



UNIVERSITY
OF TAMPERE

Development of digital radio broadcasting in Europe

Marko Ala-Fossi

University of Tampere, Finland
School of Communication, Media and Theatre

Radio in the digital era: stability,
transformation or new age ?

Paris, 6 June, 2013

The Agenda

- Introduction
- A brief history of the future of radio in Europe
- An overview of digital radio broadcasting in Europe
- Country reports: The UK, Norway, Denmark, Sweden and Finland
- Conclusion: 10 obstacles on the way

Digital radio - the radio of the future ?

- Radio and audio media is already digital: only its terrestrial broadcast distribution is mostly not.
- The audiences are living in a digital media environment: they do not have to make exclusive choices between “old analog” and “new digital”
- In everyday life, different -also analog and digital- media forms are increasingly interconnected and constantly used in relationship to each other
- *How the concept idea of a special “digital radio” with a dedicated network and dedicated hardware could still be a viable vision for the future ?*

A brief history of the future of radio in Europe

French policy tradition of techno-political manoeuvres became the European approach

1948: France adopts 819 line standard for B&W TV

1956: France adopts SECAM standard for Color TV

1962: Anglo-French treaty on supersonic Concorde

1965: French-Soviet contract on SECAM Color TV system

1982: “ The Second Battle of Poitiers” against Japanese VCR imports

1985: France initiates EUREKA research coordination network

1986: France rejects NHK system for analog HDTV as
“inequitable, premature, unfair and unsuitable for Europe”

1986: Dutch Philips, French Thomson and German Bosch set up
Eureka 95 to develop European analog HDTV

1986: Dutch Philips, French Thomson and German Bosch set up
Eureka 147 to develop digital radio

The future of analogue broadcasting in Europe by 1986

FM radio

Digital radio

PAL TV

SECAM TV

High-definition television
(HDTV)



US005091782A

United States Patent [19]

[11] Patent Number: **5,091,782**

Krause et al.

[45] Date of Patent: **Feb. 25, 1992**

[54] **APPARATUS AND METHOD FOR ADAPTIVELY COMPRESSING SUCCESSIVE BLOCKS OF DIGITAL VIDEO**

[75] Inventors: **Edward A. Krause**, San Diego; **Woo H. Paik**, Encinitas, both of Calif.

[73] Assignee: **General Instrument Corporation**, Hatboro, Pa.

[21] Appl. No.: **507,258**

[22] Filed: **Apr. 9, 1990**

[51] Int. Cl.⁵ **H04N 7/12; H04N 7/18**

[52] U.S. Cl. **358/135; 358/136; 358/105; 382/56**

[58] Field of Search **358/133, 135, 136, 105; 382/56**

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,439,753	4/1969	Mounts et al.	325/38
4,546,386	10/1985	Matsumoto et al.	358/136
4,651,206	3/1987	Ohki	358/136
4,707,738	11/1987	Ferre et al.	358/135
4,802,006	1/1989	Iinuma et al.	358/135
4,816,906	3/1989	Kummerfeldt et al.	358/136
4,827,340	5/1989	Pirsch	358/136
4,837,618	6/1989	Hatori et al.	358/135
4,862,264	8/1989	Wells et al.	358/138
4,887,156	12/1989	Ohki	358/133
4,897,720	1/1990	Wu et al.	358/136
4,933,750	6/1990	Van der Meer et al.	358/105

OTHER PUBLICATIONS

"Scene Adaptive Coder", Chen and Pratt, *IEEE Transactions on Communications*, vol. COM-32, No. 3, Mar. 1984.

"Fixed and Adaptive Predictors for Hybrid Predictive/Transform Coding", Ericsson, *IEEE Transactions on Communications*, vol. COM-33, No. 12, Dec. 1985.

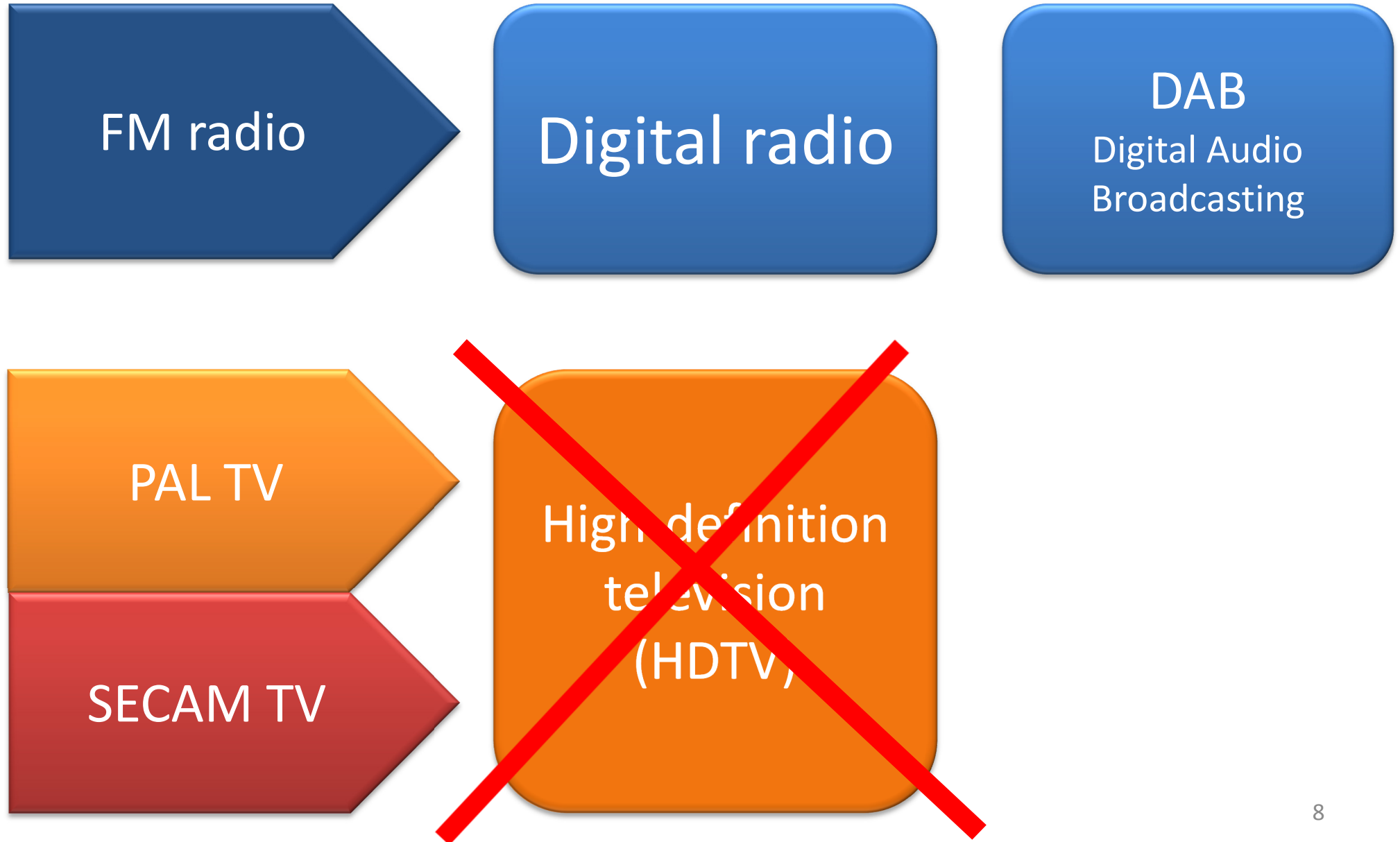
"A Motion-Compensated Interframe Coding Scheme for Television Pictures", Ninomiya and Ohtsuka, *IEEE Transactions on Communications*, vol. COM-30, No. 1, Jan. 1982.

