APWPT notes on an EMR workshop

Brussels, Representation of the Land Saxony-Anhalt to the European Union, September 25 2012
Introduction

Frequencies are a valuable commodity and billions of euros are paid to use them because they promise corresponding profit margins. First and foremost, the focus is on mobile telephony and wireless Internet. The activities of these telecommunications companies are currently dominating the headlines.

But these frequencies are equally important for terrestrial broadcasting and wireless production equipment (Programme Making and Special Events – PMSE), such as radio microphones.

Allocating frequencies is a complex process that takes place at national/regional, pan-European and international levels. The European Union has decided that the frequencies between 790 and 862 MHz (known as “Digital Dividend I”) are to be allocated to mobile telephony. Preparations for “Digital Dividend II” have already been made at the World Radiocommunication Conference in February 2012 to also award the frequencies between 694 and 790 MHz to mobile telephony. This spectrum is currently still being used by TV and PMSE.

Radio microphones, in particular, are fundamental elements of our communications and media systems and of our cultural lives. They are, for example, used in journalistic reporting, at sporting events, in theatres, educational and cultural institutions, at trade fairs, in film production, in conference centres, churches, sports clubs, etc. Radio microphones can be viewed as communication and production tools – without radio microphones there would be no “Lion King”, no “Starlight Express”, and also no “Parsifal” in Bayreuth. Many events where they are used are unique and not repeatable. Therefore wireless PMSE equipment is an essential part of the staging and execution of broadcasts. (Source: EMR invitation)

The Institute of European Media Law (EMR) extended an invitation to discuss these issues on 25 September 2012 in the offices of the state of Saxony-Anhalt at the European Union in Brussels.

Our transcript of the event can be found on the following pages and we have expanded it with additional information. Further information can be obtained via: info@apwpt.org

Preparation and moderation of the event
Mr Helmut Bauer, EMR, Lawyer

The EMR

The Institute of European Media Law (Institut für Europäisches Medienrecht EMR e.V.) is a neutral and independent legal institution which meets the increased need for investigation and information in the media sector.

A message from APWPT

We would like to thank the Institute of European Media Law (EMR), the permanent representative of the state of Saxony-Anhalt at the European Union, Mr Bauer and the speakers for a remarkable event.
Herr Fiber is Head of the Media Policy department at the State Chancellery of the state of Saxony-Anhalt. He presented his view on the issue:

- According to our measurements, LTE currently supports 1-2 MBit/s and, at its peak, 6 MBit/s
- We are not sure that LTE can satisfy the requirement for 50 MBit/s
- PMSE is important
- Broadcasting contributes to the quality of the infrastructure
- The EU is not questioning that frequencies are a public asset
- The PMSE spectrum has already been significantly restricted
- But now the EU is calling for the opening of 470-790 MHz
- Further developments in broadcasting (HD content) must be taken into account
- I assume that 470-790 MHz will continue to be required for broadcasting and PMSE
- WRC-15 is considering 694 to 790 MHz for co-primary mobile telephony usage
- 20 radio stations are currently being broadcast in Saxony

Note on the conversion costs:

- Saxony-Anhalt had brought a motion in the Bundesrat to this effect – in the end there was, unfortunately, only a compromise – the equity directive (Billigkeitsrichtlinie).
- However the new telecommunications act (TKG) contains wide-ranging regulations for future undertakings – we will wait and see what it brings.

Burkhard Fieber started his career as a public prosecutor in 1985. He then worked as a deputy director of the Oldenburg county from 1986 to 1991. In 1991, he moved to Saxony-Anhalt as a head of department at Magdeburg district. From 1996 to 1998 and 2000 to 2002, he was responsible for municipal and administrative reform in Saxony-Anhalt at the Ministry of the Interior. He became vice-president of Halle district in 1998. Since 2004, he has been at the State Chancellery of Saxony-Anhalt, where he manages the department of international cooperation, EU affairs, protocol, media policy and broadband infrastructure. Additionally he was commissioner for the reform of the state administration at the state chancellery from 2002 to 2010. He is also the honorary chair of the Saxony-Anhalt branch of the German youth hostel association since 1996.

