HD + 5.1ch Streaming

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Presentation Contents

Introduction
- About Our Company and this Project

BG
- Broadband in Japan
- DTV in Japan & in ABC
  - Overview about DTV

HD Streaming
- Broadband Internet service “FLETS”
- Shooting & Sound Collecting
- How to Create High-Quality Contents ?
- Appendix

Summary

Introduction of Our Company

Asahi Broadcasting Corp. is a commercial broadcasting Company in Osaka, Japan.

Since 1951,
we have been broadcasting TV & Radio Program in “Kansai” Area.

Introduction

ABC has started internet streaming since 1996.

& (Terrestrial Digital Television)

ABC has started DTV since December, 2003.

Introduction

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(Terrestrial Digital Television)

& →

ABC has started DTV since December, 2003.

↓ Multi-Use

We have already started providing high-quality contents using Windows Media for users of the NTT West regional IP network.

Introduction --- Streaming in ABC

- Streaming in ABC
  “High School baseball championship”
- Present state of DTV in Japan

Introduction --- Streaming in ABC

ABC has a popular & valuable TV program
“High School baseball championship”.
Its tournament is held in every summer.

ABC has started streaming since 1996.

ABC

Introduction --- Streaming in ABC

Sample page

Introduction --- Streaming in ABC

- 2004 (Summer)
  - Live Streaming
    - 3Mbps --- 640 x 480 pix
  - On Demand Streaming
    - 1Mbps --- 640 x 480 pix
    - 500kbps --- 320 x 240 pix

Broadband in Japan

In Japan, the number of subscribers to broadband Internet services is increasing rapidly. Especially the growth of DSL is remarkable.

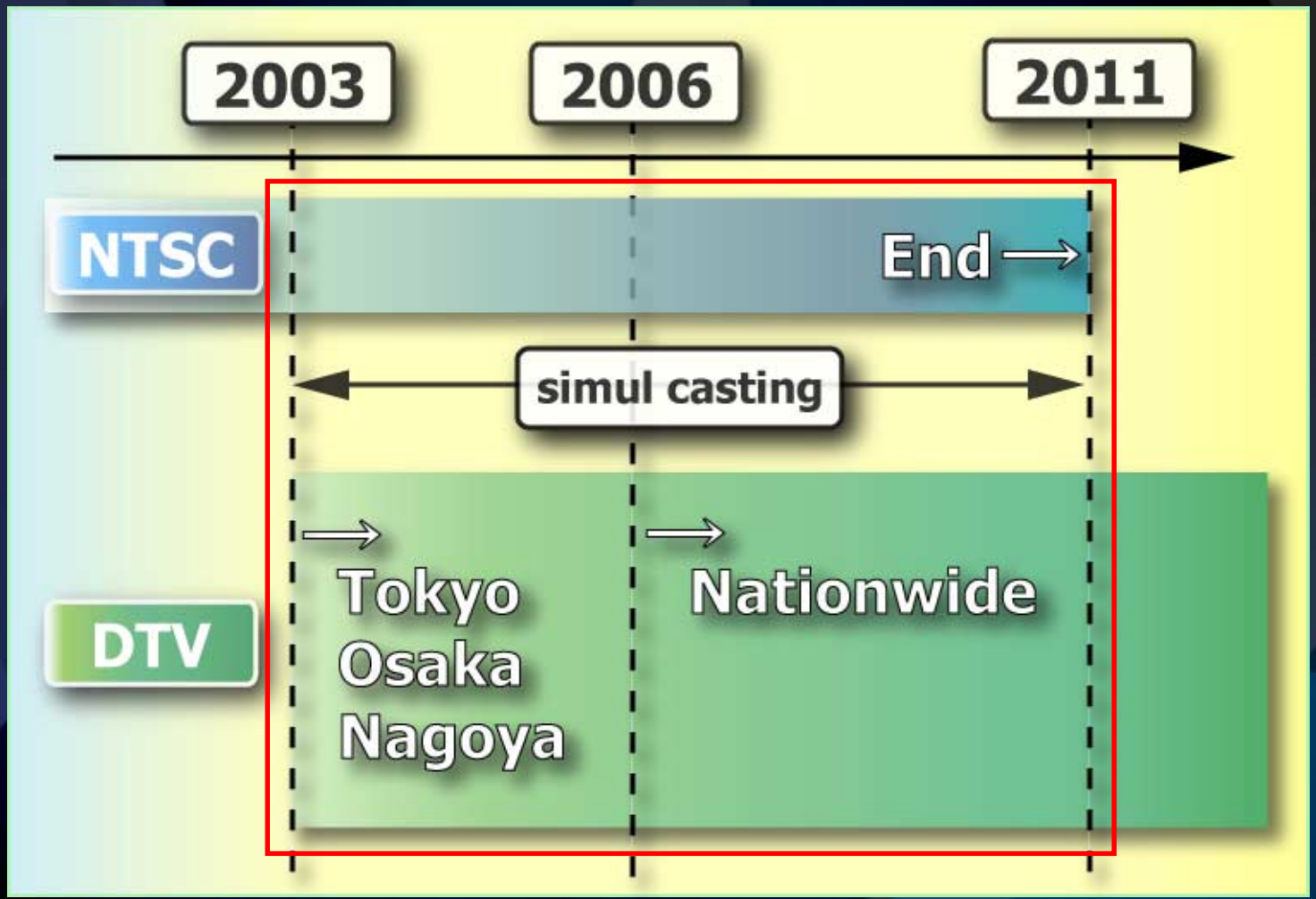
	2003 YE	2008 YE
DSL	9,369,000	9,890,000
Optical Fibre	766,000	5,899,000
CATV	2,331,000	2,379,000

DTV in Japan

In Japan, DTV broadcasting has begun to be promoted as a national policy since 2003. DTV broadcasting can give a televiewer the various new services which were not in the former.

