adopt are the most popular ones gaining ground in Europe at the moment – DAB and Hybrid radio. Also, introducing no new formats is of course also an option.

In its most recent strategy manifesto *“Yle 2020 – in the midst of Finns”* (Yle 2020 – Suomalaisten keskellä 2016) Yle states that it will “constantly develop and try new technologies and ways to make work” and to act “cost-efficiently, fluently and responsibly”. In Yle’s eight seminal development goals for 2016–2020 the second is the renewal of television by investing in “light and flexible production and publication technology”. The third goal is dubbed “We will take the radio online”.

This goal is reached by *“increasing the amount of radio content and usability options online, especially on Areena”*. Yle will develop audio services for especially devices “on-the-move” and devices developed for cars. As the last goal, number 8, Yle names the developing and increasing co-operation with distribution and technology partnerships as well as commencing new experiments and development with different

operators.

Yle claims to have anticipated the severe change of television and radio and also states to be in the peak of audio and video publishing development in order to provide the Finns with the best possible public service.

(Yle 2016)

### **5.3.1 Scenario 1: Adopting DAB+ – still not a timely option**

Since there is no point in even considering to adopt the once-tested, obsolete format DAB, the only viable option of bringing digital radio to Finland would be with the newer DAB+ format. But is the right time for it even now? With the current government running a tight ship when it comes to Yle's funding (Sutinen 2016), it is very unlikely for the public broadcaster to receive additional funding for a new costly format that already has failed once.

With the exception of Norway, Digital Audio Broadcasting is not considered an option to replace the analogue radio for the time being. For example Sweden has already postponed the decision of the switchover many times. Still, when it comes to European countries, Finland is in the very lonely minority of not providing any digital radio services. That only is not a reason enough to start developing a potentially unwanted format, since in the public there is no high demand of bringing digital radio to Finland any time soon.

As Sipilä commented, though Yle has no plans to invest in digital radio, if needed, the public broadcaster would have the capabilities of starting up a DAB service “rather quickly even”.

### **5.3.2 Scenario 2: Adopting hybrid radio (RadioDNS) – an innovative option**

Continuing omitting the digital radio and focusing on expanding the functional FM radio experience might be an innovative option for Yle considering the popularity of its streaming and on-demand service platform Yle Areena. The RadioDNS, being a

not-for-profit organisation run by broadcasters and manufactures, has early on decided that the project is an open standard. (RadioDNS 2015)

The initial research and development have already been done by RadioDNS community and other broadcasters, hence the innovative format would be both cheap and swift to bring to Finland. Also the manufacturers already provide budget options of receivers such as the smart phone Samsung Galaxy A3 already sold in Finland. The mistakes and misfortunes of the original DAB experiment are likely not to be repeated. With the new technology introduced Yle would also be able to fulfil its strategy and the goals of developing Internet-related radio services and commencing new technological experiments and developments with different operators. (Yle 2016) According to Olli Sipilä, Yle also has history in testing similar technology with the Visual Radio project development with Nokia.

But would a service like the hybrid RadioDNS truly bring anything extra to the listener? The experience RadioDNS would be offering could be at least imitated by the existing Yle Arena with only a few modifications as an Internet radio service. In Finland the mobile Internet services are cheap and the mobile network covers practically nearly the entire Finland with the 3G network also continuing to be very extensive (Mobile Network Coverage 2017). The RadioDNS may not have enough new features to offer the Finnish listener for them to start demanding it. If a hybrid ambassador were to come and educate the Yle executives of the benefits and easiness of the format, there might still be resistance.

### ***5.3.3 Scenario 3: Adopting both hybrid and digital radio – the costly option***

Adopting both hybrid and digital radio would without a doubt be the largest financial and technological leap by the Yle in a decade. It would prove that Yle is developing and bringing new technology to Finland in not only for the television and the Internet but also radio broadcasting. With the combination of RadioDNS and DAB+ Yle would instantly become a leading country in public radio services. Additionally, the inclusion of RadioDNS would bring the Internet-related content not only to analogue content but also to digital radio content. However, considering the high costs and the



low demand of digital radio, this scenario would be the most unlikely of the four.

