

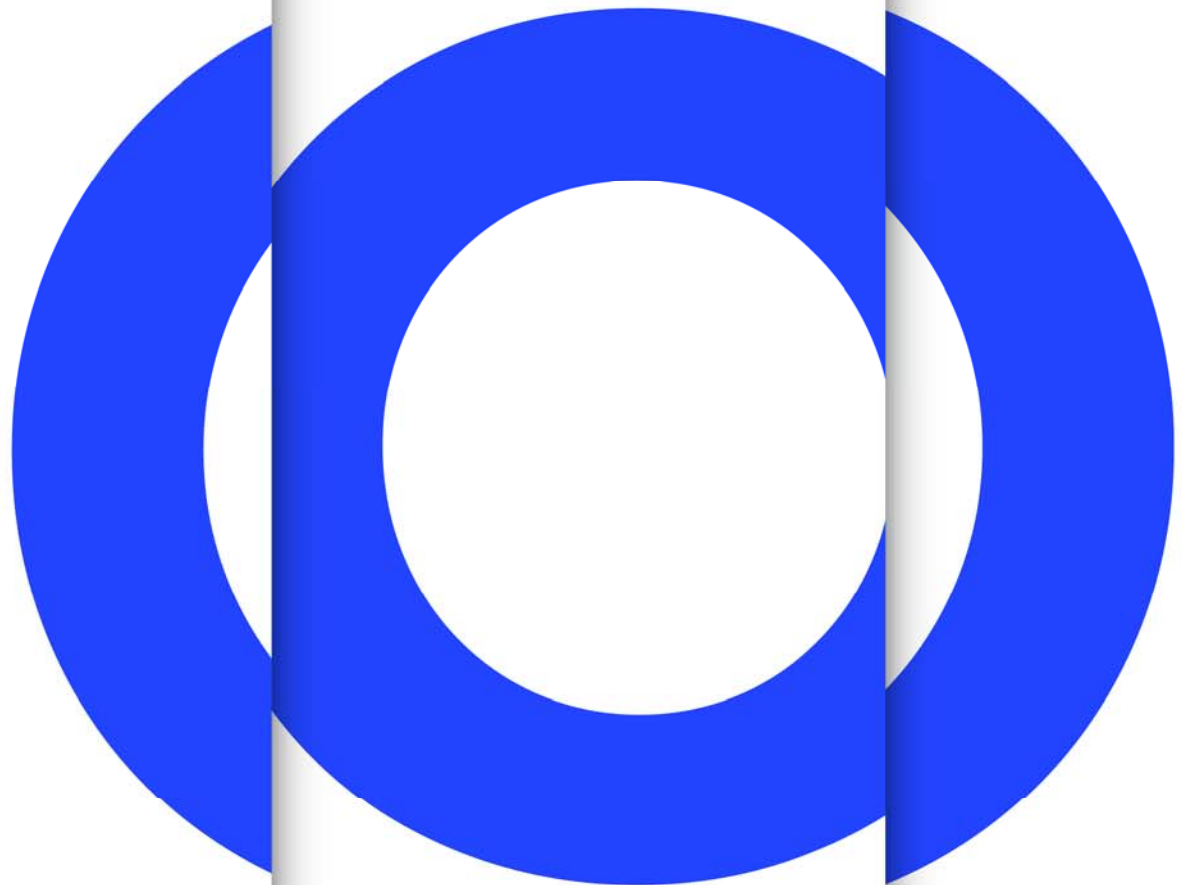
EUR(O)VISION

Satellite network

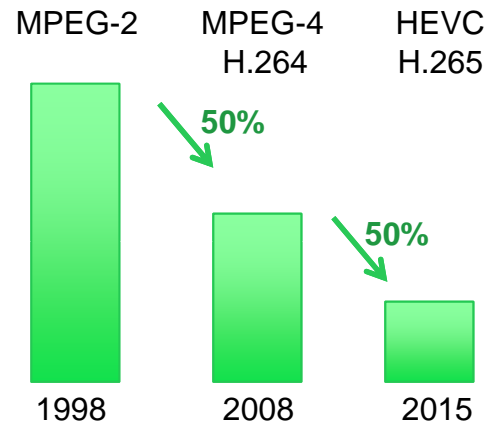
HEVC and DVB-S2X
implact on the satellite
network design