DTV in Japan (Cont'd)

Schedule :



DTV in Japan (Cont'd)

Merits of DTV :

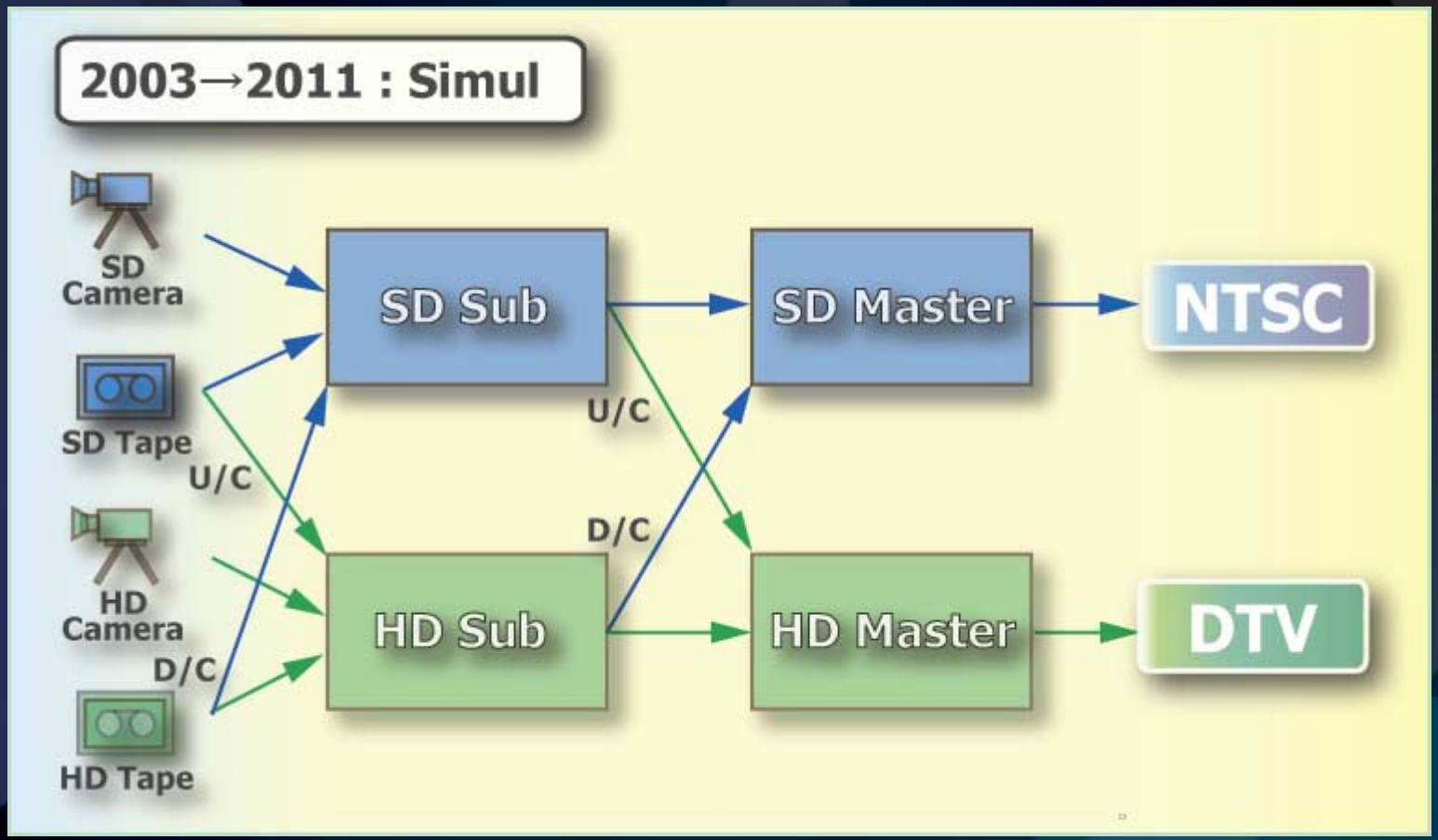
1. High-Resolution Video
2. Multi-Channel Audio
3. Data broadcasting
4. EPG (Electronic Program Guide)
5. Multi-Channel Program On one Wave
6. Stable Reception for Mobiles

DTV in Japan (Cont'd)

Problems for broadcasting DTV:

1. HD systems is very expensive.
2. Transmission delay is inevitable.
3. DTV-specific STB is required to watch DTV.
4. Problem of switching frequency
5. Contents creations in transitional stage of simulcasting is very complex.

