



PMSE

Association of Professional Wireless Production Technologies
EBU March 27 2012
www.apwpt.org

The future of wireless production tools in the UHF TV band

- What is PMSE?
- Digital Dividend
- Current Situation
- Alternatives
- What to do?

What is PMSE?

PMSE = Program Making & Special Events en-
bevat o.a.:

- Wireless microphones and IEM
- Wireless intercom
- Reporter sets
- Audio links
- Wireless cameras
- Wireless remote control of light and decor
- Conference systems
- Etc.

What is PMSE

- Regulation
- Secondary status: non interference non protection basis
- Wireless microphones: different license regimes
 - License exempt=Not administered=not known
- Wireless cameras
 - Often on license basis
- Reporter sets (Tx on/off air and Rx talk back till 10W)
 - Secondary but sometimes with primary public task during disasters

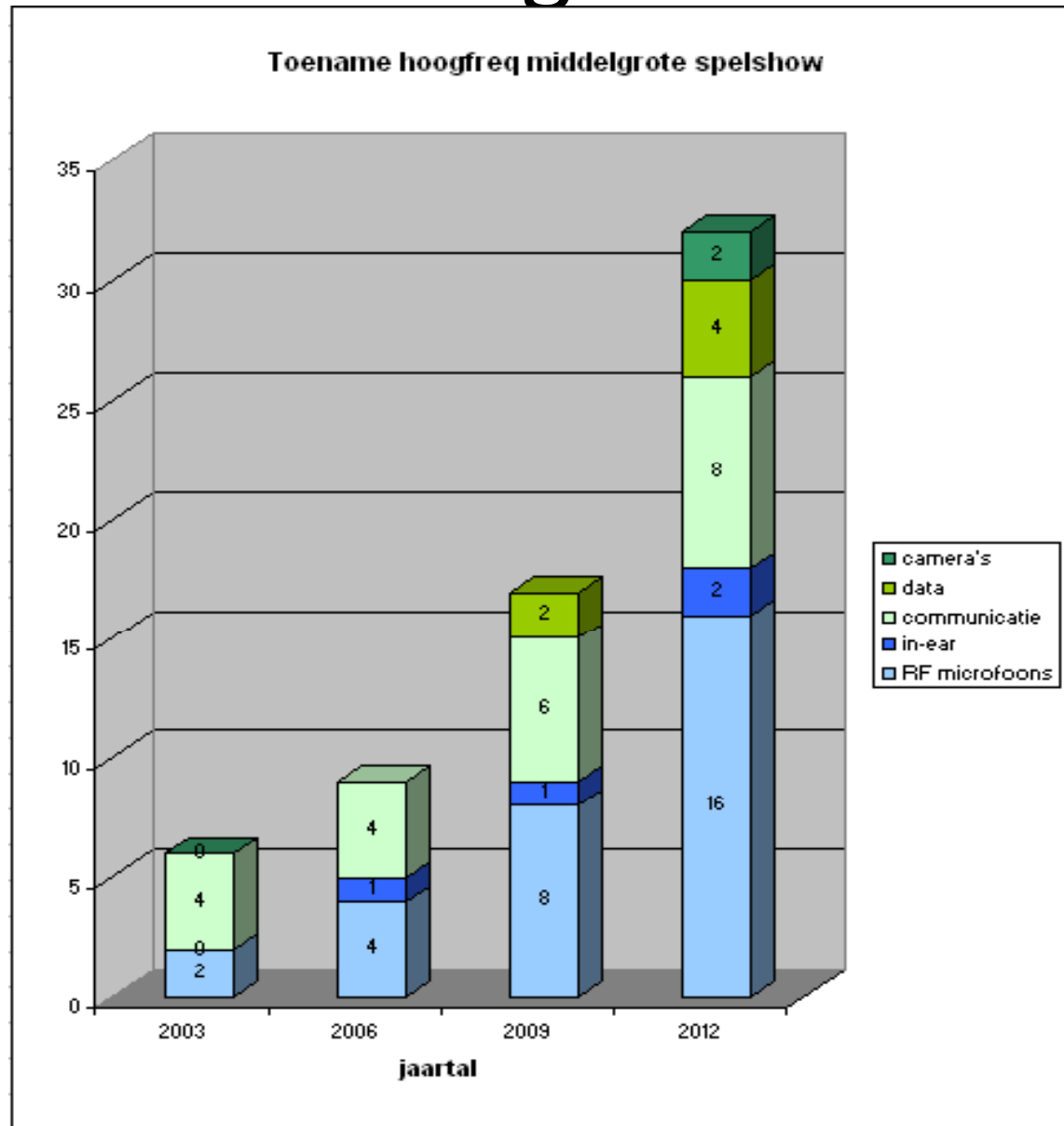
What is PMSE

- Technology
- HD/HiFi audio quality, 100% duty cycle, reliable, real time (latency < 4mSec)
- Analogue/digital (digital is not always better)
 - Digital often leads to latency
 - Digital needs more bandwidth
 - Signal or no signal: in analogue bit of signal = 100% audio/video
 - Regulation not adjusted to new technologies

Applications

- Concerts/ theatre (cultural industry)
- Public use (Churches, schools, karaoke, universities, hospitals, etc)
- Conference centres and exhibitions (museums, shows, presentations)
- Events (sport, elections, festivals, national holidays)
 - Live production
 - Recording (DVD, AV content also for IMT services)
 - ENG
 - Logistics (IEM, talk-back, safety)

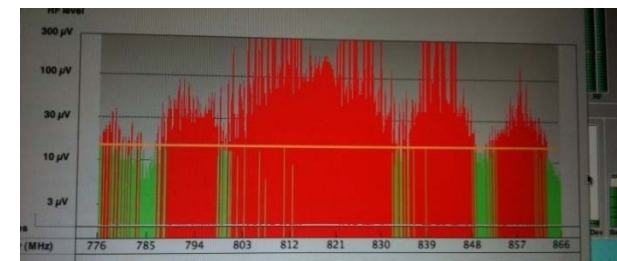