Further information

2) http://www.sachsen-anhalt.de/index.php?id=38227

APWPT conclusion

Mr Fiber explained that the broadband initiative cannot just be solved with mobile telephony. Unfortunately it is always presented as if this is the case. He explained that the PMSE spectrum had already been subject to a lot of restrictions and that there would be considerable disadvantages for the public purse. The Billigkeitsrichtlinie (German compensation directive) has not resulted in adequate compensation for the disadvantages.
Introduction
Dr. Norbert Holzer
Attorney-at-Law, Director EMR, Saarbrücken/Brussels

- From a legal perspective, this is a "tricky" subject
- Broadcasting and PMSE are, so to speak, symbiotically interwoven
- The headlines do not take account of the fact that there is a side effect of digitalisation due to the discontinuation of the 1 MHz gap.
- Where does that leave PMSE?
- The UHF frequency conversion is not being forced by customer interests, but by the requirements of the mobile telecommunications companies.
- It is interesting that the WRC application from the Arab and African states is motivated by military usage in the 790-862 MHz range.
- A further decision might turn out to be problematic for broadcasting
- What does that mean?
  - Inconvenient for event organisers
  - Irritating for customers (scanning for new frequencies)
  - A threat to PMSE
- Questions:
  - Why must we worry about PMSE and who is tasked with keeping an eye on this?
  - What does PMSE need and who will pay for it?
  - Many things are inconceivable in a non-wireless environment – however, that does not prove the need for the existence of PMSE devices. It is much more about the need for PMSE in the "unprofitable arts" usage scenario.
- Culture is regularly compelled to confirm the effect.
- The Commission's Green Paper of 2010 drew attention to the potential of the culture and creative industry:
  - 2.6% of the EU's domestic product, current figures are higher (subsequently mentioned: 4.5% of the EU’s national product, with 8.5 million jobs plus congresses and trade fairs)
- However, I cannot endorse the economic approach.
- The effect on the culture and creative industry is not known and there have been no reports on this concern.
- National administrations are responsible for the broadcasting frequencies, i.e. national allocation is the rule.
- The technological environment cannot operate in a vacuum, regard must be paid to the broadcasting conditions and the potential for interference.
- It is essential to find sufficient long-term available spectrum for PMSE.
- This is not an attack on mobile telephony, but the quest for ways to co-exist peacefully.
- Who will pay for this?
- Costs arise every time there is a change in frequency, in particular with PMSE
  - A 3-tier theatre requires an estimated EUR 350,000
- The Billigkeitsrichtlinie is too narrowly defined and leads to discrimination. There is no further comment on this here.

Conclusion:
- 4 ideas for solutions
  - Digitalise PMSE -> compression
  - Joint use of frequency -> no credible claims but investigations into interference
  - Are cognitive methods of resolution helpful?
  - Warning: do not allocate the whole DD to mobile telecommunications

APWPT conclusion
Mr Holzer is an expert in the approach to PMSE. Hasty allocations would, in his view, not be made until thorough investigations had been carried out. He had argued quite strongly against allocating the area below 700 MHz to mobile telephony.

Norbert Holzer is member of the Commission on the Determination of the Financial Needs of Public Service Broadcasters (Kommission zur Ermittlung des Finanzbedarfs der öffentlich-rechtlichen Rundfunkanstalten, KEF), Director and First Vice-Chairman of the Board of Directors of the EMR. Before his appointment to the KEF, he was Administrative and Managing Director of the Saarländischer Rundfunk (1997-2011). In 1978, he earned a doctorate on the topic "Preventive judicial review by the Constitutional Court", before becoming fraction assistant in the Parliament of Saarland and personal assistant of the Minister for Environment, Planning and Housing. Besides being mayor for ten years, he was Chairman of the State Media Authority of Saarland for nine years. Norbert Holzer was member of the Administrative Council of the Radio and TV License Fee Collecting Agency (Gebühreneinzugszentrale, GEZ). He was Chairman of the Finance Commission ARD/ZDF/Deutschlandradio in the years 2007 and 2008 where he led the Working Group "Royalties and Licenses" since 1999.

Further information
2) http://www.emr-sb.de
Does PMSE waste spectrum?
Prof. Dr.-Ing. Georg Fischer
Friedrich-Alexander-University Erlangen-Nuremberg, LTE

Prof. Fischer works at the University of Erlangen-Nürnberg and presented some important technical principles from the point of view of an independent scientist:

Are wireless microphones wasteful in terms of spectrum usage?
From the perspective of the special requirements placed on PMSE, it’s a clear - NO

Are additional UHF frequencies for “broadband” really helpful?
An exponential growth in mobile data traffic cannot be managed by allocating more spectrum. This would then also have to grow exponentially.