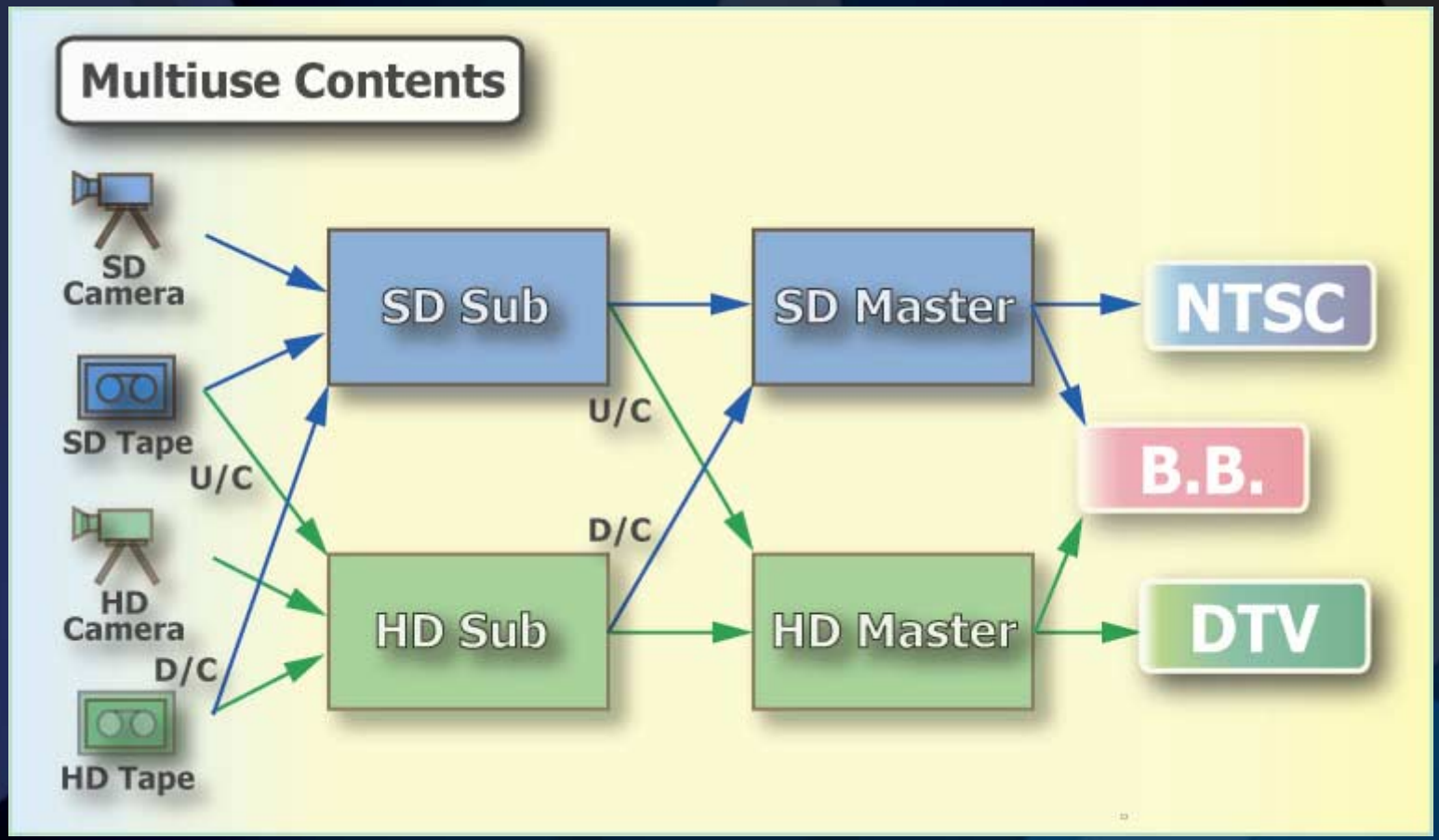
Simul-Casting



Multi-use Contents

..... Multi-use .....

Multi-use Contents



HD + 5.1ch Streaming

Project overview :

- B2B
- Distribution the contents of classical concerts held in “the symphony hall”
- Distribution via FLETS which can secure a safe and high-speed connection
- Multi-use of systems and contents
- Using WM9 codec
  - Support HD + 5.1ch encoding
- Results
  - Archive : HD + 5.1ch = 5 contents /year
    SD + 2ch = 20 contents /year
  - Live : SD = 20 times / year

HD + 5.1ch Streaming

NTT's FLETS :

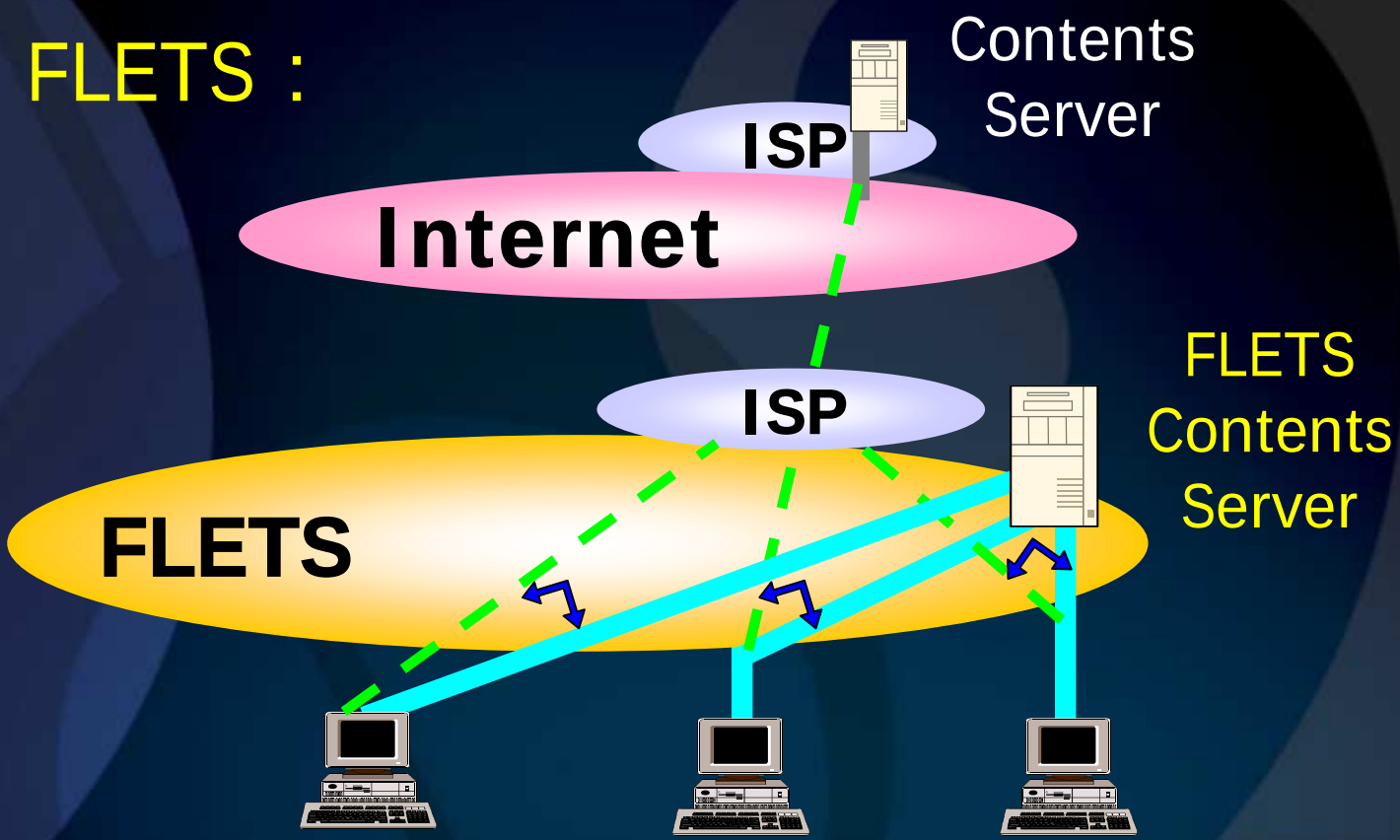
FLETS is best-effort network service.
It connects subscribers via optical fibre or DSL to a compatible Internet service provider (ISP) of their choice over the regional IP network (NTT West or East).