#### ***5.3.4 Scenario 4: Adopting no new formats – the most probable scenario***

With the current political climate in Finland it may prove wise not to suggest introducing any new radio formats since without a doubt they would also include additional costs for the state-funded broadcasting house. With the index increments frozen for at least two years Yle might have to rethink its role also as an innovator in the broadcasting world. It is very likely that since the current government's policy is to rather limit than expand Yle's functions, no technological innovations will be made.

The current investments to developing new Internet content development are likely to be the only technological investments related to radio in the foreseeable future. Podcasts and other on-demand and streaming services may be enough with little to no demand from the public for any technological evolution.

In the light of a recent parliament's special board's statement on Yle's role and functions this would seem to be the most probable scenario. According to the statements made on June 17<sup>th</sup> 2016 the current government wishes to strengthen the politicians' position in Yle's management and increase the amount of both programming purchases from independent producers and the co-operation with the commercial media.

(Sutinen 2016)

A recent study provided some extensive expert perspectives on future scenarios for radio media 2025 in Finland. In the study all nine Finnish respondents believed that FM radio will still have a central role in Finland in 2025. Five believed digital radio has no prospects in Finland for the time being because nobody is interested or investing in it. With the current FM licenses expiring in 2019, it is very likely that there will be only FM-based radio broadcasting also from the year 2020 onwards.

(Jauert et al 2017, p. 15)

## 6 Conclusions

The roadmap for the European radio is not united. Though a digitalisation process is on the way, analogue radio will not be overthrown by the digital audio broadcasting within the next ten years in more than a handful of countries with Norway and Switzerland making the switch first. The idea of a hybrid radio is becoming more and more attractive with Internet-based services bringing new kinds of features into devices already familiar with the user.

Indeed, the radio of the future is user-driven. For now, there is not one format behind which every broadcaster would line up to. Before one could be found, one question needs to be asked: What defines radio in 2016?

Is Internet-based listening still thought of as “listening to the radio” if it no longer has anything to do with the broadcasting schedules removing the listener from the mass audience experience? On-demand content has broken the simultaneous listening community creating a new, individual way of radio listening.

As Yle’s Olli Sipilä pointed out, the effects of the on-demand availability of music can already be seen with the younger generations migrating from playlist-based commercial radio channels to listen to music on YouTube or Spotify. Music is no longer the primary reason why listeners tune in. Apple Music, Spotify and similar services have begun their own radio-like content production with A-list DJs and curated content. Hence, for the past decade especially in Europe the popularity of talk radio has been steadily on the rise, and the broadcasters have noticed this.

The Internet has broadened the reach of traditional radio broadcasts in both space and time: a web broadcast has the potential to reach listeners worldwide, something neither digital or analogue radio has been able to do. Also, the rise of on-demand content such as podcasts has further changed the way the user is able to listen to radio without being tied to broadcast schedules. On-demand online content, both streamable and downloadable, has given users the freedom of choice in both radio and TV. Hence, the business has had to adapt to the change. Time-shift is here to stay.

Providing the podcast content started already in the mid-2000s by basically creating downloadable versions of the shows broadcasted on air by the broadcasting houses. In 2010's the potential of web-only content has been noticed and some broadcasting companies are now providing content only meant for the Internet.

Hugely successful podcasts like This American Life's Serial have become phenomena and the increase of only web-based broadcast radios have made the Internet a serious competitor to the traditional radio. The quality of the content matters, and the likes of Serial are setting an example of what audio-based content has the potential to achieve, be it podcast or traditional radio.

As a content distribution channel the Internet is extremely effective and offers a vast array of opportunities but, as the deputy director and head of innovation at Radio France Digital Matthieu Beauval expressed, the broadcasters must know how to "dance with the devil" and be aware of how the Internet also poses many threats and dangers.

The form of the radio and the way its content is consumed has been changing and will continue to change in the following decade. The audience is constantly adopting new technologies and the broadcasters must keep up and stay in sync with the listeners' demands. The listeners will no longer adapt to new formats by default, as can be seen by the low popularity of formats such as DAB in countries that do not force the new format.

All the interviewees agree on the necessity of having both the public and state broadcasters and the private sectors working together to develop and launch new formats and ways to listen to radio. For example, many companies in the car industry have been including both DAB and RadioDNS as additional equipment for the latest car models. The availability of the new technologies may however not be enough.

