

**The CTO 8<sup>th</sup> Annual African Digital Broadcasting  
Switchover Forum  
11-13 February 2013  
Johannesburg, South Africa**

**Delivery HDTV and wireless  
broadband services with improved  
spectrum technologies**

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..... African 8<sup>th</sup> DBSF – 11-13 February 2013, Johannesburg, South Africa .....

I have cherished the ideal of a **democratic and free society** in which **all persons** live together in **harmony and with equal opportunities**. It is an ideal which I hope to live for and to achieve. But if needs be, it is an ideal for which I am prepared to die.

**Nelson Mandela**  
**11 February 1990**



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# New Social TV



# DIGITISATION

- Exponentially increases the capacity of broadcast platform
- Reduces the costs of both production and distribution of content
- Increases the range of format, portable, mobile to 3D



# TV not the only screen in the living room!



# No Killer Device!





# The Old TV is not dead!



# No more Lonely Broadcasters



Broadcasters

MHEG-5  
MHP 1.3  
HbbTV  
YouView

TELCOS



GoogleTV  
YahooTV  
AppleTV  
Microsoft



TV  
STB  
PC

Samsung – SmartTV  
Sony – Bravia  
Panasonic – Viera cast  
LG – SmartTV  
Philips – NetTV  
Toshiba



International  
Telecommunication  
Union

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# The First “Digital” Games

- 700 gigabytes per second were delivered from the BBC website when Bradley Wiggins won his gold;
- On the peak day, 2.8 petabytes of data were delivered – equivalent to 700,000 DVDs;
- Nearly a million people watched Andy Murray win gold - not on TV but online and over 9 million followed BBC Olympic coverage on their mobiles;
- And over twenty billion views of the official London2012.com website.



# New Service Concept

- TV Anytime
- TV Anywhere
- Interactivity



# New service delivery

Service provision		Delivery	Target	Service concept	
Broad casters	TV Radio Data	<b>Broadcasting (BC)</b> TV tx networks Radio tx networks Cable networks Satellite networks	<b>General public</b> In coverage area Not addressed Some services with CA	<b>Linear services</b> Aggregated TV services Aggregated radio services	<b>HBB</b> Integrated BC/BB linear and non - linear services
	TV Radio Data	<b>IP TV</b> <b>Closed Internet</b> Fixed broadband Mobile broadband	<b>Individuals</b> With broadband Internet access Addressed		
	TV Radio Data	<b>IP Broadband (BB)</b> <b>Open Internet</b> Fixed BB Mobile BB		<b>Non - linear services</b> Full remote interactivity for video, sound and data services	

# The Linear TV

## Digital Terrestrial Television Broadcasting Systems



# Recommendation ITU-R BT.1306-6

Error-correction, data  
framing, modulation and  
emission methods for digital  
terrestrial television  
broadcasting



# System A, B, C and D

- **ATSC** : **A**dvanced **T**elevision **S**ystems **C**ommittee (USA)
- **DVB** : **D**igital **V**ideo **B**roadcasting (Europe)
- **ISDB** : **I**ntegrated **S**ervices **D**igital **B**roadcasting (Japan)
- **DTMB** : **D**igital **T**errestrial **M**ultimedia **B**roadcast (China)





# Recommendation ITU-R BT.1877

Error-correction, data framing,  
modulation and emission methods  
for **second generation** of digital  
terrestrial television broadcasting  
systems



# DTTB Systems

Standard	ITU-R Recommendation	Technology	Payload in an 8 MHz channel
<b>ATSC</b>	Rec. BT.1306-6 System A	Single carrier	6.0-27.5 Mbit/s
<b>DVB-T</b>	Rec. BT.1306-6 System B	Multi-carrier (OFDM)	5.0-31.7 Mbit/s
<b>ISDB-T</b>	Rec. BT.1306-6 System C	Multi-carrier (segmented OFDM)	4.9-31.0 Mbit/s
<b>DTMB</b>	Rec. BT.1306-6 System D	Single carrier or multi-carrier (OFDM)	4.8-32.5 Mbit/s
<b>DVB-T2</b>	Rec. BT.1877	Multi-carrier (OFDM)	5.4-50.4 Mbit/s



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# Mobile TV Systems

Standard	ITU-R Recommendation	Characteristic
<b>T-DMB</b>	Rec. BT 1833 System A Rec. BT.2016 System A	Terrestrial multimedia services based on the T-DAB system
<b>AT-DMB</b>	Rec. BT.2016 System A	Enhanced version of T-DMB, two times more efficient, backward compatible
<b>ATSC- M/H</b>	Rec. BT 1833 System B	Terrestrial multimedia services; enhancement of the ATCS system
<b>ISDB-T 1seg</b>	Rec. BT.1833 System C	Terrestrial multimedia services; part of ISDB-T multiplex
-	Rec. BT.1833 System E	Terrestrial component to satellite multimedia services in 2.6 GHz band. Satellite system known as system E in Recommendation ITU-R BO.1130 <sup>1</sup>
<b>ISDB-T</b>	Rec. BT.1833 System F Rec. BT.2016 System F	Terrestrial multimedia services
<b>DVB-H</b>	Rec. BT.1833 System H	Terrestrial multimedia services; enhancement of the DVB-T system
<b>DVB-SH</b>	Rec. BT.1833 System I Rec. BT.2016 System I	Terrestrial component to satellite multimedia services 2.2 GHz.
<b>MediaFlo</b>	Rec. BT.1833 System M	Terrestrial multimedia services
<b>DVB-T2-lite</b>	Draft revision Rec. BT.1833-1 System T2	Terrestrial multimedia services based on the DVB-T2 system