Speed :

Optical fibre : up to 100 Mbps
DSL : up to 40 Mbps

HD + 5.1ch Streaming

NTT's FLETS :



Since FLETS users can access the FLETS contents server, without going via the Internet, it becomes possible to receive a safe and high-speed stream.

The Symphony Hall

ABC

HD + 5.1ch Streaming

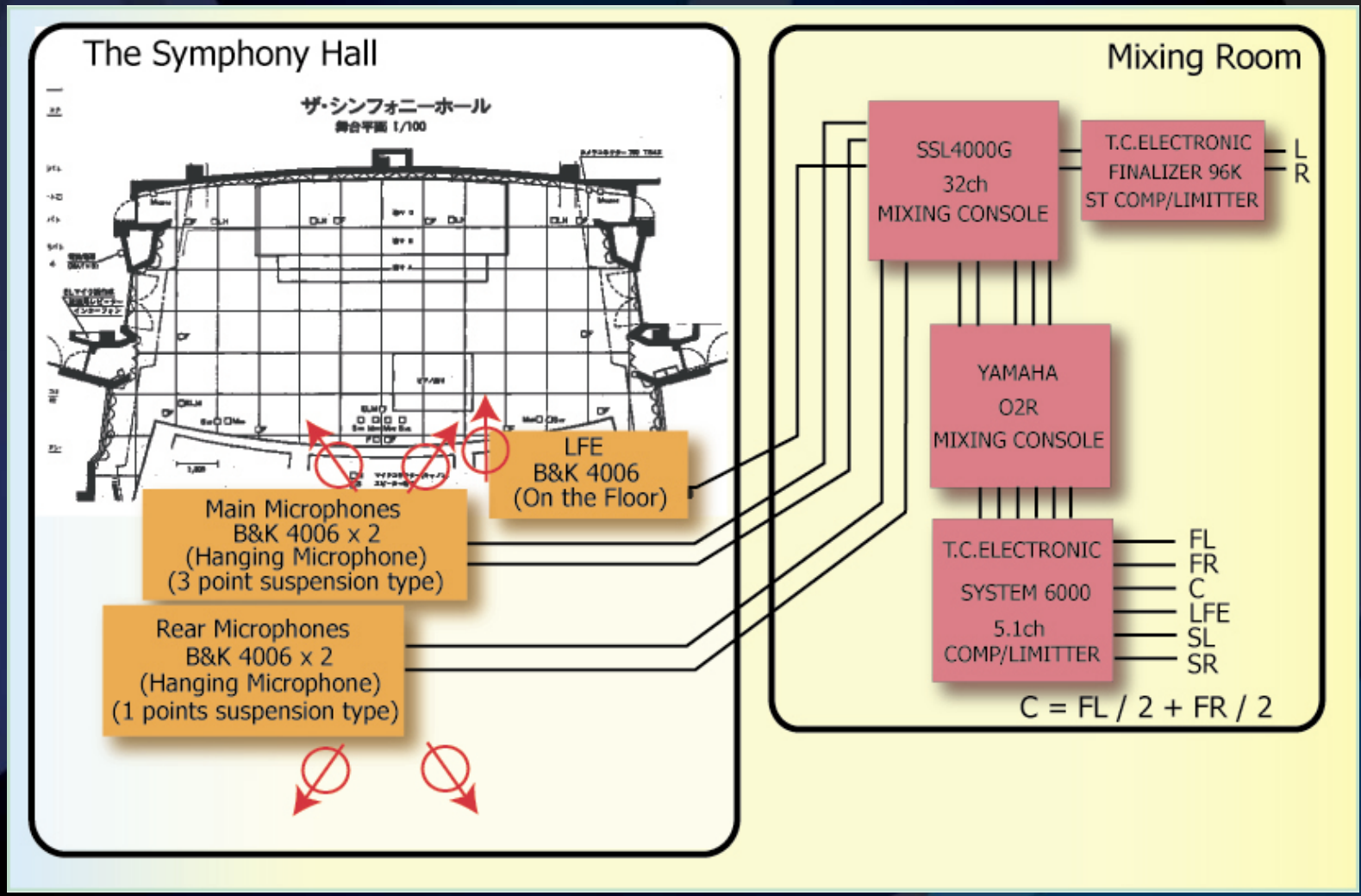
Shooting :

We used two HD cameras. One is used for top view. The other is used for zoom angle. The Recording video format is HD 1080i. The audio format is AES/EBU with 5.1ch surround. We adopted DVC PRO HD by the reason that is supporting the multi-channel audio.