Primary Examiner—John K. Peng
Attorney, Agent, or Firm—Barry R. Lipsitz

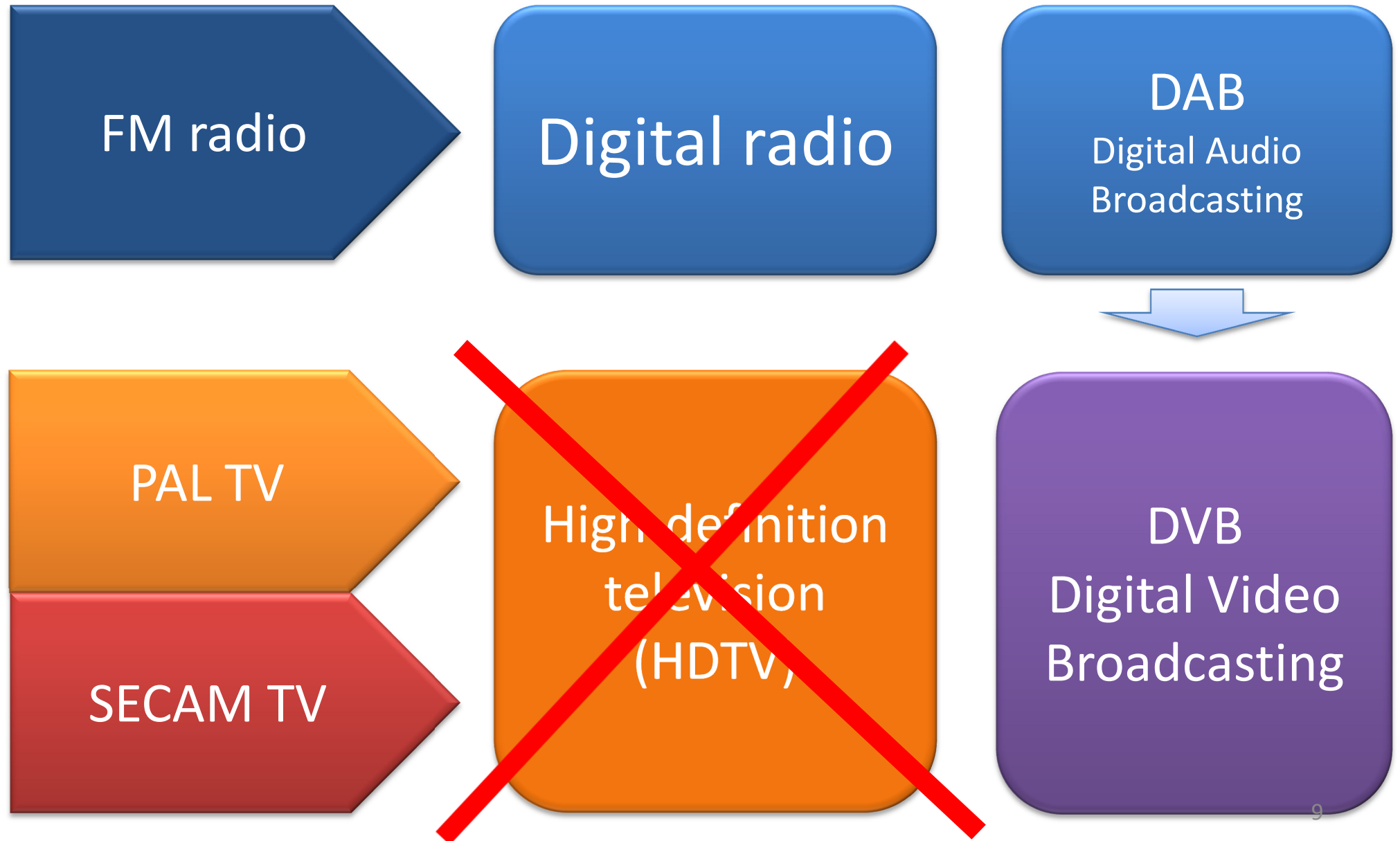
[57] **ABSTRACT**

The compression of successive blocks of digital data is optimized by selecting between different compression algorithms or different data formats on a block-by-block basis. In one application, digitized interlaced video signals are processed for transmission in a compressed form. A set of pixel data presented in a field format is compressed to provide a first compressed video signal. The set of pixel data is also presented in a frame format and compressed to provide a second compressed video signal. Errors are evaluated in the first and second compressed video signals. The compressed video signal having the least error is selected for further processing. The technique is repeated for successive sets of pixel data and the selected signals are encoded to identify them as field formatted or frame formatted

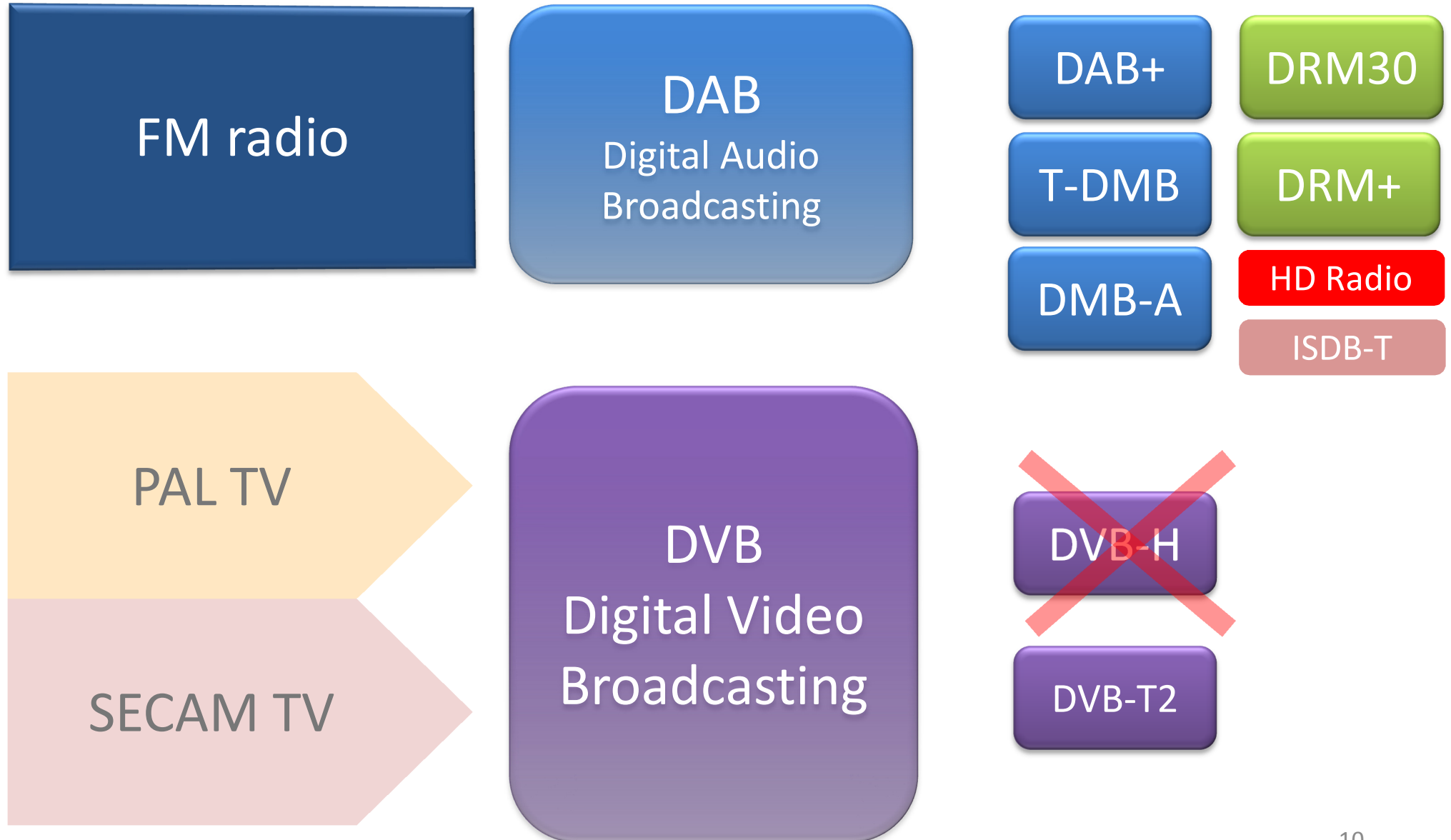
The future of analogue broadcasting in Europe by 1993