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# TV Broadcast Technology

- Two main directions
  - Increased picture quality by means of HDTV and 3DTV and Ultra-HDTV
  - More efficient compression and transmission systems



# HDTV and Beyond

- Developments on the television presentation formats
  - Improved HDTV (1080p/50 or 60)
  - Stereoscopic 3DTV
  - Ultra High Definition Television  
UHDTV



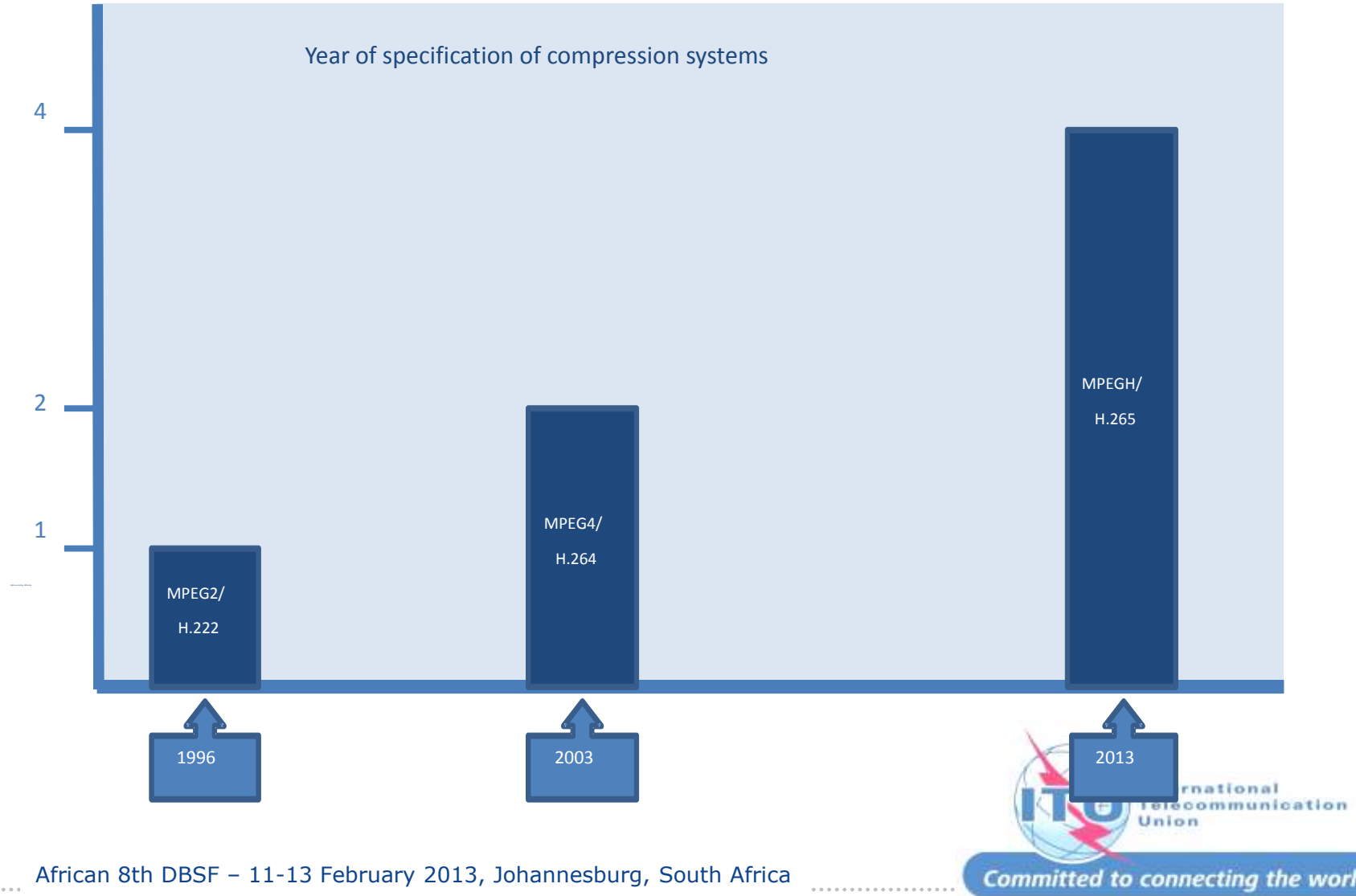
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# Compression Systems