ABC

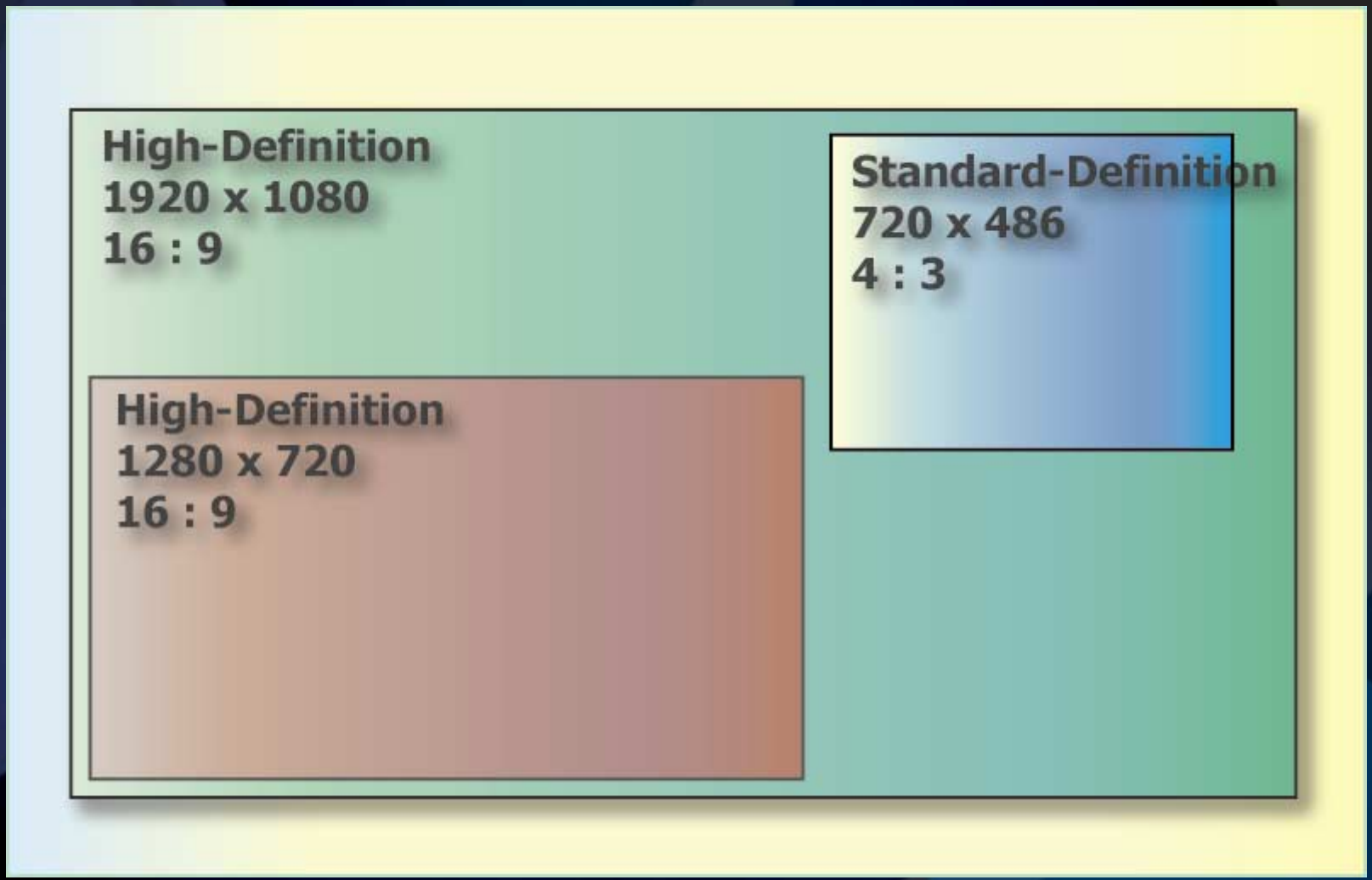
HD + 5.1ch Streaming

Sound Collecting :



HD + 5.1ch Streaming

Comparison of pixel sizes between HD & SD



HD + 5.1ch Streaming

Comparison of specs between HD & SD

	SD 525i	HD 720p	HD 1080i
Disk Storage per min	1.51 GByte	7.72 GByte	8.69 GByte
Video bit rate	270 Mbps	1.5 Gbps	1.5 Gbps
Video size	720 x 486 pix	1280 x 720 pix	1920 x 1080 pix

HD + 5.1ch Streaming

To Create High-Quality Contents as possible,
We encoded contents using HD Disk Recorder
with Uncompress.