Growing user demand



User application: Hilversum mediapark N

UHF band

<i>Situation Mediapark within 500 meter</i>	NOS	Radio	The Voice Publieke	Winner is	Dinner show	RTL	koffietijd	Hulpdienst Veiligheid	Total	Tekort
Reporter sets		2							2	0
Intercom command	4	4	6	6	0	3	8	8	39	0
portophones	4	2	32	16	10	4	6	12	86	0
Wireless microphones	24		62	32	24	24	32	2	200	31
in-ear	12		14	8	12	12	8	0	66	18
intercom llow power	8		8	8	4	8	2	0	38	38
UHF devices									304	95
RF cameras			2	2					4	0



User applications



- Elfstedentocht

<i>3 dagen voor elfstedentocht</i>	<i>Publieke TV</i>	<i>Publieke Radio</i>	<i>Fryslân/ROOS</i>	<i>538/ Veronica</i>	<i>RTL/ SBS6</i>	<i>ENG/ div</i>	<i>Hulp/ Veiligheid</i>	<i>Totaal</i>	<i>Tekort</i>
Reporter sets	7	7	6	4	4			28	0
intercom+rcommand	60	7	6	4	12		??	89	44
portophones	176	8	16	2	52			254	0
Wireless microphones	128	4	??	8	32	30	??	202	33
in-ear	32	4	??	4	8	10	??	58	10
intercom llow power	16		??				??	16	16
RF cameras	14		2		2		??	18	2
Div.videolinks	19		2				??	21	15
Helicopter repeater	4	1	0	0	0	0	??	5	0
Airoplane to studio	2	1	0	0	0	0	??	3	0
personel (estimation)	500	40	40	40	150	130	??	900	
sandwiches (haha)	1300	125	125	125	300	275	??	2250	

User applications A'dam city centre

Musical/Theater/Congres

	<i>Soldaat v Oranje</i>	<i>Conferentie RAI</i>	<i>Glazenhuis</i>	<i>Guus Meeuwis</i>	<i>Gemiddelde Theater productie</i>	<i>Symfonica Rosso</i>	Sportclubs+Kerken	Saturday Night Fever	Efteling
Wireless microphones	40	96+	70	16	12	52	2+	40	136+
in-ear	6			12	10	21			
intercom low power	18	12	10	20	12	12		14	14+
UHF devices	64	108+	80	48	34	85		54	150+