If we view the technical formats covered in this study in the light of the five attributes of a technological innovation introduced in the Everett Rogers's diffusion theory, we can clearly find a reason why, for example, DAB has not always been the success it

was hoped to be.

Purely as a technology DAB offers relative advantage to the analogue FM in better sound quality, additional information in the forms of slideshows and pictures and, if provided by the broadcasters, the availability of more content. The DAB service can also be seen as less complex and more reliable than the analogue FM since DAB channels are easier to tune automatically and less affected by disturbance from for example cell phone signals.

The biggest problem for the DAB is the compatibility. In order to listen to the digital radio one needs to have a digital radio receiver. If one has an old format DAB receiver, one cannot listen broadcasts in the better DAB+ to which every broadcaster either has already changed to or will be changing to in the near future.

The observability of DAB usage is a hard attribute to distinguish. In everyday life one is not expected to pay attention to the technological format in which a radio broadcast is heard for example in a café. The responsibility in making the DAB observable is on both the broadcasters and the manufacturers, who can make the benefits of the new format visible via television and online advertising and other marketing campaigns.

Since it was first introduced to the public in the early 1990s, DAB has also lost some of its relative advantage to the Internet. Indeed, the Internet-based radio has the potential to surpass DAB in all of the attributes.

The extra information and pictures can be obtained via the Internet, not to mention the practically unlimited amount of content available online. Especially in countries like Finland, the availability of fast and cheap mobile Internet has also made the radio on the Internet reliable and, since everyone has a smartphone, also potentially much more observable. As the listeners already have the skills needed to use the Internet on their smartphones and other devices, the switch to an Internet-based radio would involve very little complexity. Compatibility of course would not be an issue either.

With the availability of high-speed Internet connections also on mobile devices, also the sound quality aspect of DAB is covered by the Internet-based services such as the

hi-fi music streaming service Tidal that offers very high quality audio in the same manner as Spotify. The likes of Spotify, Tidal and Apple Music may rise to become viable competitors to traditional radio in the future with the recent trend of adding DJs, radio-like talkshows and podcasts into services predominantly identified as music streaming services.

The most important difference between any radio broadcasting and content and the aforementioned platforms is that the radio broadcasting has been and should also remain free for the listeners. If these kind of new, Internet-based attributes are introduced to the public, they should come without any additional costs.

Is something like the DAB still needed? Does it bring more value to the listener than any other alternative, or would something between the FM and DAB be more appreciated? A hybrid FM 2.0 with the inclusion of Internet-based features might be enough for the listener who does not wish to upgrade every single radio receiver with a newer technology that does not offer that much of anything new. Perhaps the likes of the hybrid RadioDNS or NouVoson surround that bring additional value to the traditional radio broadcasting are the way to enhance the radio listening experience.

Similar thoughts can be found in the study *Future Scenarios for the Radio Media in 2025* (Jauert et al 2017) where the status of DAB/DAB+ is described to be less challenged as the most important digital broadcasting platform. The European respondents of the study seem to share a tripartite vision of the future of radio consisting of analogue *and* digital broadcasting and IP. The new IP-based services can continue to grow to diminish the role of DAB/DAB+. (p. 23)

All the experts interviewed seem to believe that, as a whole, analogue FM radio is not going anywhere any time soon. The switch to digital is inevitable but the way of the transition and the timeframe is still not set. The crucial lesson from the Norwegian plan that should be kept in mind when planning the digital transition is to be decisive.

Without a set switch-off date the technological transition will take much longer in terms of time and resources. If there is no set date, both the listeners and the relevant industry will remain in uncertainty and not make the progress happen on their part.

The digital radio does offer much advantage over the analogue FM but, especially with the Internet-based services becoming more and more popular, there is less and less natural will to commence such transition to digital within both the public and the industry if a regulatory push towards a change is not made. As was apparent in all the interviews, support from both political and commercial stakeholders is needed.

In Finland not much technological progress can be expected in radio in the coming years. When it comes to innovation and development, the funding of Yle is a probable decisive factor. The current government has set its collective mind to perform cuts in public services, and the freezing of Yle's index increments is only one part of it. Most probably Yle is destined to essentially make the best of a bad situation and not invest heavily into anything new. This would close the door on at least the digital radio for a few years still. That door may again be opened if and when the economical situation of the country develops for the better, perhaps during the reign of the next government formed after the elections of 2019.