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Disk Storage per min	1.51 GByte	7.72 GByte	8.69 GByte
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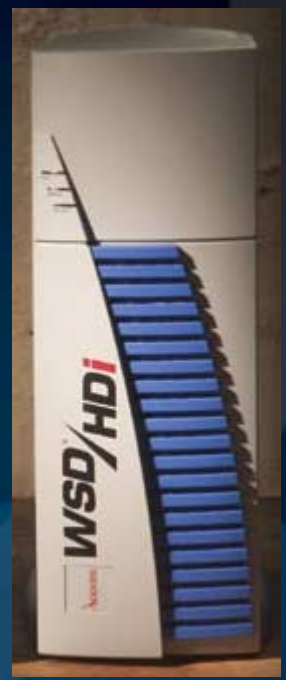
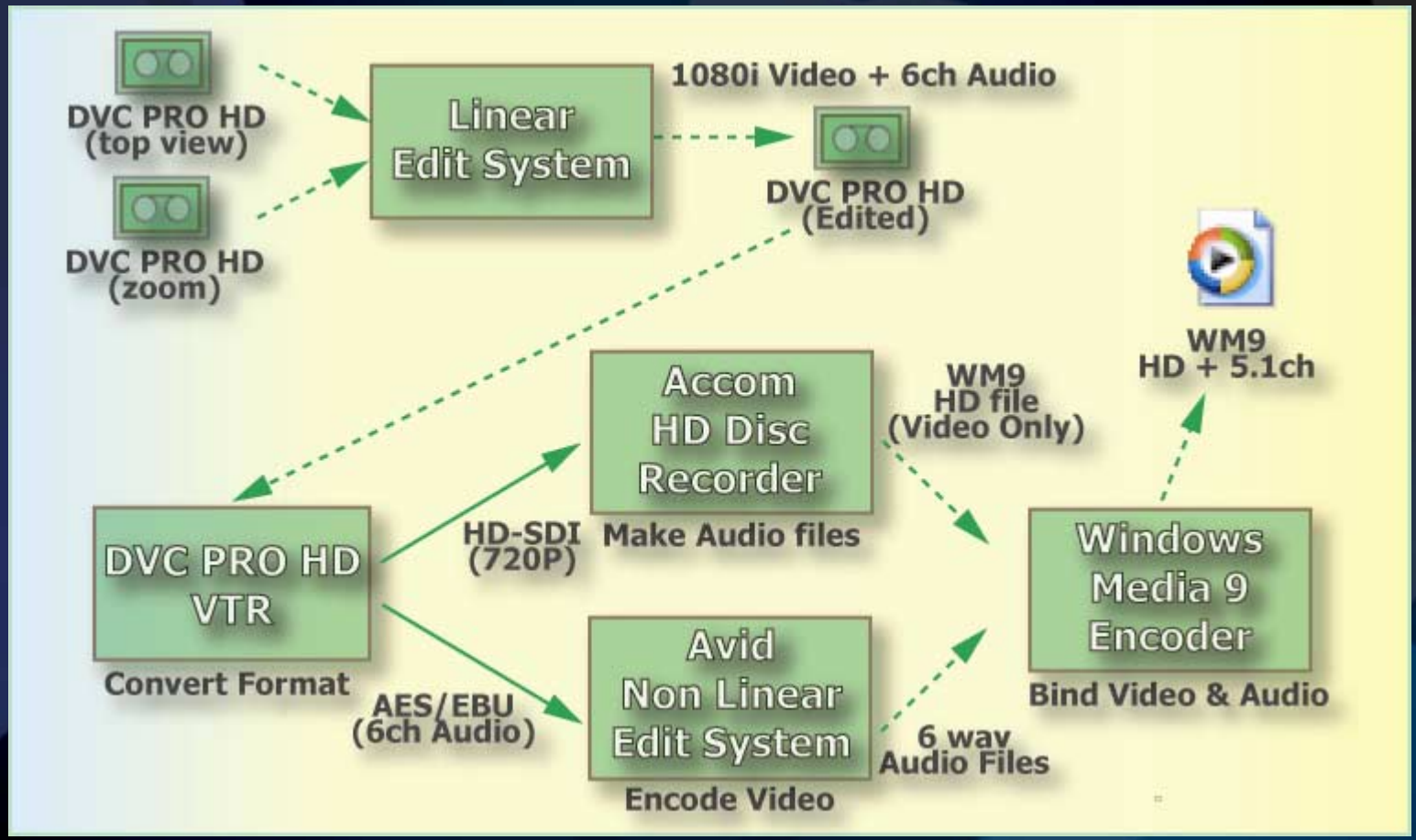


Accom WSD/HDi

- Storage capacity : 2TB
- Multi format (HD & SD)
- Enable to export windows media 9

HD + 5.1ch Streaming

How to Create High-Quality Contents ?



HD + 5.1ch Streaming

Encoding Parameter :

	SD+Stereo	HD + 5.1ch
Total bit rate	1.2 Mbps	3.8 Mbps
Video bit rate Video size	1 Mbps 720 x 486 pix	3 Mbps 1280 x 720 pix
Audio bit rate sampling rate	192 kbps 48 kHz	768 kbps 48 kHz

HD + 5.1ch Streaming

Encoding processing for a content of 1 hour :

Processing time	: 10 hours
Output file size of wm9	: 1.6 GBytes
File size of HD movie with uncompress	: 520 GBytes