Leidseplein Amsterdam (all operational)

	<i>De La Mar</i>	<i>Stadsschouwburg</i>	<i>Paradiso</i>	<i>Melkweg</i>	<i>Theater Bellevue</i>	<i>De Balie</i>	<i>Kroegen ed.</i>	<i>Totaal</i>	<i>Tekort</i>
Wireless microphones	40	32	25	25	35	15	36	208	39
in-ear	12	10	6	10	10			48	0
intercom low power	6	12						18	18
UHF devices	58	54	31	35	45	15	36		

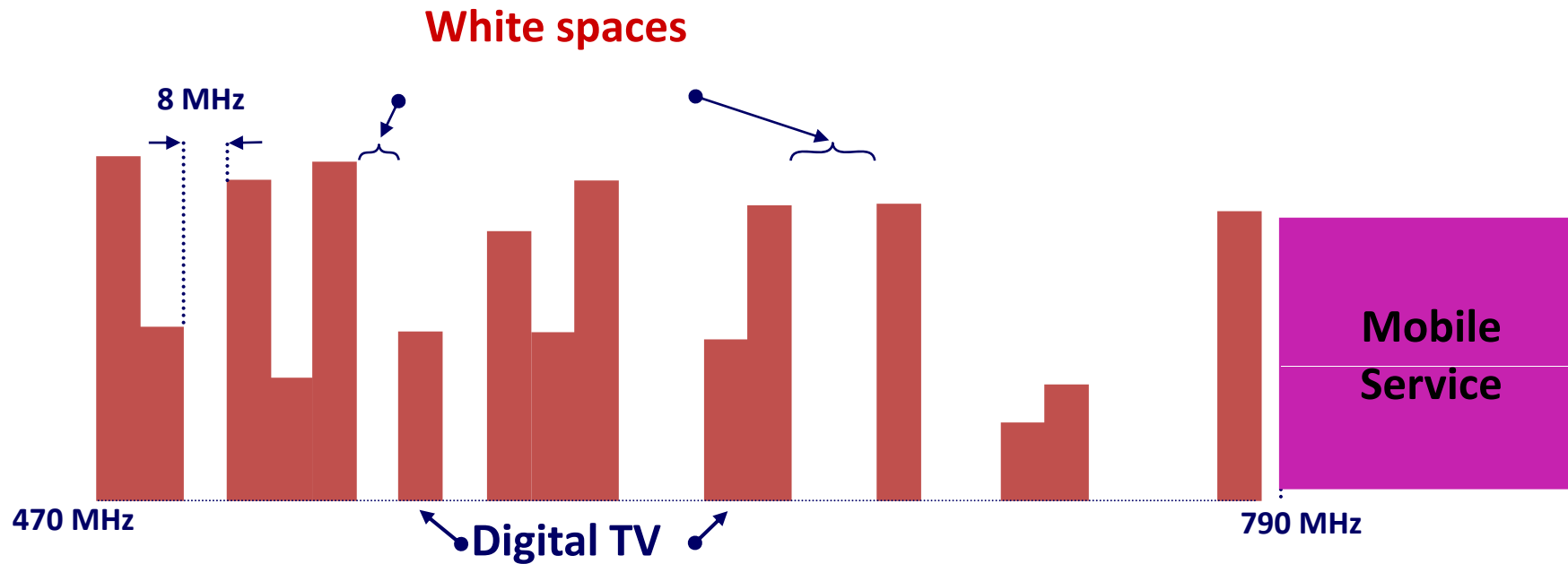
Digital Dividend

- DD has only a political meaning
- Regulators want more efficient use of spectrum:
 - Liberalisation (money)
 - Technology neutral
(only data traffic? no 100% duty cycle?)
 - Has to deliver economic growth
(what do you take into account?)
- WRC07 1^e DD: IMT co-primary user
 - most PMSE equipment with current technology redundant
- WRC15 2^e DD: IMT co-primary user
 - major events become IMPOSSIBLE
 - Musical industry will vanish.
- Cognitive Radio (WSD: thread or chance?)