Other technologies must be used instead:
a) Femtocell networks
b) Remote antennae linked to a BTS Hotel (DAS Distributed Antenna Systems)
c) Active and adaptive antenna arrays, e.g. Alcatel-Lucent Light Radio, Focubeam, Ubidyne

References to spectral reference in mobile telephony:
- GSA Report: goal for LTE is 5 bit/s/Hz (appendix)
- EU BEFEMTO Report: goal is 8 bit/s/Hz, at its peak up to 14 bit/s/Hz
- Femto networks can support a growth in capacity of a factor of three

Conclusion:
- Exponential growth can be managed by making networks more dense through smaller cells
- In the long term there is no way round using micocell networks at higher frequencies.
- Further allocation of UHF spectrum would just postpone the spread of more efficient technologies to increase network capacity.
- So why allocate further UHF spectrum to “broadband”?

APWPT conclusion
Prof. Fischer presented the basic principles of data compression very clearly and also explained why it is very difficult to digitalise PMSE. PMSE is an efficient spectrum user. Digitalisation would need more spectrum, even if the quality requirements were retained.

Prof. Fischer studied Electrical Engineering with focus on communications, RF/microwave, electromagnetism and acoustics at University of Aachen RWTH (Aix La Chapelle), Germany, from 1986 till 1992, from where he received his diploma degree (Dipl.-Ing.). In the years from 1993 till 1996 he was a research assistant at University of Paderborn, Germany, working on adaptive antenna array systems for mobile satellite communications. He received his doctoral degree (Dr.-Ing.) “summa cum laude” in electrical engineering in 1997. From 1996 till 2008 he was with Bell Labs research of Lucent, later Alcatel-Lucent. Here he focused on the RF and digital architecture of mobile communication basestations for GSM/UMTS and features for network coverage and capacity enhancements. He became a Bell Labs DMTS (Distinguished member of Technical Staff) in 2000 and a Bell Labs CMTS (Consulting Member of Technical Staff) in 2001. He also acted as a chairman in the European Telecommunications Standards Institute (ETSI) during the physical layer standardization of the GSM-EDGE system. Since 2009 he also acts as Chairman of the ETSI Specialist Task Force STF386 on Cognitive Spectrum Management for PMSE devices like Professional Wireless Microphone Systems.

Further information
2) http://www.lte.e-technik.uni-erlangen.de
Spot: Starlight Express without Sound? PMSE’s need for frequencies – with case studies
Bruno Marx
Member of Board of Directors, APWPT

Bruno Mark is a member of the APWPT board and presented the view of PMSE users by means of various case studies such as the Eurovision Song Contest 2011, the London Olympic Games 2012, the U2 360 Degree Tour and Starlight Express. His presentation included their influence on cultural life in Europe and the opportunities that have arisen through the creative application of PMSE and their commercial benefit for the cultural and creative industry.

He concluded:

• The cultural and creative industry would not have developed so far without the successful application of wireless devices – known as PMSE

• Assumption: everyone’s life is influenced by PMSE, either directly or indirectly

• The APWPT is working hard to ensure that this remains the case so this industry can continue to grow

Contact on the APWPT board:

Science and Consulting: Matthias.Fehr@apwpt.org, President
International Affairs: Dre.Klaassen@apwpt.org, President
Art, Culture, Theater & Orchestra: Hubert.Eckart@apwpt.org, Vice President
Event, Conference Centers & Fairs: Bruno.Marx@apwpt.org, Vice President
Industry & Standardisation: Wolfgang.Bilz@apwpt.org, Vice President
International Associations: Alan.March@apwpt.org, Vice President

Bruno Marx was born in New York. He came to Germany in 1975 to become an electrician going on to study communications engineering. In Hamburg became a certified event engineer. He has been in the event industry since more than 30 years. His last station before going freelance was as technical director for one of the leading event locations in Germany, Düsseldorf Congress. He has engaged himself in important industry organizations, which makes him an expert in the event industry. He specializes in optimizing event locations, how to sell event technology better and finding solutions for special event locations such as airports.

Functions/Organizations:
• Vice president of the APWPT
• Founding member of the location marketing organization “Seven Centers Germany”
• Managing of the Greenglobe certification for Düsseldorf Congress
• Collaboration in the German DIN standards organization

Further information
2) www.apwpt.org
Darko Ratkai is an employee at the EBU’s Department of Technology & Innovation. He detailed the following key points:

Public service broadcasting uses money to make programmes and not the other way round.

