INTERNATIONAL DATACASTING

3D in digital Cinema

Damon Semprebon

November (WBU-ISOG)

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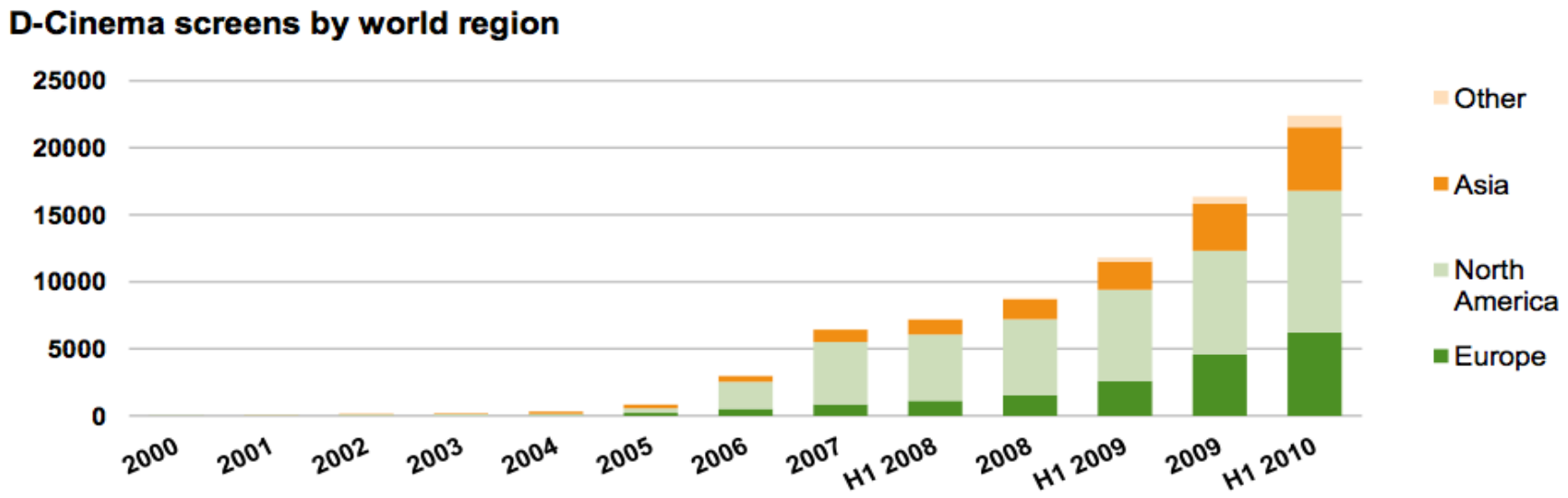
IDC PRIVATE