Cognitive radio/WSD

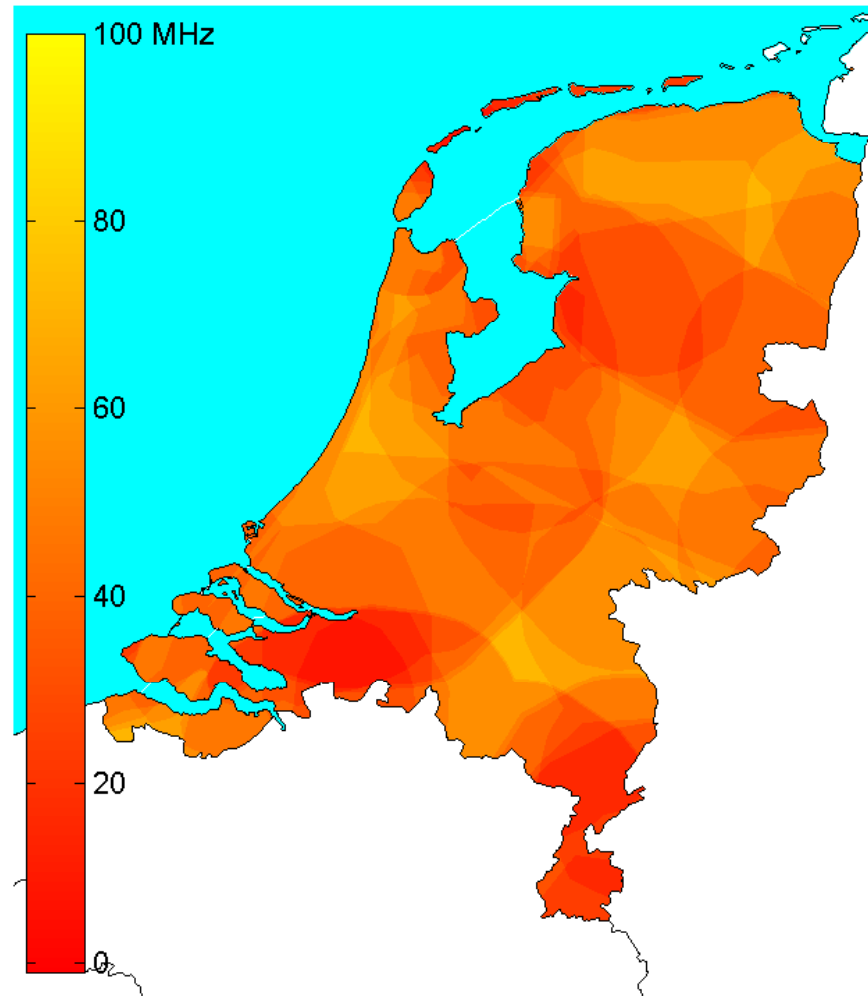
- Frequencies between DVB-T transmitters= White Spaces
- Private networks till 48 MHz of bandwidth
- Tx power up to 4 W license exempt
- Possible in 470-790 MHz
- Protection of PMSE?
- Database and `sensing' to protect primary users
- PMSE in NL licentieexempt => not in database
- Currently sensing is inadequate to protect PMSE

DD: Cognitiveve radio/WSD



Digital Dividend

Actual situation, channels 21-32
Available spectrum (in MHz) for wireless microphones outdoor usage
min=8MHz max=72MHz



Alternatieven

- ALTERNATIV SPECTRUM IS NECESSARY
- Currently in NL 22 TV channels available in Hsum mediapark
- Maximum of production run on time sharing
- 1st DD due to reallocate spectrum still 22 channels available
- 2nd DD only 10 TV channels left => productions cannot be done in current form
- Protection against WSD?
- Administration of database?
- Database must be updated within short time intervals

What to do?

- Current spectrummanagement needs cooperation
 - Our industry's character is R&R
 - Works ad hoc (the show must go on)
 - Inventory of problems doesn't happen (time constraint)
- International:
 - Association of Professional Wireless Production Technologies (APWPT) www.apwpt.org
- National:
 - PMSE.NL www.pmse.nl
 - PMSE Belux
 - British Entertainment Industry Radio Group (Beirg): www.beirg.co.uk

Questions?

Any further erosion of the UHF TV band is unacceptable and will hurt the cultural economy at the basis of its existence

People experience through events the essential emotions that everybody needs.

These once in a lifetime experiences will be vastly inferior without PMSE.