

**TANDBERG**  
Television



sharing **your vision**



[www.tandbergtv.com](http://www.tandbergtv.com)



**Next Generation Encoding...**  
**...are we ready?**

*Tim Sheppard*  
*TANDBERG Television*

# Agenda

- Intro to TANDBERG Television
- Who wants next generation encoding?
- The Keys to viability



# Introduction to TANDBERG Television

- Video delivery **solutions** for Cable, Telco, Satellite, Terrestrial
- Wide product range
  - Encoders, Muxes, Mods, Receivers, VOD solutions, Control Systems
- Leading provider of next generation encoding solutions
  - Over 500 next generation encoders shipped
  - Over 3000 MPEG-2 encoders in the field capable of upgrade
  - Over 15,000 digitized live channels worldwide
- Purchased N2 Broadband, January 2005
  - Increased US presence
  - On-Demand solutions (e.g. VOD, Ads)



# TANDBERG Encoder Products

	Standard Definition	High Definition
MPEG-2	✓ <b>E5770</b>	✓ <b>E5780</b>
MPEG-4 part 10 (H.264/AVC)	✓ <b>EN5930</b>	✓ <b>EN5990</b>
Windows Media 9 (WM9S/VC-1)	✓ <b>EN5920</b>	✓ <b>EN5980</b>



- HD MPEG-4 AVC (H.264) encoders chosen by Directv and BSkyB



# Who wants next generation encoding?



Satellite HD

Cable HD

Contribution

Telco IPTV SD

Telco IPTV HD

Distribution

DTTV SD & HD

Mobile (DVB-H)



# Example Satellite HDTV DVB-S2 and AVC/VC1

## BEFORE

36MHz Transponder  
DVB QPSK at FEC 2/3  
TOTAL bit-rate = 38Mbit/s

Using MPEG-2 HD at  
6 Mbit/s = 2 HDTV services

## AFTER

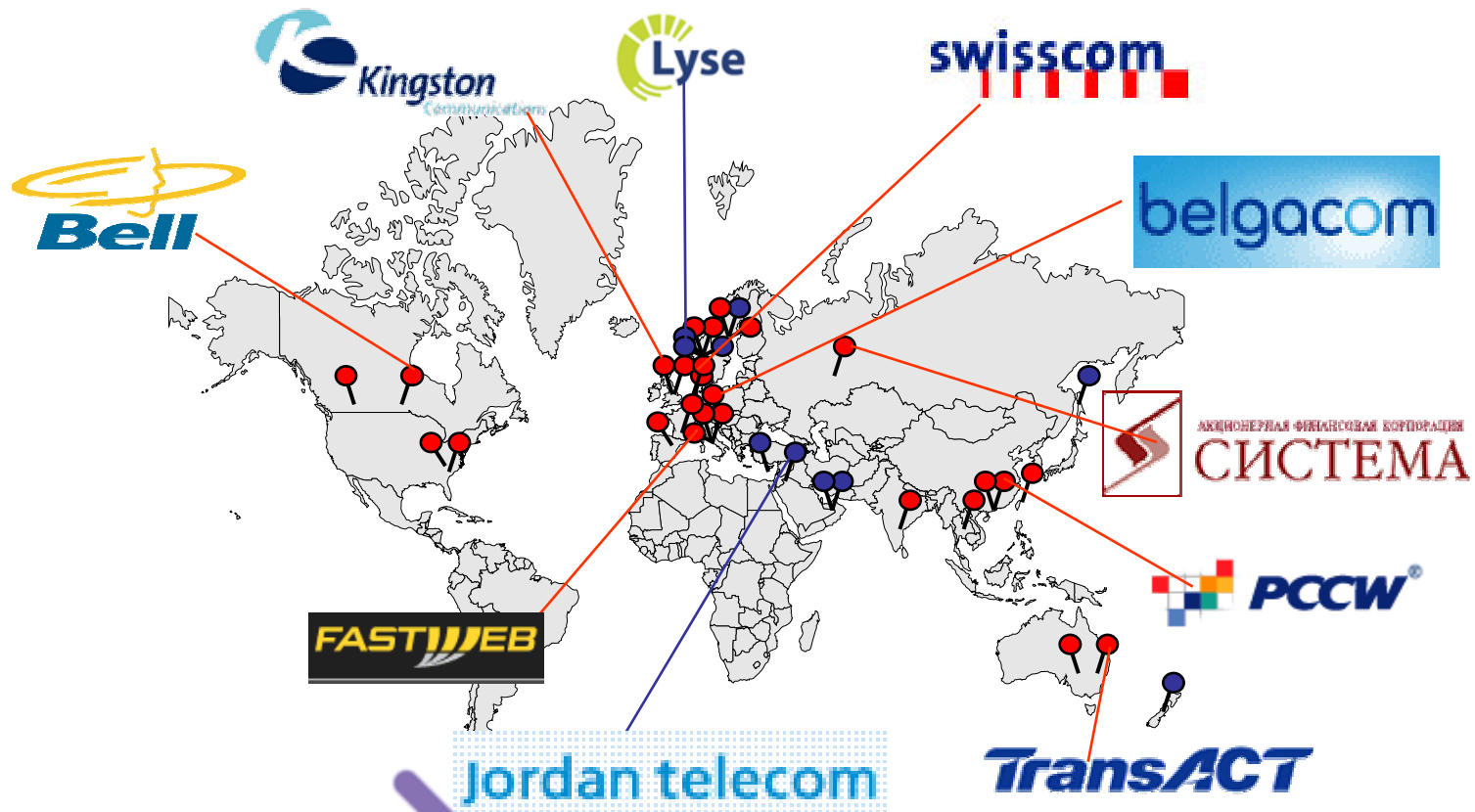
36MHz Transponder  
**DVB-S2** QPSK at FEC 4/5  
TOTAL bit-rate = 43.6Mbit/s