The issue is broadcasting or broadband

Broadcast networks can be used for more than just TV:

- Their capacity is 100-200 MBit/s
- The problem is the uplink
- The solution:
  - Broadcast receiver in smartphones and tablets (as is already the practice in Korea, China and the USA)

For 20 years, Darko Ratkai is active in the area of radio spectrum management both at the national and the European level. As a member of the European Radiocommunications Office of the CEPT he was deeply involved in various activities concerning the introduction of digital broadcasting in Europe. He took an active part in several broadcast spectrum planning conferences in CEPT and ITU.

Darko is currently working at the EBU’s Department of Technology & Innovation in the domain of new media delivery technologies and spectrum management, with a particular focus on promoting the interest of public service media and providing support to the EBU Members. He maintains working relationships with national administrations, CEPT, the ITU, the European Commission, and the industry.

Darko holds a masters degree in electrical engineering.

Further information

2) [www.ebu.ch](http://www.ebu.ch)
Fast Terrestrial Internet as Universal Network in Europe?
Karl-Heinz Laudan
Deutsche Telekom AG

Karl-Heinz Laudan described the framework for dealing with mobile telecommunications companies:

- Europe’s Digital Agenda is an ambitious project – broadband for everyone – everywhere?
- German expansion in 800 MHz spectrum usage is progressing.
- A view into the future reveals further spectrum demand – how should this be dealt with?
- There is no argument that the number of base stations must increase (cell density will increase).
- However, the telecommunications companies also need more spectrum, otherwise the political requirements cannot be met.
- It has been reported via the German Federal Network Agency (BnetzA) that there are 21 cases of interference with microphones; not so bad.

Additional spectrum for mobile broadband is indispensable to serve European Society’s future needs for mobile broadband

Success factors to get there:

- Common European schedule for implementation.
- Balance of interest between all stakeholders.
  - Definition of appropriate compensation schemes
  - Identification of alternative frequency bands for secondary services
- Dialogue and appropriate information exchange between NRA’s and spectrum users is key.

APWPT conclusion
Mr Laudan reported cases of interference which were not yet known to the APWPT. In our view, the BnetzA must be informed of these so that further interference can be prevented. Mr Laudan argued for a close working relationship between the PMSE users and mobile telephony operators – and the APWPT. The number of cases of interference (“only” 21) is certainly just the tip of the iceberg and not a proper argument to support compatibility.

Further information
2) www.telekom.de
Technical pre-conditions for the development of PMSE equipment, Specificities to be taken into account
Dr. Heinrich Esser
General Manager SENNHEISER

Dr. Esser works at a company which is typical of the sector and which develops and manufactures PMSE. He explained which general conditions are necessary from the manufacturer’s perspective, so that everyone can use wireless resources anytime and anywhere for communication and production purposes. Dr. Esser also demanded long-term planning certainty for PMSE users so they are also given opportunities to amortise their own investments and grow further:

- Planning certainty is one of the problems of the last few years
- Medium-sized companies think in generations and not just about this financial year
- PMSE users are anything but undemanding
- Many small and large teams are in the pipeline
- We have invested millions in the L-band and have been waiting years for widespread usage
- We will not let up our efforts and will fight for Europe-wide usage – also as a replacement for 790-862MHz
- Interference in the radio spectrum must be eliminated
- Only UHF is in a position to support 100 links and more
- Going "back to the stone/cable age" is not an option
- Large events rely on suitable equipment and sufficient spectrum
- 4.5% of the EU’s national product with 8.5 m jobs plus congresses and trade fairs
- The "social and economic value" formula keeps many advisors busy – in the end it’s a question of making a political substantive decision on a sound basis!

APWPT conclusion

Dr. Esser explained how important it is to have a long-term binding frequency allocation which is harmonised as much as possible across the EU, in order to provide a reliable environment for the PMSE industry and its users. Too many people are directly or indirectly dependent on using PMSE without any interference. The political bodies must understand that.

Further information
2) www.sennheiser.com
Sabine Verheyen emphasised:

- Culture has its own special justification beyond commercial interests
- Continued existence free of interference and growth in broadcasting
- The demand for 1200 MHz has “passed through” the Committee on Culture
- Please, wait until DD1 is completed first!
- Efficiency in broadcasting cannot be implemented via mobile telephony
- Up to now, the Federal government has paid out EUR 380,000 in compensation for interference to wireless production technology (Billigkeitsrichtlinie of 29 September 2011)
- Is there really a requirement for more spectrum? We spoke out firmly against the opening up of the 700 MHz spectrum and that was recorded in the report “Überprüfung oder Untersuchung” (“Review or Investigation”)
- Firstly, mobile telephony’s need for optimisation should be included. Currently, three times more spectrum is available than is actually used by mobile telephony.