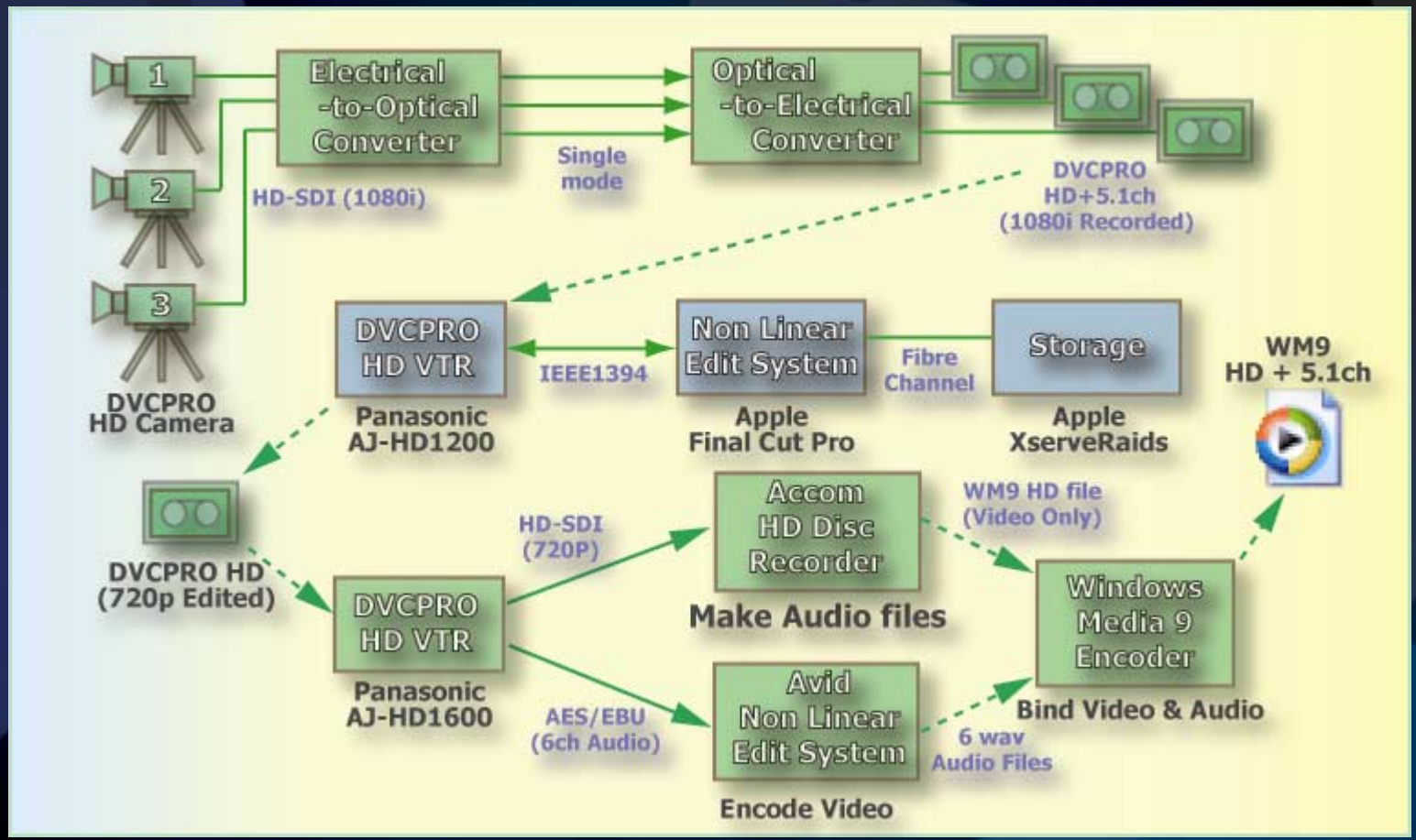
HD + 5.1ch Streaming

New Non Linear System --- 1

Apple
Final Cut Pro
&
Apple Xserve RAID
&
Panasonic
DVCPRO HD VTR
AJ-HD1200

HD + 5.1ch Streaming

Flow using Apple & Panasonic



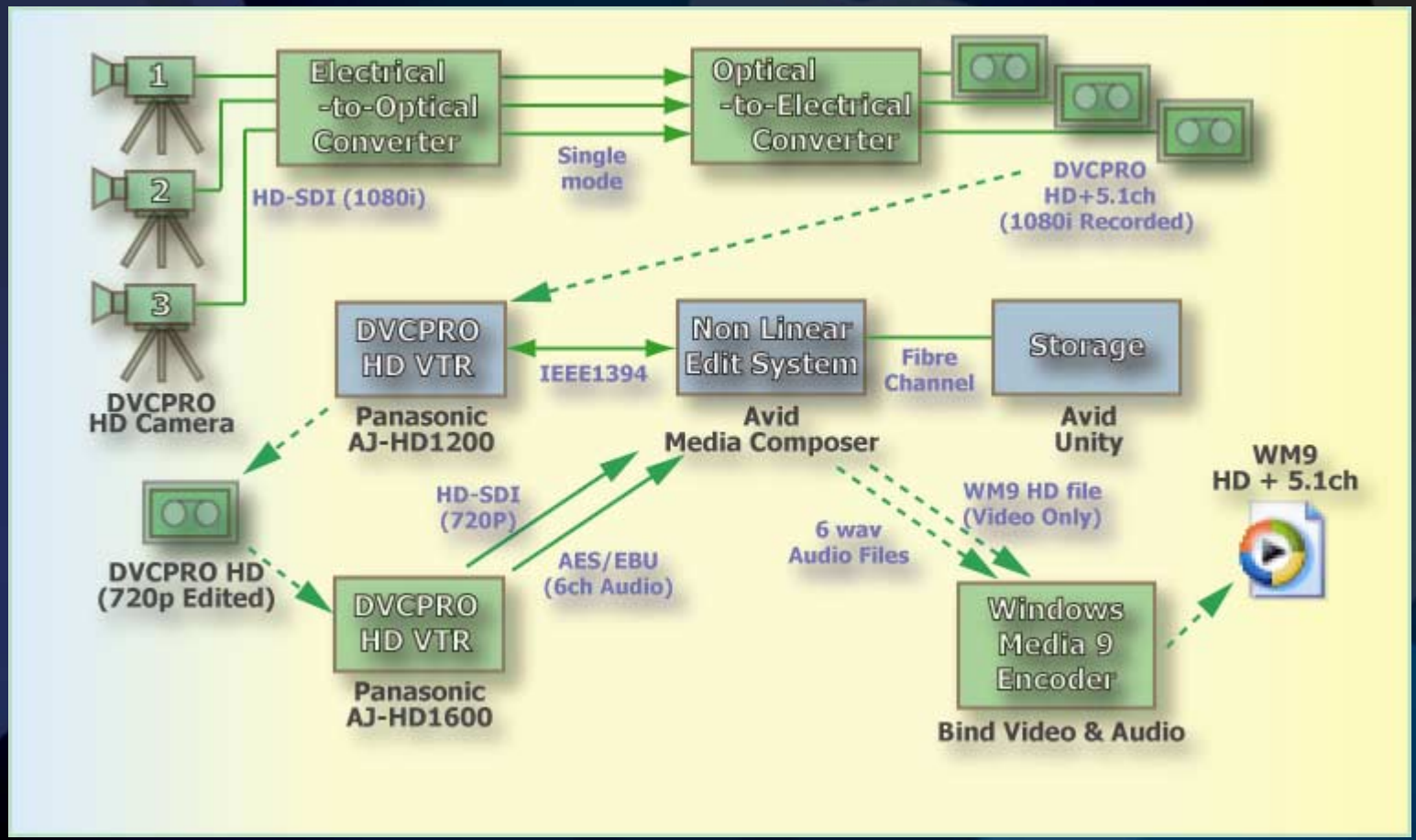
HD + 5.1ch Streaming

New Non Linear System --- 2

Avid
Media Composer
Adrenaline
&
Avid Unity
&
Panasonic
DVCPRO HD VTR
AJ-HD1200

HD + 5.1ch Streaming

Flow using Avid & Panasonic



HD + 5.1ch Streaming

HD Contents Sample

HD + 5.1ch Streaming

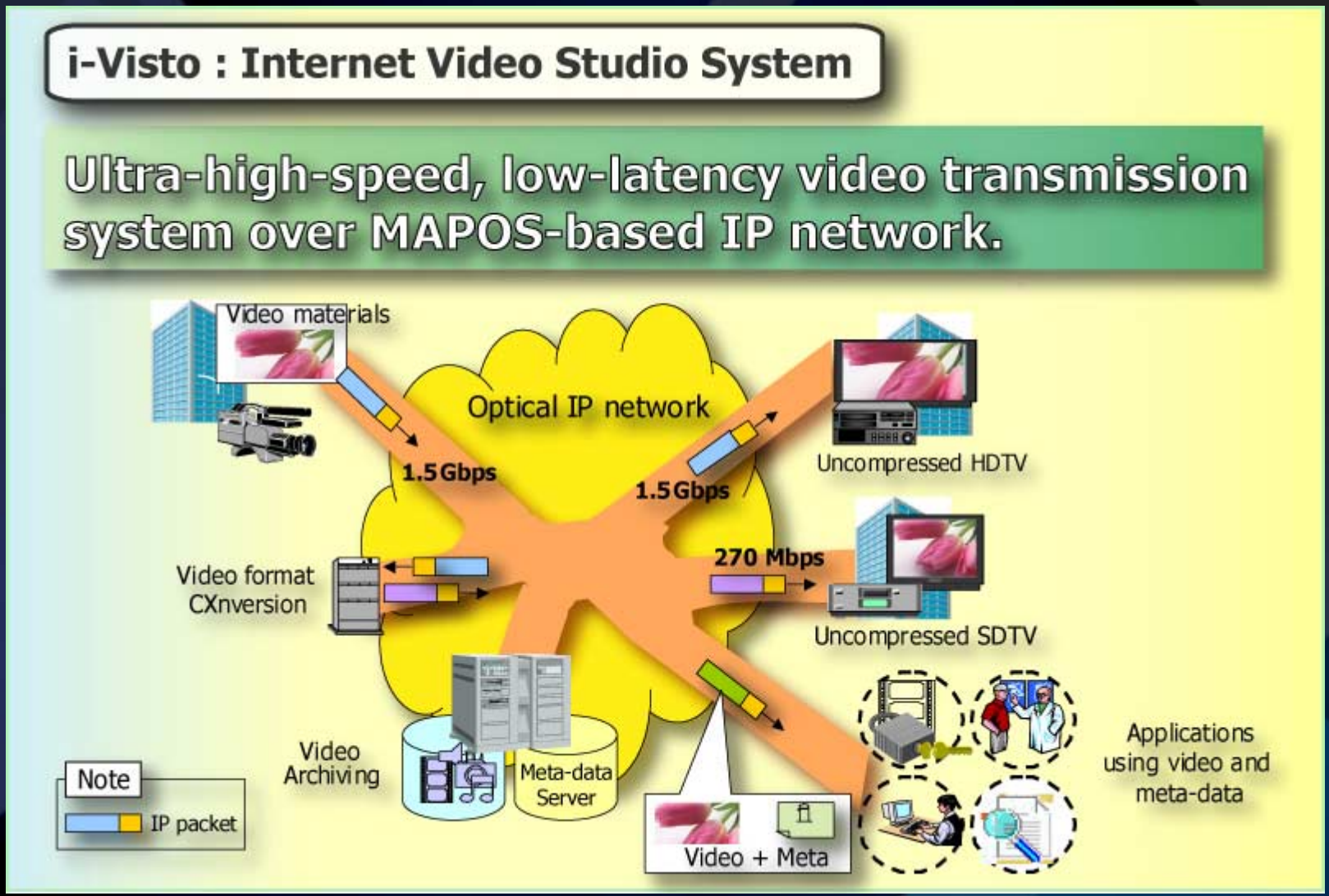
How to appreciate the contents ?

- Connection to broadband Internet
- Windows XP
- Windows Media 9 Player
- 2.4 GHz processor
- 512 MB of RAM
- 128 MB video card
- Multi channel sound card
- 5.1 surround sound speaker system

HD + 5.1ch Streaming

Appendix

Appendix “i-Visto”



Appendix “i-Visto”

shooting with i-Visto HDTV camera

HDTV transmission & Camera control
via Optical IP network

NTT

http://www.i-visto.com

Summary

We want to continue to perform program distribution to the other media positively with the viewpoint of multi-use.

Summary

Thank you for listening !

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ABC