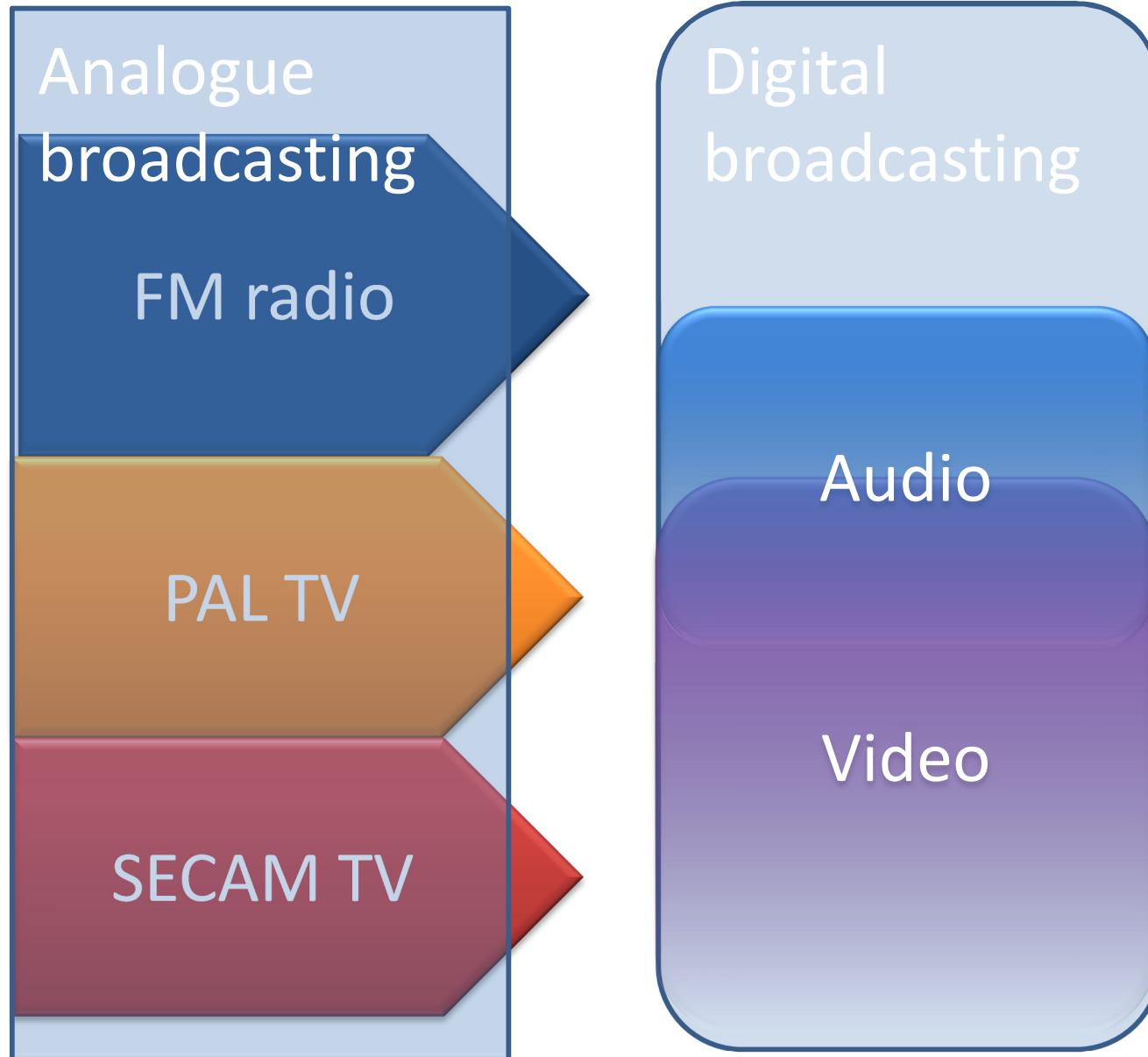
The future of analogue broadcasting in Europe by 1995