Commission in September: joint use of specific frequencies, e.g. WSD, interference from which must be taken into account (Neelie Kroes 2012)

The quote from Ms Kroes was annotated:

I cannot see evidence of

- A clear commitment to culture
- The safeguarding of culture and many others

Sabine Verheyen has been a MEP for the German Christian Democrats (CDU) since 2009. She is a member of the European Parliament’s culture and education committee and a substitute on the internal market and consumer protection committee, where she focuses in particular on intellectual property and digital issues. She took part in the conciliation committee on the telecom package and has been a member of the European Parliament’s annual delegation to the Internet Governance Forum since 2009. From 1999 to 2009 she was mayor of Aachen. She has been a member of the Euregio Council since 1999 and a member of the council of WDR, the West German public broadcaster, since 2003. She is a member of the European Internet Foundation. She studied architecture at Aachen Technical College

Further information

2) http://www.eppgroup.eu

APWPT conclusion

Ms Verheyen explained how important culture is for Europe and how little the political bodies recognise that. She spoke out against hasty frequency allocation without exploiting the potential for optimising mobile telephony and having thoroughly investigated the effects of further allocations.
The Value of Culture (In Times of Crisis)

Mrs María-Luisa Fernandez Esteban,
Directorate-General for Education and Culture, European Commission

Maria Luisa Esteban works at the European Commission's Directorate General for Education and Culture. She concluded:

- The cultural and creative industry employs more people than other sectors
- Culture is responsible for fantastic innovations
- Culture is very resilient in times of crisis
- Each euro invested gives a return of 10 euros
- Other countries/regions invest massively in culture (e.g. Korea or China)
- The cultural and creative industry in China has 23% annual growth
- It is expected that the cultural and creative industry will generate 5-6% of gross domestic product by 2013
- Public comments to the EU were closed in the summer. What were the results?
- 1.8 billion euros for "Creative Europe"
- Europe-wide harmonisation of PMSE frequencies

APWPT conclusion

Ms Estaban clarified that the cultural and creative industry in Europe now represents considerable economic value and this has not yet been properly recognised. Other countries in the world are apparently far ahead of the EU and are investing massively in this sector.

Further information

1) Presentation or script is present not on-hand
   [http://ec.europa.eu/dgs/connect/index_en.htm](http://ec.europa.eu/dgs/connect/index_en.htm)

**Maria Fernández Esteban** holds a degree of Law from the Autonoma University of Madrid (1992), with ERASMUS award for her academic semester in the University of Amsterdam, The Netherlands. She holds a PhD in European Law from the European University Institute (1996). She was a lecturer of European Law and Spanish Constitutional Law at the Autonoma University of Madrid between 1996 and 2001. She has been a civil servant in the European Commission since 2001. She worked as a Policy Officer in the audiovisual unit of the Directorate General for Competition until 2004. As a Policy Officer within DG Connect she dealt primarily with external aspects of audiovisual industries in the context of the enlargement strategy of the European Commission. She is currently working in the Culture Policy, Diversity and Intercultural Dialogue Unit of DG EAC in the Sector “Globalisation, Copyright and Competition” within the Unit. She is the author of 3 academic books and several articles on European Law and media.
The question is, who are the winners and losers?

- Losers are obviously all PMSE users (live performances and A/V culture)
- WHERE DO WE PAY?
- PMSE users are like the "gypsies of the radio spectrum"
- More and more interference
- Lobbying
  - Create an "APWPT.EU" – more a German concern up to now (?)
  - That costs time and money (!)

Nicolai van Gorp (MA) is the head of the telecommunications team at Ecorys Netherlands and a Senior Research Fellow at the Department of Technology, Policy & Management of Delft University of Technology (TUDelft). He has an expertise in Competition and Regulation as well as in European Policy Making. Prior to these positions he was a researcher and lecturer at several universities (University Maastricht 2003-2005, University of Düsseldorf 2005-2006 and University of Rotterdam 2006).

Dr. Remco den Besten obtained his PhD in chemistry in 1997. In the same year he was asked to join the Dutch Radiocommunication Office (governmental agency). As Deputy Director, Remco’s responsibilities were frequency allocation and spectrum governance in an intense political and competitive environment.