Vlastimil Benovsky
Satellite Operations Manager

OPERATED BY EBU

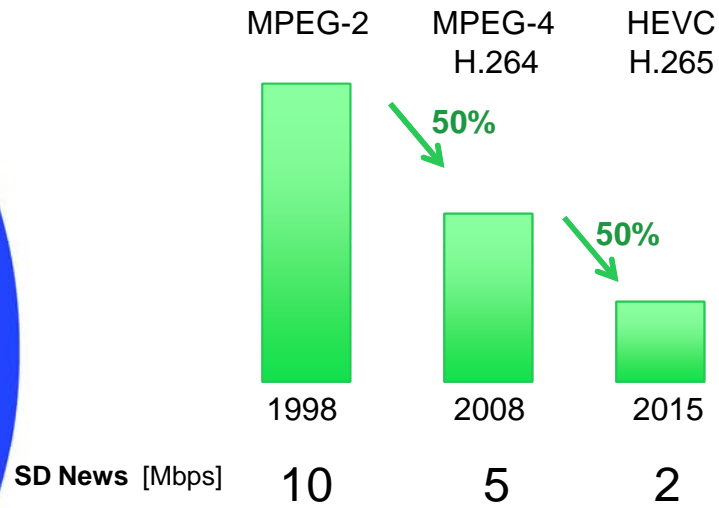


ENCODING TECHNIQUES



MODULATION TECHNIQUES

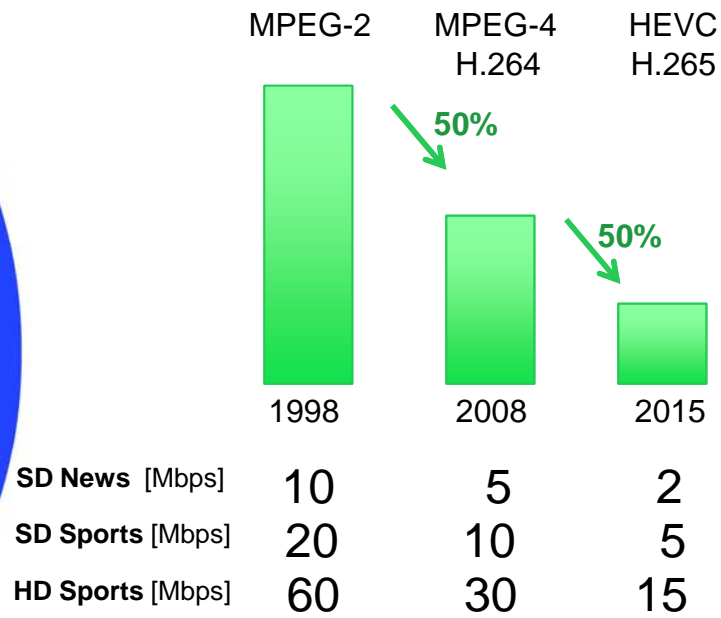
ENCODING TECHNIQUES



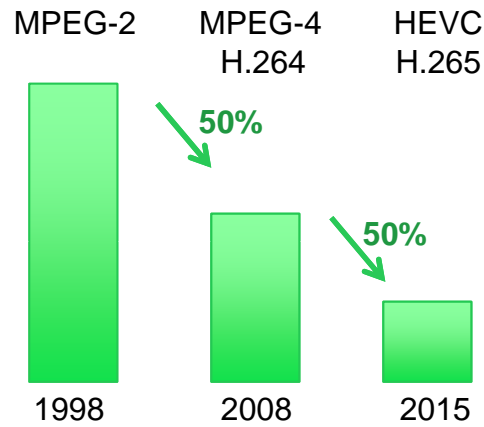
MODULATION TECHNIQUES

ENCODING TECHNIQUES

MODULATION TECHNIQUES

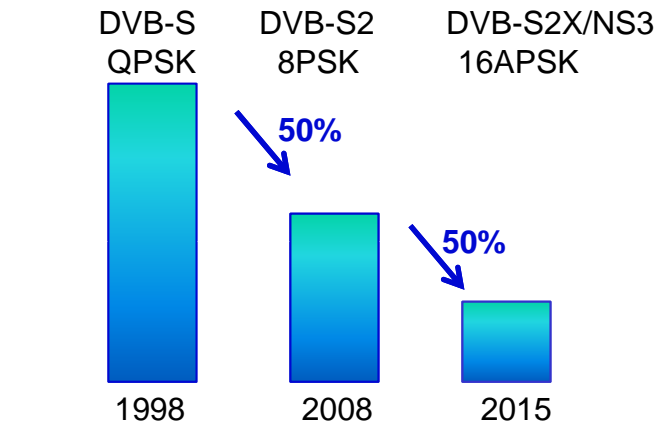


ENCODING TECHNIQUES



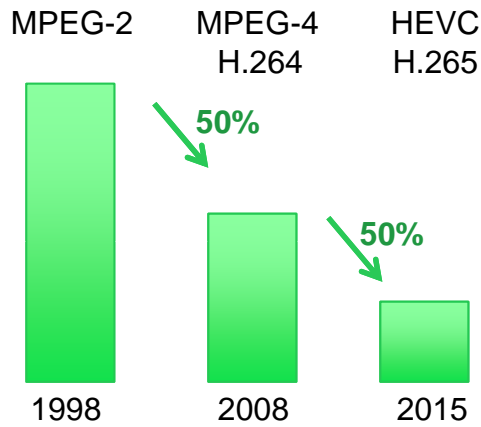
	1998	2008	2015
SD News [Mbps]	10	5	2
SD Sports [Mbps]	20	10	5
HD Sports [Mbps]	60	30	15

MODULATION TECHNIQUES



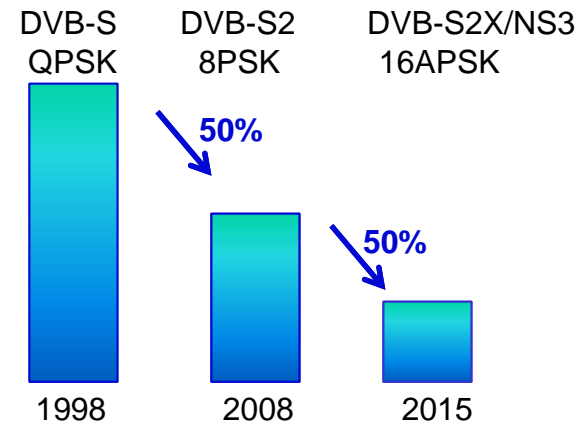
	1998	2008	2015
[MHz]	9	3	1
[MHz]	18	6	2
[MHz]	36	18	9

ENCODING TECHNIQUES



SD News [Mbps]	10	5	2
SD Sports [Mbps]	20	10	5
HD Sports [Mbps]	60	30	15

MODULATION TECHNIQUES



[MHz]	9	3	1	} SCPC ?
[MHz]	18	6	2	
[MHz]	36	18	9	

SATELLITE TRANSPONDER OPTIMIZATION

Multi-carrier mode:
Transponder output
back-off up to 16 dB



Large receiving
antennas required



SATELLITE TRANSPONDER OPTIMIZATION

Multi-carrier mode:
Transponder output
back-off up to 16 dB



Large receiving
antennas required



Single carrier mode:
Transponder at saturation



Small receiving
antennas

SATELLITE TRANSPONDER OPTIMIZATION

Multi-carrier mode:
Transponder output
back-off up to 16 dB