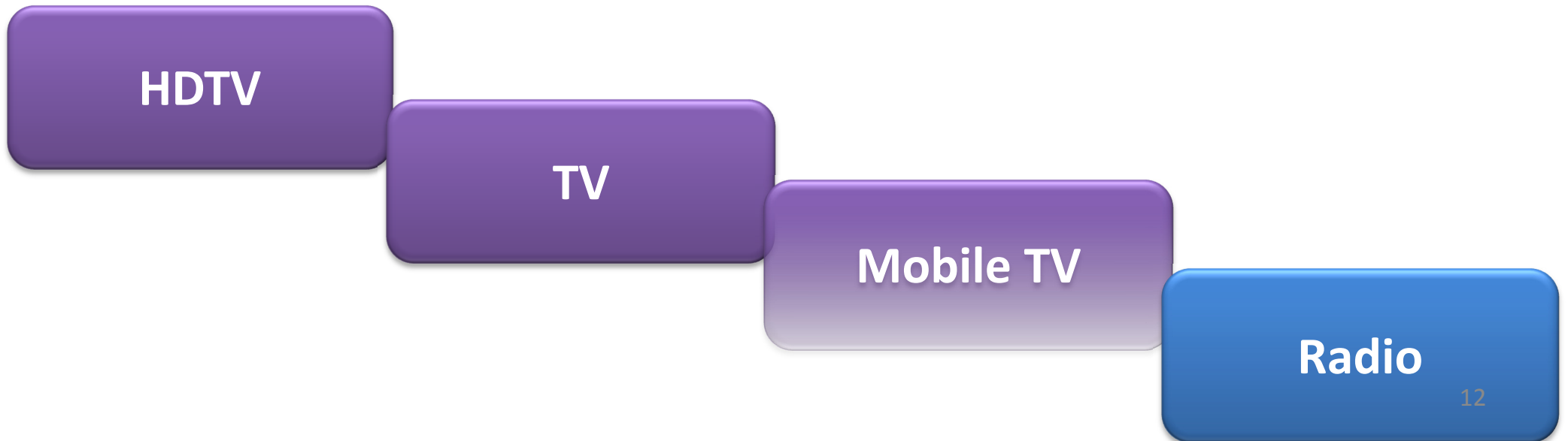
The present: digital divergence



The lost future: one switchover



Converged digital networks vs. Digitalization of separate networks

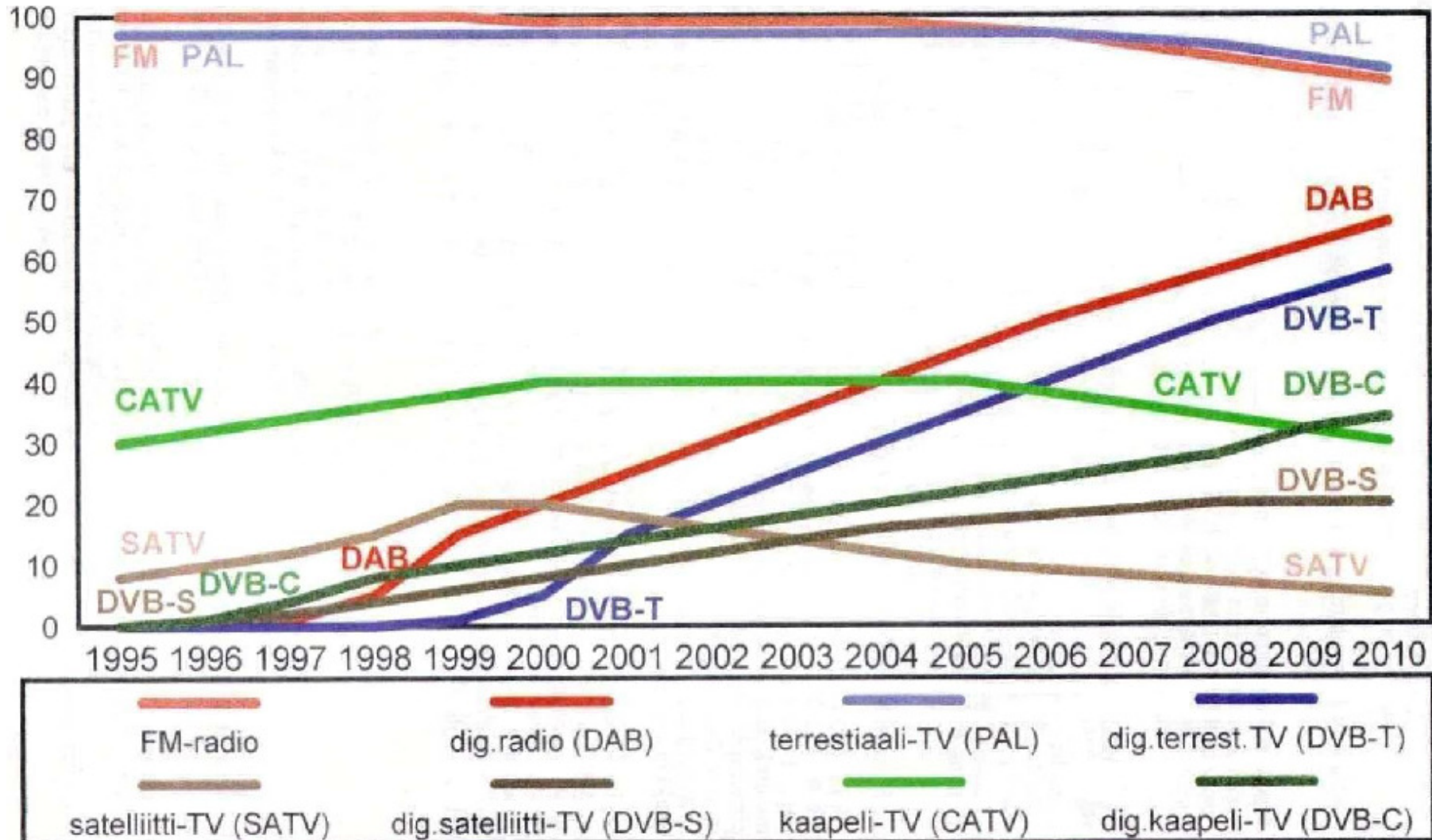


An overview of digital radio broadcasting in Europe

1995: DAB was expected to take over the markets within the next 10 years - before DVB

Diffusion of television and radio delivery systems in Finland
scenario 1995- 2010

diffusion estimate, percentage of households



Source: Mykkänen (1995)

1999: Germany to decide FM switch-off in 2003, the BBC expected 20 million DAB sets to be sold by 2005