Using **AVC/VC1** HD  
at 10 Mbit/s = 4 HDTV  
services

Using AVC/VC1 HD and  
**Reflex**<sup>®</sup> (statistical  
multiplexing)

# IPTV is happening!

AVC enables ADSL



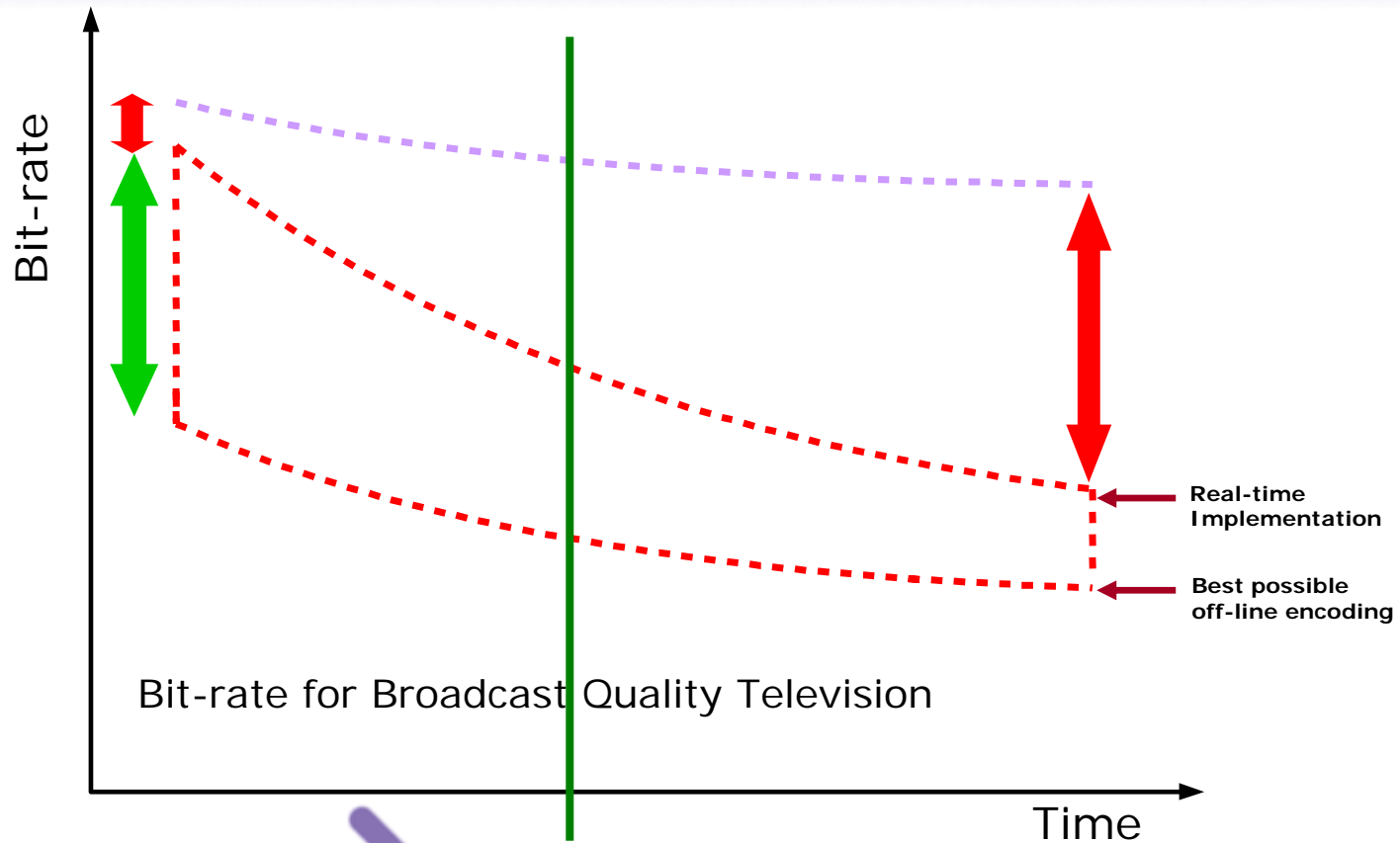


# The Keys to Viability (simple)

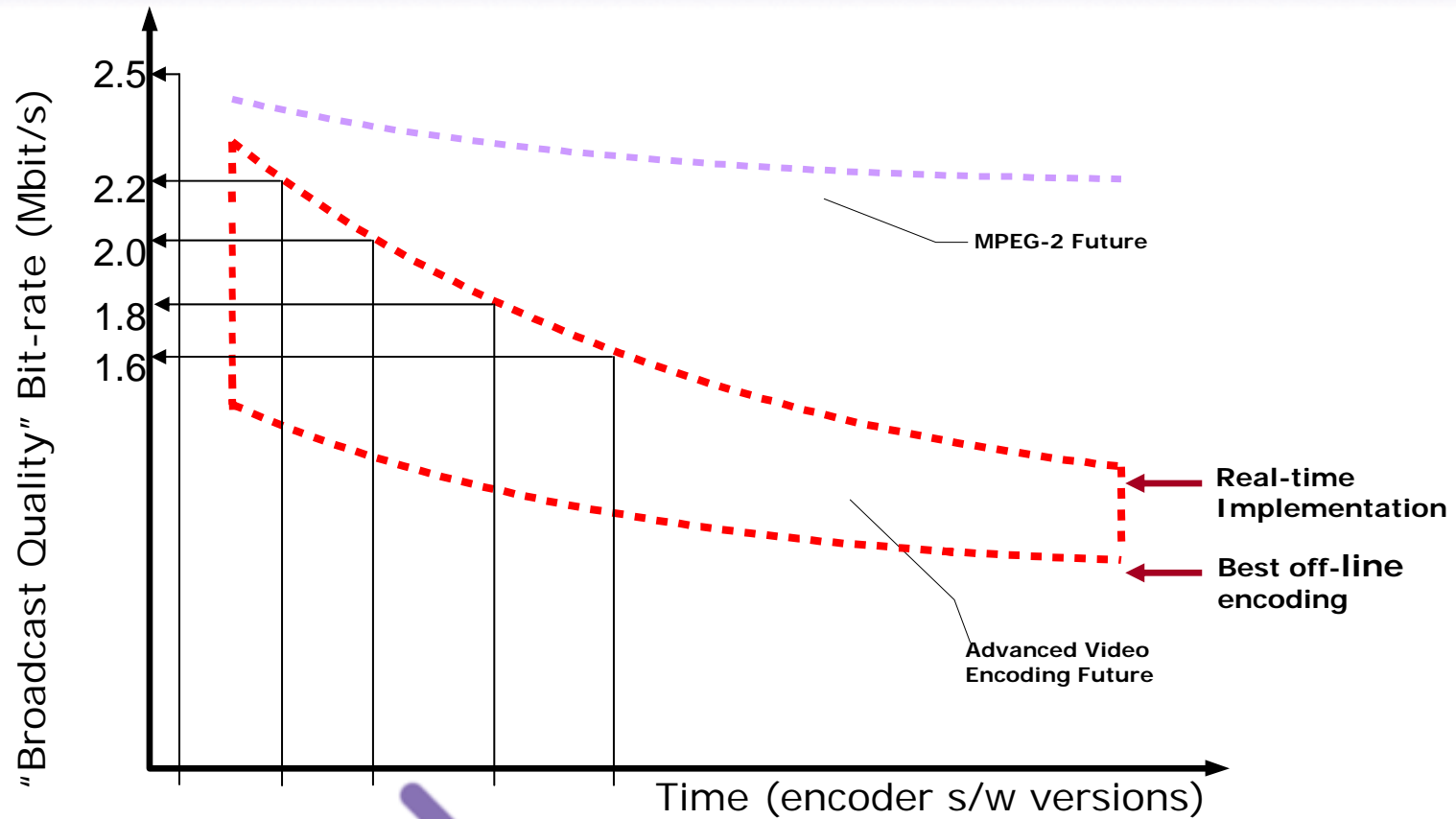
- Availability
  - Encoders
  - STBs
- Performance (video quality & stability)
  - Encoders
  - STBs
- Interoperability
  - Encoders and STBs



# Key Issue - Encoding Quality



# Real-time Encoding Video Performance



# Conclusions

- Satellite HD and IPTV SD are first
  - this is just the start
- Encoders are ready
- STBs are close behind
- New business models are being enabled
  - 2005 will see several large and live deployments
  
- Are you ready?



# TANDBERG

Television



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