Large receiving
antennas required



Single carrier mode:
Transponder at saturation



Small receiving antennas

CONCLUSION

For small carriers the Single Channel Per Carrier (SCPC) is not convenient

The Multi Channel Per Carrier (MCPC) to be used

SATELLITE TRANSPONDER OPTIMIZATION

Multi-carrier mode:
Transponder output
back-off up to 16 dB



Large receiving
antennas required



Single carrier mode:
Transponder at saturation



Small receiving antennas

CONCLUSION

For small carriers the Single Channel Per Carrier (SCPC) is not convenient

The Multi Channel Per Carrier (MCPC) to be used

Contribution satellite network designed a similar way as the direct-to-home networks.

SATELLITE TRANSPONDER OPTIMIZATION

PRACTICAL EXAMPLE

Satellite **Eutelsat 10A**
Transponder **Ku-band**

Bandwidth **72MHz**

Modulation **16APSK**

FEC **17/30**

Roll-off **5%**

Symbol rate **68 Msps**

Total info bit rate **200 Mbps**

Diameter of reception antennas within the satellite footprint 1.8 m – 2.4m



EUROVISION

SATELLITE NETWORK TOPOLOGY

THANK YOU

VLASTIMIL BENOVSKY

Satellite Operations Manager

EUROVISION

L'Ancienne-Route 17A

1218 Le Grand-Saconnex

Geneva, Switzerland

T +41(0)22 717 27 59

www.eurovision.com

OPERATED BY EBU

EUROVISION

OPERATED BY EBU