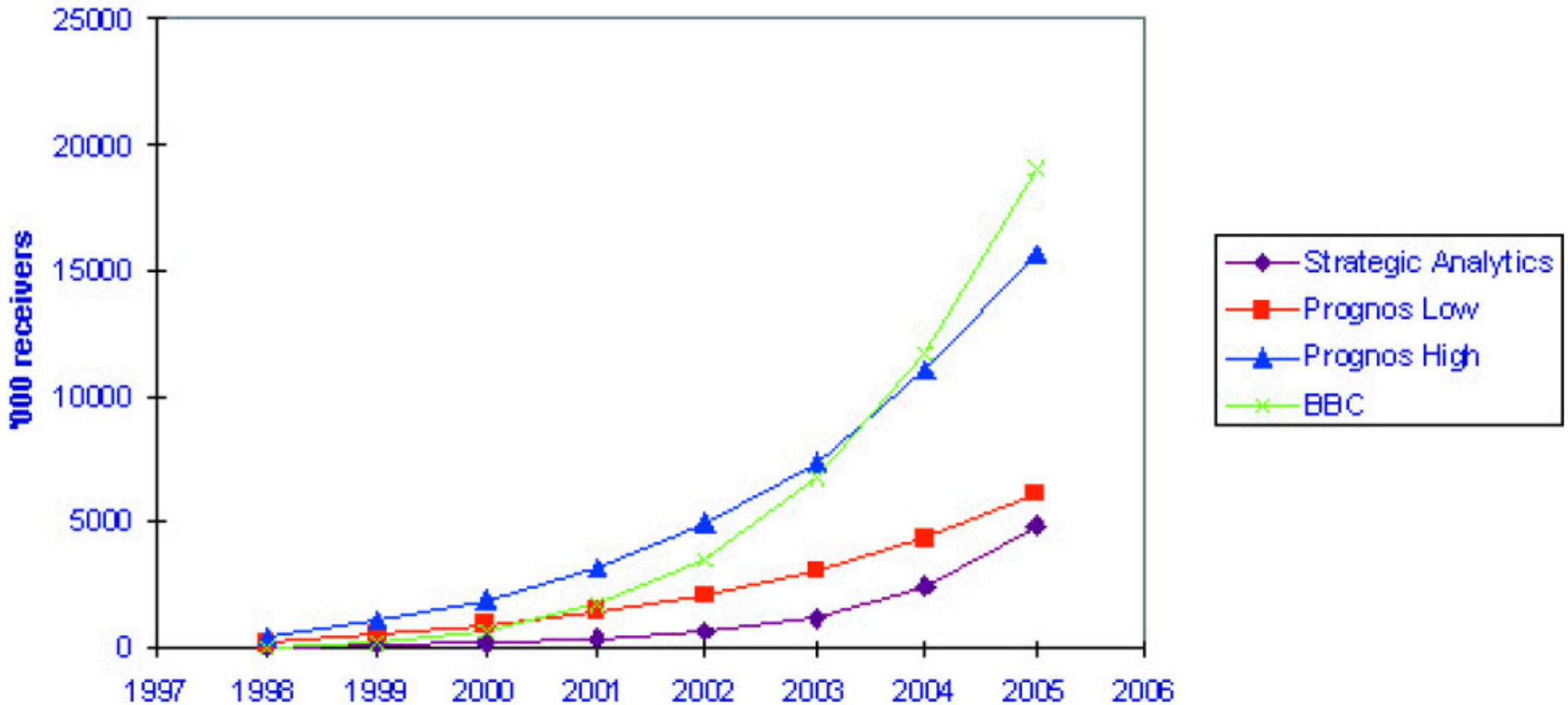


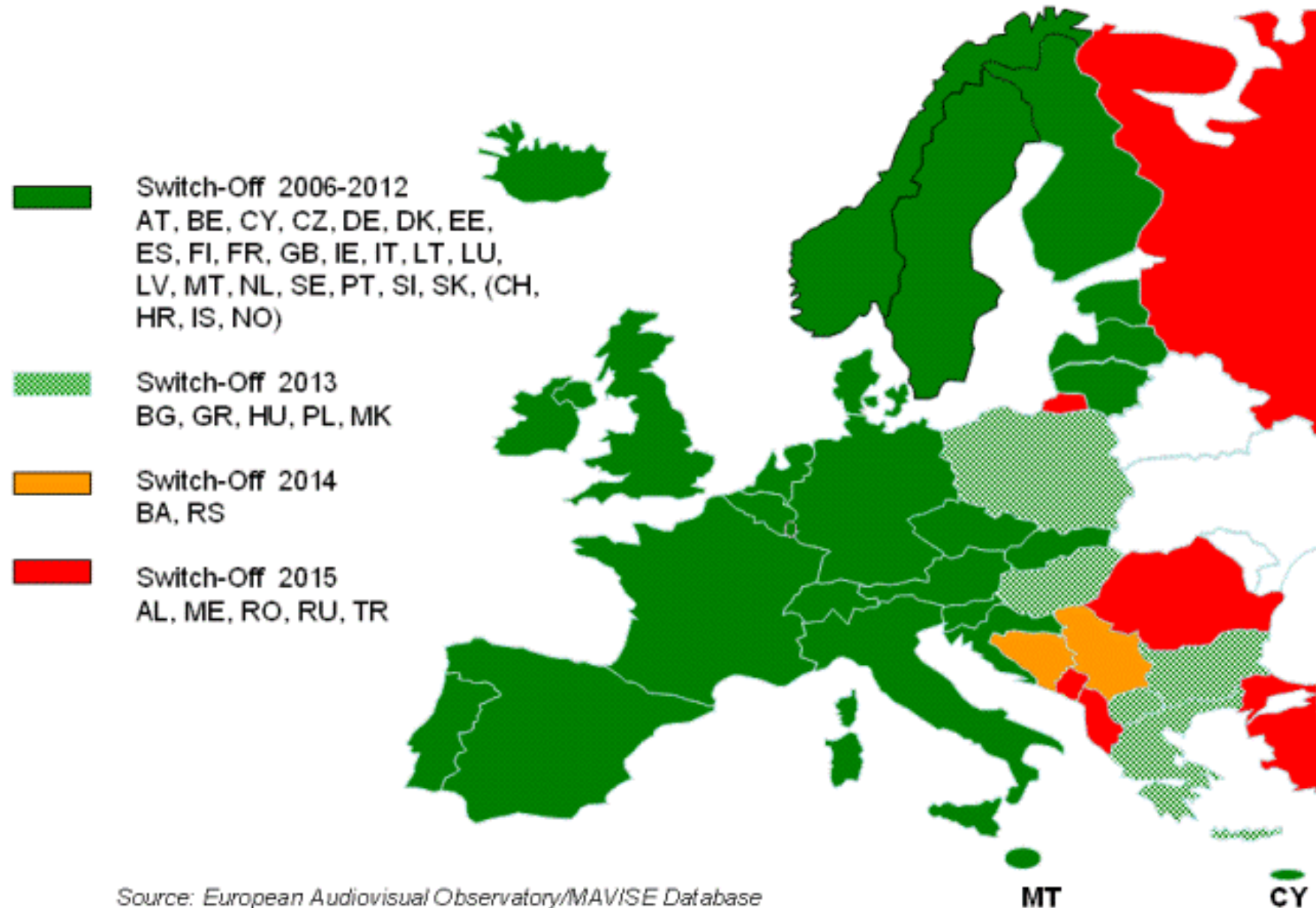
Figure 4

Predicted growth of DAB in Europe up until 2005.

Source: Kozamernik 1999

Status of T-DVB switchover in Europe 2013

22 EU countries out of 27 already switched off



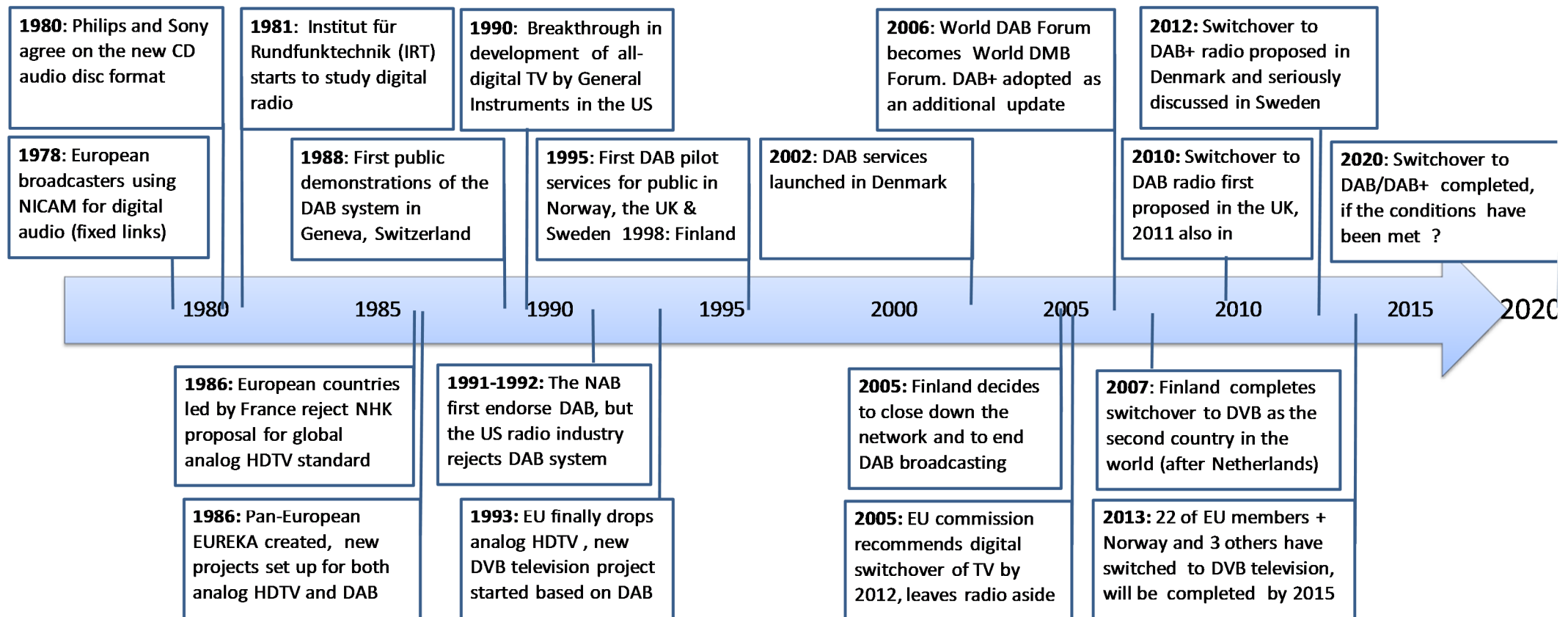
Source: European Audiovisual Observatory/MAVISE Database

DAB / DAB+ in Europe 1999 - 2013: relatively slow progress or no progress

Country	DAB / DAB+ population coverage		DAB / DAB+ share of all radio listening
	1999	2013	2012 / 2013
<i>Belgium</i>	80 %	95 %	n/a
<i>Denmark</i>	25 %	95 %	16,0 %
<i>Germany</i>	50 %	90,1 %	n/a
<i>Finland</i>	20 %	0 %	0,0 %
<i>France</i>	43 %	(trials) 0 %	n/a
<i>Italy</i>	60 %	75 %	n/a
<i>Netherlands</i>	45 %	70 %	n/a
<i>Norway</i>	35 %	84 %	13,0 %
<i>Portugal</i>	20 %	0 %	0,0 %
<i>Spain</i>	25 %	20 %	n/a
<i>Sweden</i>	85 %	35 %	n/a
<i>Switzerland</i>	50 %	94 %	n/a
<i>UK</i>	70 %	94 %	22,5 %

The UK, Norway & Denmark plan for digital radio switchover – but not for FM switch-off !