Further information
2) http://www.ecorys.nl
http://www.stratix.nl

APWPT conclusion
Mr van Gorp and Mr den Besten explained that the PMSE industry had not yet managed to find itself a lobby to balance out the financial disadvantages which arise from existing and future frequency allocations. They suggested that the beneficiaries of the frequency allocation should compensate for the disadvantages to the existing users.
Catherine Baumann is President of Pearle and presented her own view of the issue of a commercial value for art and culture as the basis for allocating broadcast spectrum:

- How can you measure efficiency when, for example, 1000 people are doing the same thing?
- What is the benchmark? Culture is not measurable in terms of the individual.

- A cultural centre in a community is justified through the “knock-on effects”. This means that the centre cannot finance itself through its own income alone, but the additional income from overnight stays, restaurant visits, etc. (= indirect profitability) contribute towards this
- The value of a special cultural institution for a region was demonstrated in a video that was presented on the “Vara concert house” (S).

Conclusion:
- Culture has its own unique value
- Culture ensures that peace prevails in Europe.

You can activate the clip presented via this link:  
[http://www.youtube.com/watch?v=OyLrsitm8g&feature=youtu.be](http://www.youtube.com/watch?v=OyLrsitm8g&feature=youtu.be)

Catherine Baumann has been Director of SYNOLYR (Syndicat national des orchestres et théâtres lyriques), the national employer's organisation for French symphonic and lyric orchestras, since 2005. SYNOLYR undertakes advocacy work on many levels, providing a network for its members and representing them to political authorities at the local, national and international levels. SYNOLYR also participates in collective bargaining with union representatives.  
Before joining the SYNOLYR, Catherine Baumann worked for Présences, Radio France’s contemporary music festival in Paris, and for Walker & Associés, a law firm specialised in intellectual property. She holds a B.A. in Comparative Literature and a Masters in Arts Management.  
In 2011, Catherine Baumann was elected President of PEARLE*, Performing Arts Employers Associations League Europe.

APWPT conclusion
Ms Baumann presented various definitions of the word “value”. Nobody is in a position to put figures on the value of culture. The value of culture can only be measured with difficulty. Using the example of the Vara Concert House, she showed how a community profits commercially from the operations of a cultural institution and, on the other hand, how such an institution makes a vital contribution to the quality of life in a community.

Further information
2) [http://www.pearle.ws](http://www.pearle.ws)
Helmut Bauer in the conversation with Martin Levan

Martin Levan, Sir Andrew Lloyd Webber's sound designer, who made musicals like Cats, Starlight Express, Phantom of the Opera and many others into an acoustic experience – using wireless microphones.

Helmut Bauer:
- What does a sound designer do?

Martin Levan:
- I started off in 1982 with 6 radio microphones. That was the most we were allowed in those days.
- Starlight Express began in 1992 with 24 wireless microphones
- In a live production, you maintain visual contact with the performers and have to react to their signals (IEM)
- What would happen if there were no more wireless mics?
  - 98% of shows would have to close if the wireless microphones didn't work
  - Musicals would have to be re-written so they could be produced using cable mics
- In 1982 only 6 frequencies were made available in London for wireless microphones. Starlight Express required more than 20 microphones. There was massive interference to these wireless microphones when additional journalists’ microphones were switched on with no coordination. The premiere had to be abandoned.

Why are wireless microphones important for musicals?
- They allow softly spoken or sung passages to be made audible.

What was the most important production?
- Phantom of the Opera has so far been seen by 130 million people and has grossed 5.6 billion dollars.

APWPT conclusion

Mr Levan reported on his experiences in using PMSE. Many productions can no longer be staged without PMSE. PMSE allows the performers’ emotions to be experienced directly and to make an important contribution to a production’s success. The emotions aroused in the audience and their final effect cannot be measured.

Martin Levan’s career began in 1971 at Morgan Studios, London. By the mid 70’s he was producing and engineering world class albums with such diverse artists as John Martyn, Ralph McTell, Iron Maiden and Andrew Lloyd Webber. Martin's career took a change in direction when, in 1982, he was invited by Andrew Lloyd Webber to supervise the sound on the theatrical production of Song & Dance. Since then, Martin has designed the sound for numerous critically acclaimed musicals worldwide and became internationally renowned for his work on productions such as ‘Phantom of the Opera’, ‘Cats’, ‘Kiss of the Spider Woman’, ‘Starlight Express’ and ‘Sunset Boulevard’. He also produced and engineered the cast albums for a great number of theatrical productions including Co-Producing the Broadway Cast Album of ’Cats’ which won the Grammy Award for best cast album. In 1988 Martin developed and pioneered the ‘A-B System’ for use in theatres where problems with the conventional method of using multiple radio microphone systems on stage caused unavoidable interference patterns resulting in coloration and distortion in the sound system. The use of the ‘A-B System’ relieved this phenomenon, providing the audience with a much more natural, cleaner and more focussed sound.
Discussion: The Results of the WRC-12 and their Impact on Broadcasting and Culture