INTERNATIONAL DATACASTING

3D in D-Cinema

0 to 3D in a minute



In 2009, 7000 (44%) of D-Cinemas were 3D capable

History – Live 3D to Cinema

- 2008 1 live event
- 2009 8 broadcasts
- 2010 – 60 broadcasts and counting

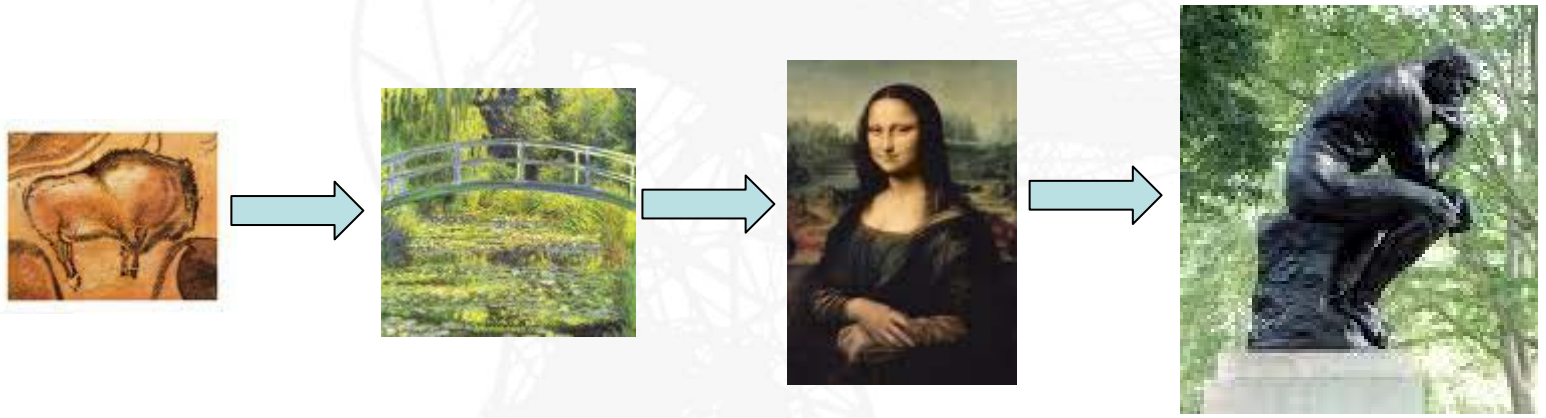
- Live 3D events to Cinema in 2010
  - French open
  - 6 Nations Rugby
  - NBA all star game
  - BCS game
  - **Black Eyed Peas**
  - Fashion show – Tokyo
  - Final four basketball
  - NHL games
  - English Premier league games

- Live 3D events to Cinema in 2010
  - Masters Golf
  - Cricket Premier league – India
  - Football game - Poland
  - **World Cup**
  - Home run Derby
  - X games
  - Shanghai world expo
  - Various college football games
  - Ryder cup

  - We still have two months left!

The Transition

4X3 → 4X3 → 16X9 → 3D



3D Cinema leads the way

- Most 3D events have been produced and delivered for both Cinema and broadcast
- D-Cinema normally uses the contribution feed as is
  - Normally is retransmitted using a simple digital turnaround
- D-Cinema normally has a full transponder available
  - With a full transponder a normal movie file is delivered in 8 hours
  - Compressed at 250 mbps (at 60 mbps full transponder a 2 hour movie is delivered in approximately 8 hours)
  - Errors in transmission or reception increase transmission time
  - 5 to 12 movies released per week
  - 1 live event = 1/4 movie

Introducing Seamless 3D©

- First Generation
- 3D to 2D compression (2 (LR) * HDSDI => 1* HDSDI)
- 2D to 3D decoder (1 * HDSDI => 2(LR) * HDSDI)

- Second Generation
- 3D IRD (Satellite or IP = > 2(LR) * HDSDI or HDMI)
- 3D Encoder (2(LR) * HDSDI => Satellite, IP or ASI)