- Will DAB (+) be still relevant after 34 years (1986->2020)?

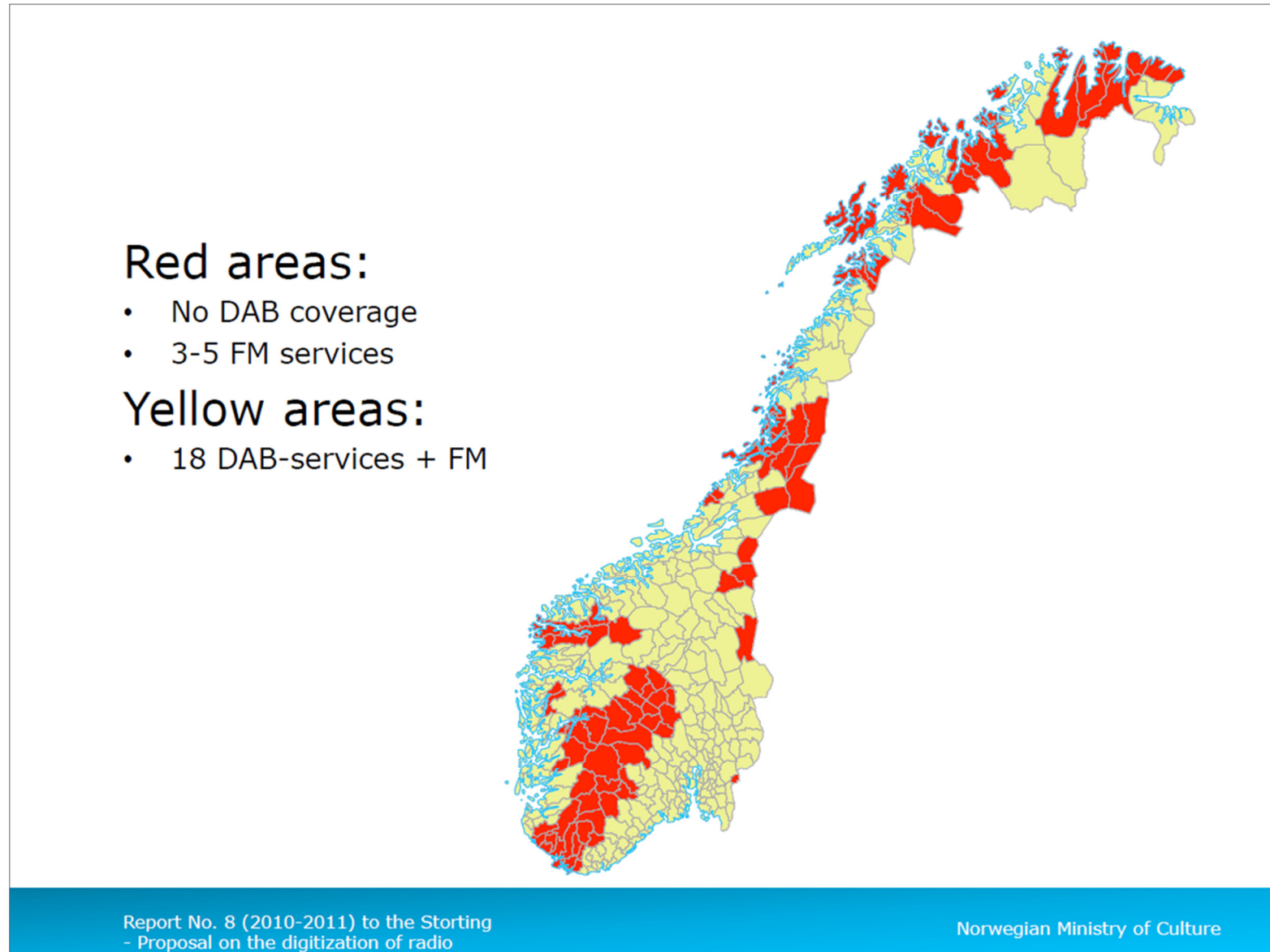


Country reports: The UK, Norway, Denmark, Sweden and Finland

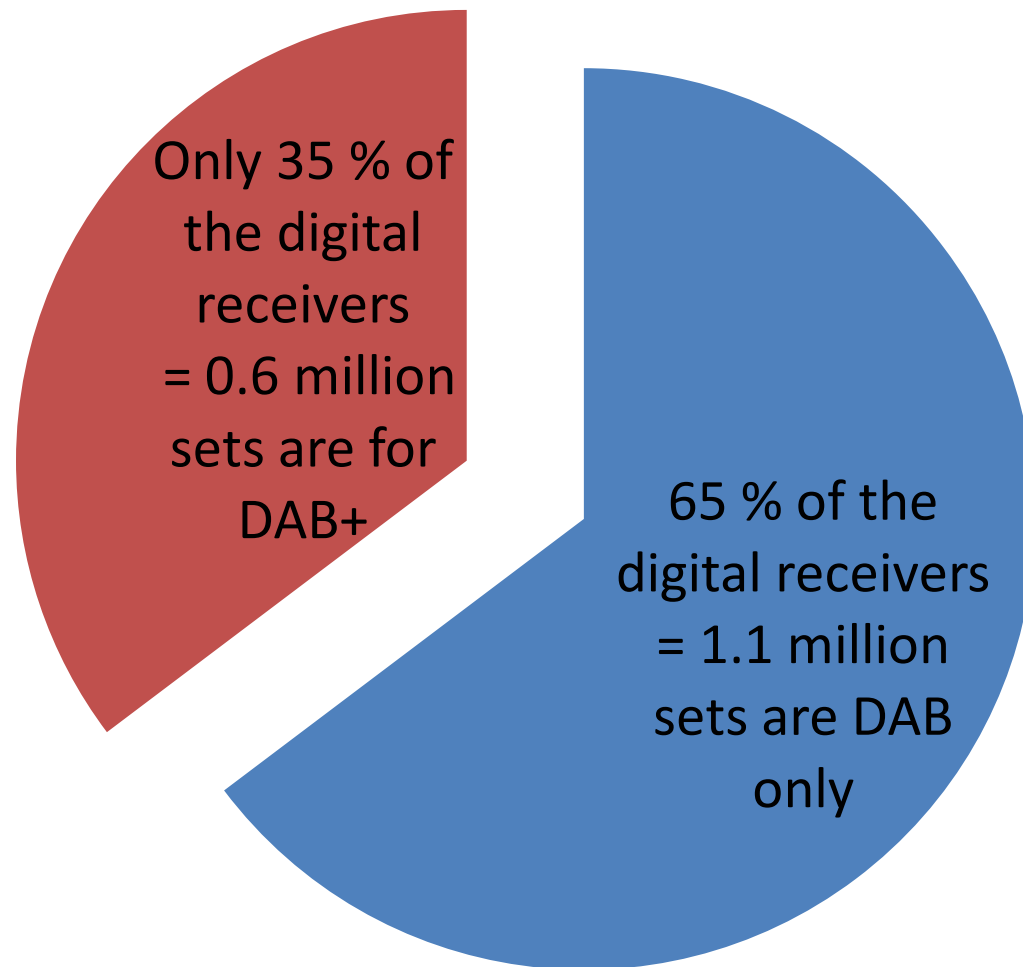
The UK: more than one year total radio market revenue (~1.5 bn €) invested in DAB