Pearse O'Donohue
- The public consultation on the topic of PMSE has ended.
- 12-20 MHz "coreband" for PMSE. This includes the Duplex gap.
- The large amount of "legacy" equipment must be taken into account
- The EU does not view the 700 MHz spectrum as an additional Digital Dividend (DD2) – greater compression or new technologies will create new capacity
- Member states are not obliged to switch over from broadcast to broadband
- The EU is annoyed that many states have still not switched over from analogue to digital broadcasting
- The APWPT must be involved in the impact assessment process

Dr. Lange
- People are cultural beings
- The value created by the cultural and creative industry is greater than the pharmaceutical industry
- Decisions should be based on reality, not on wishes

Matthias Fehr
- The APWPT represents the interests of PMSE users and manufacturers on many committees
- Interference thresholds were set out by ETSI and have not been disputed up to now
- The issue of a "social and economic benefit" is often put forward and should now be studied in SMART.

Dr. Hermann
- In spite of shifting the PMSE frequencies in Belgium, there have been no complaints

Dr. Korehnke
- If "SOS" cannot share, it implies the long-term allocation of spectrum
- DD2 is linked to broadband initiative
- Spectrum must be made available at a reasonable price so the broadband initiative can be delivered
- Can there be a peaceful co-existence between PMSE and mobile telephony?
- He is not aware of any cases of interference

Participants (from left to right):
- Matthias Fehr - APWPT President
- Pearse O'Donohue - Head of EU Spectrum Policy
- Bernardo Herman - Director of "Distributeurs & Opérateurs"
- Helmut G. Bauer - Moderator of the event
- Dr. Stephan Korehnke - Vodafone, Department of Regulatory Strategy
- Dr. Josef Lange - Lower Saxony Ministry for Science and Culture
**Matthias Fehr** is a graduate in electronics, microprocessor systems and biomedical technology / bio cybernetics. He has worked in a variety of development projects and has often been entrusted with their management. Since 1990, he has worked as a technology consultant (full-time and part-time, freelance). From 2001 to 2008 he worked as a technical coordinator for radio frequency projects in the Research Division of Sennheiser Electronic GmbH. Since 1995, he has also been involved in international committees, such as EASA, ECC, ETSI, EUROCAE and ITU. Since 2005, he has additionally been engaged on "Digital Dividends" issues. Since 2006, he has been led the DKE Working Group "Professional Wireless Microphones and Event Systems" in connection with the DIN and VDE. In 2008 and 2011 he was elected to be president of APWPT. In 2012, he attended the World Radiocommunication Conference in Geneva as an expert on wireless microphones. Since 2012, in connection with the ITU Radiocommunication Sector, he has been “Chairman of SWG-2 Task 1.2.3 Reporter Group for JTG 4-5-7”, which is exploring wireless microphone solutions in preparation for the World Radiocommunication Conference 2015.

**Stephan Korehnke** is currently heading the Regulatory Strategy and Law Department of the German subsidiary of Europe's biggest mobile operator, Vodafone Group plc. At Vodafone Germany, Stephan Korehnke is responsible for their regulatory strategy in the mobile telecommunication sector and for all issues related to telecommunications, media and competition law. In 2008, he was seconded to Vodafone's Brussels Office. In Brussels he represented the Vodafone Group's interests before the European institutions. Before he joined Vodafone (at that time Mannesmann Mobilfunk) as a Legal Counsel in 1998, Stephan Korehnke had been working as “Rechtsanwalt” (Solictor in private practice) for Gög Rechtsanwälte in Cologne.

Stephan Korehnke studied law at the Universities of Cologne and Strasbourg, France. After having worked as an assistant at Cologne University, he obtained his doctorate in law in 1996. Stephan Korehnke has contributed to numerous publications in the area of telecommunication law and is co-editor of the monthly journal "Netzwirtschaft & Recht".