- MPEG2, also referred to as ITU-T H.222
- MPEG4, also referred to as MPEG-AVC, MPEG-4 part 10 and ITU-T H.264.
- High Efficiency Video Coding (HEVC), MPEG-H and ITU-T H.265
  - jointly developed by ISO/IEC MPEG and ITU-T VCEG



Year of specification of compression systems



# Interactive TV Systems

- Middleware
- MHEG-5
- MHP
- Giga
- BML
- HbbTV





# MHEG-5

- ISO **M**ultimedia and **H**ypermedia information coding **E**xpert **G**roup (MHEG) and the Digital Audio Video Council (DAVIC) from 1995
- ISO/IEC 13522-5 “Coding of Multimedia and Hypermedia Information”.
- UK, New Zealand, China, Hong Kong, India, Singapore



# MHP

- MHP middleware in fact sits on top of the operating system of a set-top box, as an Application Programming Interface (API).
- Italy, Austria, Spain, Belgium, Poland,....



# HbbTV

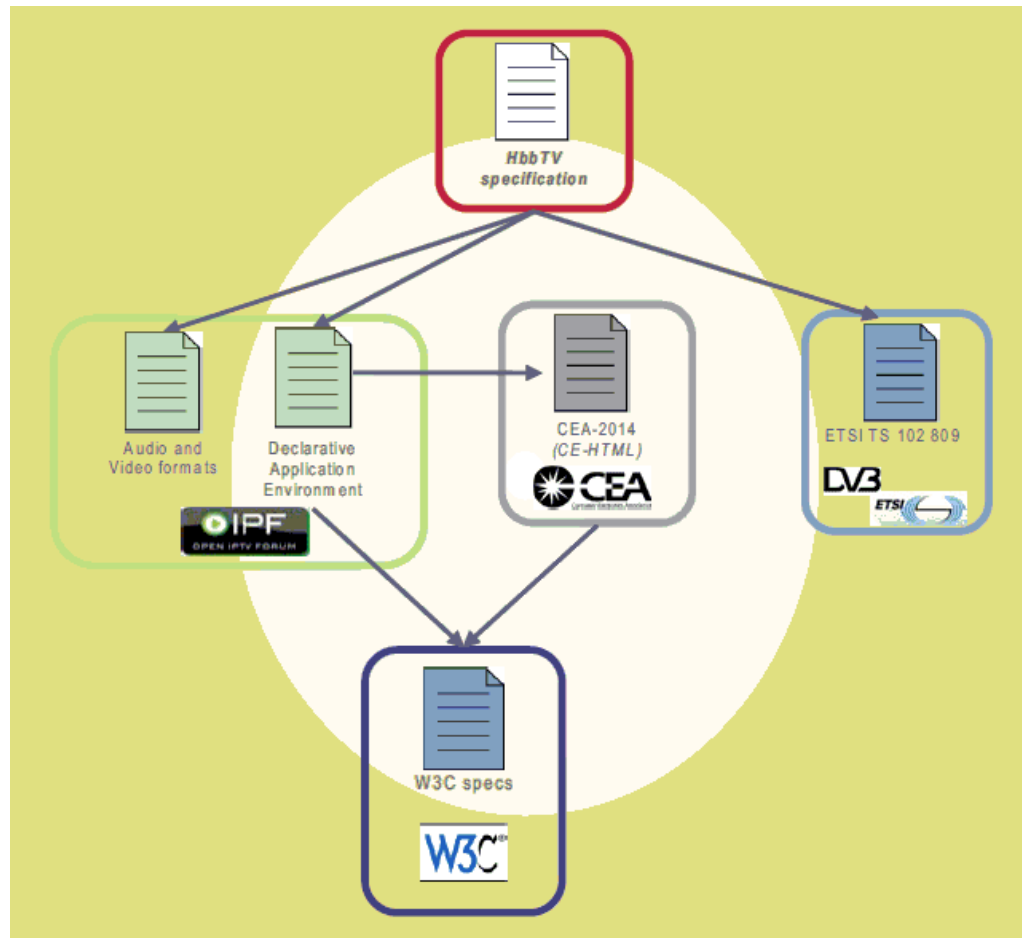
- **H**ybrid **b**roadcast **b**roadband **TV**
  - Broadcast signaled internet connected TV
- Pan European Standards (German and France)
- Based on existing standards & Web technologies
- FTA business model, Germany, France, Spain, Netherlands



# ISDB Related

- Giga
  - Brazil
- BML
  - Japan

# Specifications - HbbTV



# The Lessons

- Identify and take advantage of the opportunity the technology created
- To engage with audience
- Tell stories in different ways
- To be relevant in the new landscape.



Future is not some place we are going but one we are making. The paths to the future are not to be found but made and in the process of making them change both us and our final destination

**John Schaar**



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# Have a successful DBSF 2013!



Thank you!



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