- The first ever cost-benefit analysis of digital radio switchover is currently in preparation at the UK Department for Culture, Media and Sport
- The UK government is supposed to decide on whether to proceed with the switchover or not by the end of 2013
- The original switchover date was 2015, but even the criteria for setting the date (50 % listening on digital) will obviously not be met before 2016
- Digital listening (DAB & DVB & Internet) is now 34,3%

Norway: wants to invest in DAB to cut the distribution costs and to reinvigorate radio



Denmark: DR and the commercial sector to swap muxes and switch DAB for DAB+ in 2013



Sweden: SR, the commercial sector and Teracom want extra public funding for DAB+

SvD OPINION

NYHETER NÄRINGSLIV KULTUR OPINION SPORT RESOR MAT&VIN
BRÄNNPUNKT LEDARSIDAN BLOGGAR KRÖNIKOR/KOLUMNER KORSELD

Svensk radio måste bli digital

Nu är det dags att fatta beslut. Det konstaterar vd:arna för Sveriges tre största radiobolag inför ett möte i riksdagen i dag. Vi agerar gemensamt i en fråga som är avgörande för framtidens radio, skriver Cilla Benkö, Staffan Rosell och Christer Modig.



Rekommendera 2
Tweeta 22
Kopiera sidans adress
2 blogglägg
✉ 🖨 ⚠ T

6 mars 2013 kl 01:26 , uppdaterad: 6 mars 2013 kl 09:37

Finland: The commercial sector likes to stick with FM, but YLE looks beyond broadcasting

Broadcast radio might be digitized through cellular networks

Several European countries are preparing or building digital broadcasting networks for radio (DAB etc). DAB uses in most cases VHF III frequency band.

Finnish public and commercial radio companies seem not to be willing to invest in digital audio broadcasting networks. In Finland the VHF III band is used for digital tv-broadcasting.

The potential of 4G cellular networks for radio channel distribution will be studied in Finland.

Audio content from radio channels is already available over internet. All domestic radio channels are streamed over internet and several companies are offering also audio on demand services.

11% of population 9+ years are listening to radio channels over internet on weekly basis, according to Finnpanel .



Germany: Relaunch with DAB+ in 2011 - "Now it's all about marketing" (Reichert 2013)

Wir sind eins.
ARD

DIGITALRADIO
 Radio der Zukunft

Digital radio in Germany – status quo

- + Great variety (football radio, culture, religion)
- + 13 national stations
- + More than 200 regional stations
- + 27 regional programmes
- + 23 local programmes

(in Bavaria: 10 stations, 10 programmes)

Digital radio in Germany in brief:

- + More stations, more content, more variety
- + Simple (terrestrial) reception via aerial
- + More than 250 different digital radio receivers available
- + Coverage ARD-network (72,4% area / 83,7% population)
- + Coverage national programmes (63,4% area / 77,7% population)
- + Total coverage: (81,9% area / 90,1% population)

Total coverage
 Rev: Apr/2013

State borders © Federal Agency for für cartography and geodetics, Frankfurt on the Main

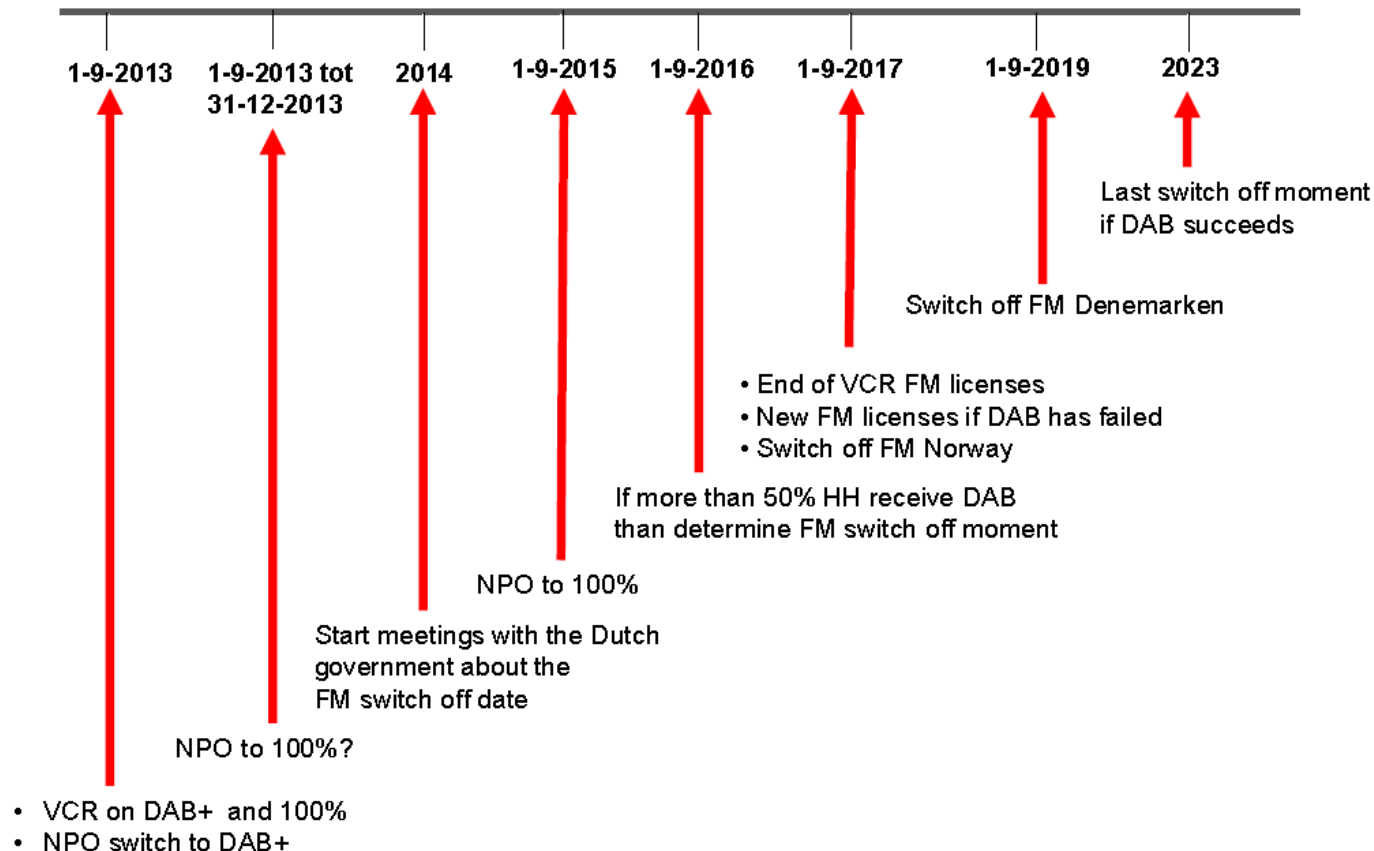
■ mobil outdoor
■ portable indoor

Source:

Reichert (2013), http://www.worlddab.org/public_document/file/410/Germany_DAB+_digital_radio__national_and_regionalMichael_Reichert_ARD.pdf

The Netherlands: NPO is going to switch DAB to DAB+, the commercial sector to join efforts

Government policy DAB+



16/05/2013

Australia: DAB+ would need public funding for expansion - and for local programming

We Want Digital Radio

Home About Us

Digital Radio It's radio as you know it, plus...