**Pearse O’Donohue** is responsible for the development and implementation of policies for efficient spectrum use and a coordinated approach to frequency management in the EU, to provide opportunities for the development of wireless broadband and the introduction of innovative wireless technologies. This includes the development of spectrum harmonisation measures for electronic communication and wireless broadband, as well as for other internal market sectors such as transport and research. He is Chairman of the EU Radio Spectrum Committee. Prior to his current post, Pearse was the Assistant to the Director-General of DG CONNECT (formerly DG INFSO), as well as Deputy Head of Unit responsible for monitoring and enforcing implementation of the EU regulatory framework in electronic communications, where he dealt amongst other things with spectrum authorisation and broadband access issues. He began his career in the Irish Department of Foreign Affairs, from which he was posted to the Permanent Representation of Ireland to the EU in Brussels. He was later appointed Assistant Director of the Brussels office of the Irish Business & Employers’ Confederation, before joining the European Commission.

**Bernardo Herman** is Director for Distributors and Networks at the CSA, a Belgian regulator for audio-visual matters, where he is overseeing several issues impacting e-communication and media players such as: SMP obligations on TV and Broadband markets, spectrum, connected TV, net neutrality, digital strategy. Before joining the CSA, Bernardo worked ten years in the telecom sector in various legal and regulatory positions. As Regulatory Affairs Manager with the European Telecommunications Network Operators’ Association from 2006 to 2009, he was involved in discussions over the revision of the regulatory framework for electronic communications. With the Belgian Telecom Regulatory Authority (BIPT), he was in charge of the legal assessment of markets analysis in his capacity as Legal Advisor (2005 to 2006). From 2001 to 2004, he contributed to the launch of the GSM operator KPN-Orange/BASE, where he has been successively Corporate Affairs Manager and Legal Counsel. Bernardo Herman holds a Master in law from the University of Louvain-La-Neuve.

**Helmut G. Bauer, Lawyer in Cologne, studied law, journalism, politics and ethnology in Heidelberg and Mainz. He served as managing director in various media companies and is one of the pioneers of private broadcasting in Germany. His current work focuses on broadcasting infrastructure and new media technologies, particularly for radio. He advises manufacturers and users of wireless production tools in the context of the Digital Dividend at national and European level. Since 2012 he is member of the Board of Directors of the Institute of European Media Law (EMR). Bauer is the author of numerous publications and was for many years lecturer at several universities.**

**Dr. Josef Lange** studied Catholic Theology, History and Political Science at the Universities of Münster and Regensburg. 1971 Diploma (final examination) in Theology. 1971 to 1974 Member of Bavarian Higher Education Planning Committee. 1974 Ph. D. at Regensburg University. 1974 to 1979 Personal Assistant of the founding President and Press Officer of Bayreuth University; 1979 to 1984 Office of the Deutsche Forschungsgemeinschaft (DFG); 1984 to 1990 Office of the German Council of Science and Humanities; 1990 to 2000 Secretary General of Hochschulrektorenkonferenz (HRK – Association of Universities and Higher Education Institutions in Germany); 2000 to 2001 State Secretary for Science and Research in the Federal State of Berlin; 2001 Advisor of the Center of Higher Education Development (CHE); 2002 to 2003 Head of Department “Coordination of Ministeries” in the State Chancellery of Thuringia; since March 2003 State Secretary, Ministry of Science and Culture in Niedersachsen.
Common ground

All speakers stated that PMSE (wireless microphones and comparable technology) has already been considerably affected by the awarding of the current Digital Dividend (790-862 MHz).

Differences

There were different evaluations of the need to allocate additional radio spectrum to broadband provision. The different evaluations were principally based on the

- fact that linear allocation of spectrum cannot support exponential data growth
- the need for comprehensive investigations before any new spectrum allocation
- a balance between the demand for radio spectrum by the cultural and creative industry and the provision of broadband
- an endorsement or rejection of the evaluation on the basis of “socio-economic factors”

Interesting points

- Representatives of the mobile telephony industry made it clear that the requirements for the broadband initiative have been formulated and determined primarily by politicians.
- The European Commission is not happy that the implementation of the Digital Dividend in the 790-862 MHz band has not yet started in the majority of EU states. The feeling arose during the discussion that additional UHF spectrum for broadband provision is currently more a subject for discussion than a plan for implementation.

Further support is required

A number of national, European (CEPT) and worldwide (ITU) committees are carrying out wide-ranging investigations until around 2015, both into the additional demand for frequency for broadband and mobile telephony, and into solutions for PMSE (spectrum requirement and quality for PMSE have not been sufficiently investigated up to now).

The APWPT requests that these processes are encouraged as much as possible and would like to play an active role in this, as far as possible.