Compression Technology Choices

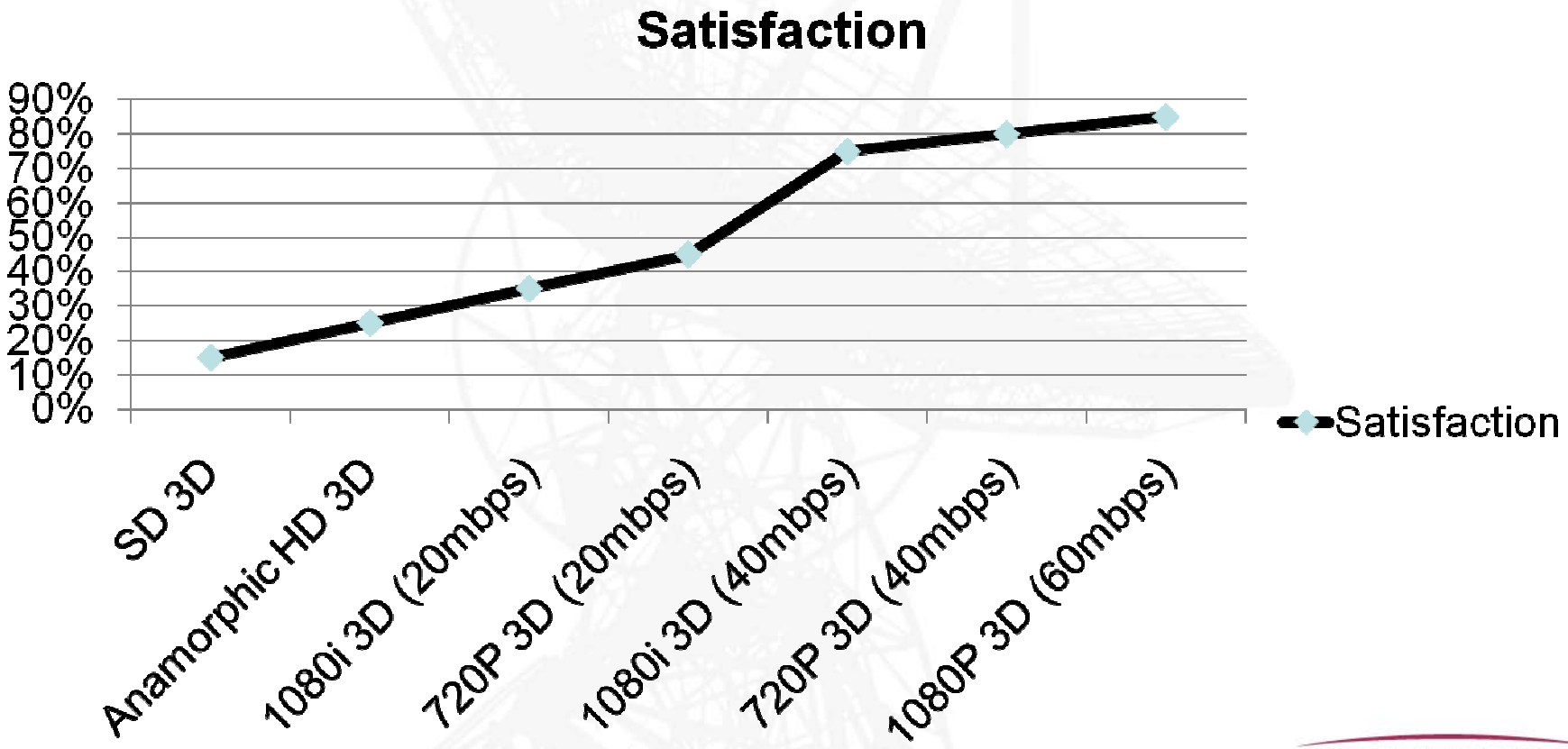
- **Anamorphic**
  - Red / Green separation
  - Most viewers consider this to be unwatchable
  - Does not compress well
- **Simple Side/Side or Top/Bottom**
  - Provides for ½ HD resolution for each eye
  - Some Compression efficiency lost
- **Sensio**
  - Performance improvement up to 90%
  - Quincux Sampling used
- **MT & RealD**
  - Slight improvement in Performance
- **MVC**
  - Open Standard
  - Not yet widely available
  - Provides for 2D plus difference delivery
  - Believed by many broadcasters to be their preferred format
- **A number of new Entrants**
  - Dolby Etc.

Agnostic technology

- Cinema Projectors are agnostic
  - 2 * HDSDI or HDMI (3G)
- Consumer Sets will be agnostic
  - 2 * HDMI or HDMI (3G)
- D-Cinema
  - IRD's can be proprietary
- Cable / DTH / IPTV
  - STB's can be proprietary
- Broadcasters ?
  - Will require standards agreement
  - Will most likely fall behind in 3D

Quality Perception

- Bad 3D is worse than Bad 2D *(Bit rates are MPEG-2)*



IDC 3D Roadmap

- 2011
  - MPEG-4 4:2:2 10 bit **3D** encoder / Modulator
  - MPEG-4 4:2:2 10 bit **3D** IRD

- 2011 / 2012 – MVC codecs or others?

Conclusions

- D-Cinema 3D is here to Stay
  - Live events are growing
- Gaming will drive home displays
- PayTV (Cable / DTH / IPTV) are well positioned and will offer 3D as a differentiating premier servic
- Over the Air Broadcast television is less well positioned to benefit from 3D
  - Uncertain business model
  - Less available Bandwidth
  - Standards are unsettled

Thank you for your time!

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