If any innovations were to be done in the radio broadcasting, the lowest risk for Yle would be the introduction of RadioDNS or similar hybrid format. The technology is already available, easily adaptable and the affordable receivers are already on the market. Yle's Internet-heavy production would also most likely be able to provide suitable metadata with very little effort for the purposes of for example RadioDNS.

According to Marko Ala-Fossi, by the end of the year 2014 there had not been any interest for RadioDNS in Finland (Ala-Fossi 2014). However in 2015 both Yle and the Finnish commercial radio union Radiomedia appeared listed as RadioDNS collaborators and supporters.

Politically this kind of innovation would be the one least likely to meet resistance since it both represents new and efficient innovation and also enhances the analogue radio experience. It would not be as expensive as setting up a whole new digital radio network. The new, expensive digital radio receivers the public would have to invest in are also an unpopular option from the political point of view. No current political party wishes to create additional costs for the average voter. A hybrid radio would offer an experience resembling something between the traditional analogue and the

DAB+.

Still, the most likely scenario is that there will be no great technological development in Yle's radio services apart from the Internet-related content. Odds are that in radio broadcasting Finland will most likely remain from the European point of view a relatively underdeveloped country well into the 2020's. Nobody wishes to invest in digital technology since the analogue is still so lucrative for broadcasters. Hence, the new radio licenses starting from 2020 will almost certainly all be for FM radio broadcasting (Jauert et al 2017, p. 15).

The need to provide content in ways already familiar with the listeners in their everyday life is necessary for the new forms and formats to become a success. Stefan Möller of Finland's Radiomedia believes there could also be a market for subscription-based radio service based on the web (Möller 2015). A paid service, however, is very unlikely to find enough audience, since, at least in Europe, the public is accustomed for the radio content to be available free of charge.

It seems that the European and also the Finnish consensus is that the radio is moving towards a more hybrid form that would combine elements of the traditional broadcast radio with the Internet-based services, possibilities and features. Maybe more than a long-term goal, the radio digitalisation is the eventual destination different countries will reach via different paths at their own pace.

As a fitting closure of sorts, I offer some thoughts from Radiomedia's Stefan Möller and Marko Ala-Fossi of the University of Tampere from my earlier interviews for my bachelor's thesis.

In November 2014, Marko Ala-Fossi stated it is more likely that we are moving towards an inclusive rather than exclusive way of thinking about radio technology; *"Broadcasting has so many strengths. The networks are working and are not crashing from an excessive amount of users. They are reasonably cheap and cost-efficient to serve large masses simultaneously. I don't believe that any service based on mobile network will wipe away broadcast-based radio just like that. All kinds of additional services on its side are becoming more important and, perhaps, also more*

*popular.”*

Stefan Möller continues on the necessity of being available for the listeners in the way the listeners want their radios: *“Yes, the radio is digitalising but I do not believe that it is only about a technology that replaces the FM signal but that the radio has to be present in all the devices people use for communication.”*

In the spring of 2017 radio is still very much alive and well. The extra features and means to listen to the radio are growing in numbers but they are still in the margin. Radio is around and part of our everyday lives.

The way we consume radio-like audio content will change eventually but for the time being traditional broadcasting will serve us well – whether it be digital or not.

## **7 Discussion and further research**

At the time of writing the switch from FM to DAB is already well on the way in Norway. The switchover started in Nordland in January where the number of DAB radios has risen to 224,000 DAB radio receivers from the amount of 165,000 before the FM “extinction”. The total radio listening has however declined from 74 percent to 64 percent. The switchover has indeed met some criticism. In a survey conducted by the Norwegian Truck Owners Federation (Norges Lastebileier-Forbund – NLF) among its members in the switchover counties of Nordland, Trøndelag and Møre og Romsdal the DAB coverage is perceived as inferior to the FM coverage of the past. (Færre radiolyttere etter DAB-omleggingen 2017)

These problems also have an effect on the nearby countries such as Sweden. While the Swedish government has still not set a timeline for a digital switchover it seems that the country is instead about to expand the number of VHF FM channels available. The Post and Telecom agency has announced 80 new available frequencies in the VHF band across the country with three new national broadcasting networks in Sweden. The new frequency plan will be introduced to the government this summer



and some of the new channels may become available already during the year 2018.  
(Irwin 2017)

With such additions of new channels Sweden seems to have found a way to postpone the digital transition by giving the listeners more to choose from in the FM spectrum thus perhaps diminishing the value of the possible DAB option in the eyes of the Swedish people. According to Ole Jørgen Torvmark the increased amount of choices is one of the main attractions of the digital radio switchover.