The commercial radio sector, and its industry body, Commercial Radio Australia, is working closely with the ABC and SBS and the regulator to start planning the roll out of digital radio outside the five metropolitan capitals of Sydney, Melbourne, Brisbane, Adelaide and Perth.

Digital radio offers more choice, more features such as text and graphics, clearer reception and easy tuning from a list of stations.

The We Want Digital Radio site is a way for all Australians, particularly those living in regional areas with no current access to digital radio, to ask ALL political parties in the Federal Parliament to support the roll out of digital radio outside of the big cities as soon as possible.

By completing the "We Want Digital Radio" petition online you can quickly and easily send a message to your local Member of Parliament letting them know you want it in your area. If you live in a metro city already covered, you can still petition to ensure equity of access to digital radio for all Australians.

As well as joining with other radio listeners in the petition, we have made it easy for you to also send a direct message to your local member.

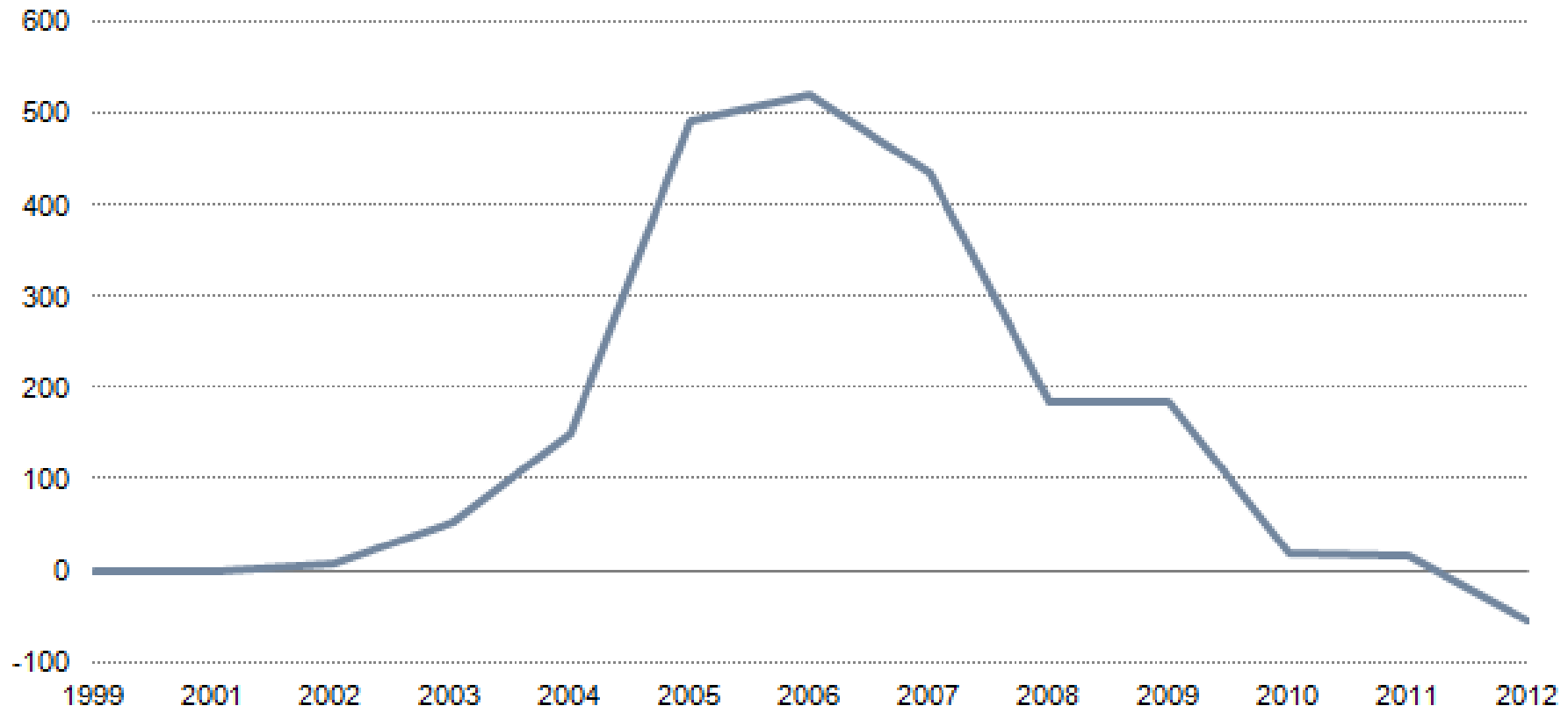
Thanks for your support.

Joan Warner
CEO, Commercial Radio Australia

The US: the number of FM radio stations is still growing, but HD Radio is not

Number of Stations Dropping HD Outnumber Those Adopting It in 2012

Number of Stations



Source: BIA Financial Network and Pew Research Center

Note: Pew Research has updated figures from 2003 forward to reflect changes in the BIA system regarding what year stations went digital in the past.

PEW RESEARCH CENTER

2013 STATE OF THE NEWS MEDIA

Conclusion: 10 obstacles on the way

Factors retarding or preventing the progress of digital radio in Europe so far

- 1) ***The defects of the standards.*** Digital radio broadcasting was designed to be a techno-political tool in the analog media world of the 1980s. It is not truly compatible or convergent with other forms of broadcasting.
- 2) ***The fragmentation of the standards.*** No single digital radio standard can be used to replace current analog radio. The European countries have not been able to fully agree even on a set of common standards.
- 3) ***The lack of economic incentives.*** Digitalization of radio does not provide any commercially valuable vacant new spectrum for mobile telephony like digitalization of television, but instead takes more of it.
- 4) ***The lack of political interest.*** Digital television and broadband Internet strategies have effectively overshadowed digital radio on the European level and in national policies for the information society.
- 5) ***The lack of consumer interest.*** The benefits of digital broadcast radio have not really appealed to consumers. Both the DAB receiver sales and listening have increased much slower than expected.

Factors retarding or preventing the migration to digital radio in Europe

- 6) ***The lack of obligatory switch-off.*** In digital radio switchover, the FM band will remain in analog broadcast use although big stations move to DAB(+). There is no way to force the listeners to follow.
- 7) ***The lack of money in the markets.*** Prolonged economic recession in Europe is hitting radio advertising market and digital radio receiver sales as well as public funding for digital radio broadcasting
- 8) ***The lack of demand in the advertising market.*** The share of radio is not likely grow in competition with mobile and social media platforms. Digital radio does not provide more targeted, but smaller audiences.
- 9) ***The lack of competitive advantages.*** The promise for wide channel selection, better sound quality and mobile multimedia has already been fulfilled: there is a multitude of audio content and services.
- 10) ***The lack of prospective users.*** An increasing number of young people are abandoning broadcast model content and technologies including radio. Also the demographic development is unfavorable.

Thank you !

marko.ala-fossi@uta.fi