My personal interests lie in the way other countries will start to copy the Norwegian digitalisation blueprint and whether or not the transition process will be a successful one. Will the more flexible FM switch-off in Switzerland be as successful?

For the Finnish radio industry my hopes are in the content creation and new services to distribute radio-like audio content online. In October 2015 the commercial broadcaster Nelonen Media, owned by Sanoma Media Finland, launched their own streaming platform Supla for distributing the Sanoma Media's audio content and content made only for the Internet. (Mervaala 2015B)

Also, the Finnish radio channel hub Radiot.fi is gaining popularity. After a historical agreement between Radiomedia and the music producers' copyright official Gramex any FM broadcast or a clip from a broadcast can be made available online as an on-demand service even if it includes copyrighted material. The copyrighted material can be made available for a maximum of 30 days. (Ylä-Anttila 2017) With the recent progress in copyright material, a growth in both content quantity and quality can be expected to bring more radio listeners to the Internet.

Though it will be the Nordic approach and Swiss approach to digital radio also in the future, but one should not limit one's focus on only that. The constantly growing mobile Internet coverage around Europe might make the DAB less desirable for the consumers.

An interesting though rather a grandiose study project would be to lay out all the different alternatives of radio service setups from an FM only service to a combination of FM and hybrid radio to analogue switch-off with only DAB+

remaining, and, with specific enough details given of each option, let the listeners decide which option suits them the best.

Does all of Europe have to have an identical radio content distributing standard? Is radio digitalisation truly a necessary step forward in every country? If the same effect can be achieved with different technology, it might not.

Upon reflection, the topic of the study was indeed quite large for a master's thesis and upon completion I have some thoughts on how to improve it. First of all, the original idea of including over ten interviewees would have vastly expanded the study outside the scope of a traditional master's thesis. I am satisfied with the results and the insights I was able to produce in the study, even though I was not absolutely happy about having to exclude some more in-depth causalities such as the full extent of the history of DAB.

I found that the interview technique suits me very well and, being a seasoned amateur radio interviewer, I also enjoy the interviews and am genuinely interested in the interviewees and their points of view. Coming from Finland, it was very interesting in hearing what the representatives of the other countries thought of the land without radio digitalisation. The version of Delphi method used, however, was not able offer the full benefits of the method since there are no multiple rounds to deepen the answers provided by the expert panel. This boils again down to limiting the topic of the study. That, I think, is the greatest lesson for me personally: learning to limit my work. I truly believe the study would have had a sharper take on the subject had I focused on an even smaller section or topic, perhaps only on hybrid radio or Scandinavia.

That being said, the study does offer sufficient answers to the main questions asked and delivers a unique and interesting discussion on the topic of future radio forms in Europe and Finland.

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## **Appendix 1: Research interviews**

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## Appendix 2: Panel interview structure

The basis of the interviews was the list of ten core statements to which the interviewees answered either true or false after which they justified their answer.

The ten core statements are:

1. The future of the radio is digital.
2. The future of the radio is on the Internet.
3. The future of the radio is hybrid.
4. Analogue radio will not be replaced by digital radio.
5. Political support from the state is necessary in order for the radio to evolve.
6. Support from the private and commercial market is necessary in order for radio to evolve.
7. Radio has to evolve in sync with the listenership.
8. The Internet has changed the way of listening to the radio.
9. On-demand, streamable and downloadable content is eating away the listenership of regular, transmission-based broadcasts.
10. Europe is leading the way in radio's evolution.

After the core statements each interviewee were asked approximately five more open questions such as:

*Where do you see the future of radio going in Your country?*

*How were the new forms of radio introduced in Your country?*

*Have the production values of radio changed in the Internet era?*