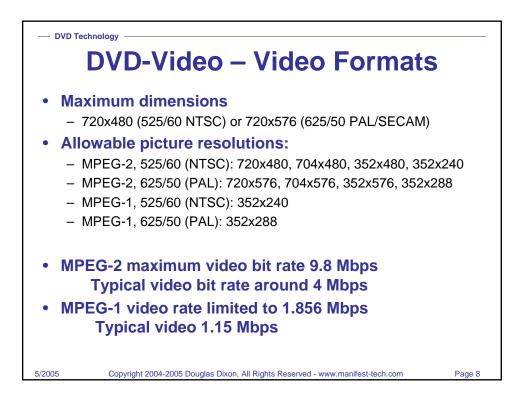


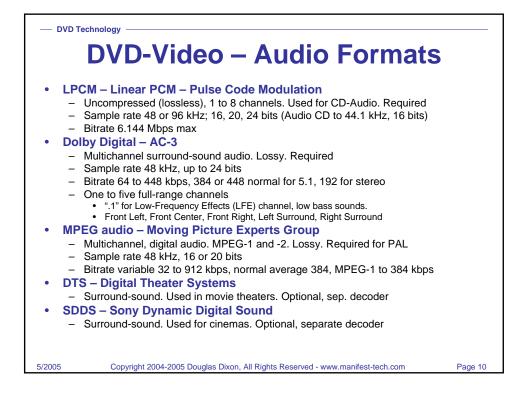
| DVD Technology |
|--|
| DVD File Structure |
| File Systems ISO-9660 - CD-ROM file system UDF - Universal Disc Format) - DVD file system used for (condensed micro-UDF) UDF Bridge - ISO-9660 for CD and micro-UDF for DVD, backward compatibility DVD Folders DVD Volume - DVD disc directory structure and files Video Object (VOB) files with actual multimedia data, video and audio Associated navigation information (IFO) and backup (BUP) files that describe contents Created for each Video Title Set (VTS), split into multiple VOB files no larger than 1GB VIDEO_TS - Root directory of DVD-Video production stored on a DVD disc AUDIO_TS - Root directory of DVD-Audio production stored on a DVD disc DVD Files VTS files - Video Title Set - Video contents (VOB) and navigational info (IFO) IFO file - Navigation information file for a title set BUP file - Backup for the IFO navigation file of a title set Video Object (VOB) - MPEG program stream Includes multiplexed video, audio, subpictures, and control information. VOB file - Video Object file - Video CD disc. Contains MPEG-1 video |
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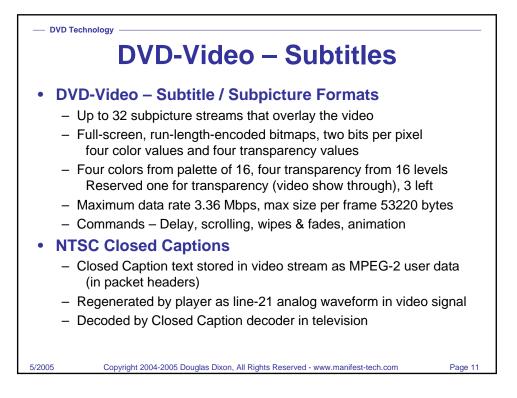
| — DVD Technology — | | | | | | |
|--|---|--------|--|--|--|--|
| DVD Directory Structure | | | | | | |
| Optional main menu Up to 99 titles (Video | Title Set) - each with main menu | | | | | |
| VIDEO_TS | Video zone - DVD-Video Main Menu | | | | | |
| VIDEO_TS.IFO | Main menu information Video Manager Information (VMGI) Video Manager Title Set (VMTS) | | | | | |
| VIDEO_TS.VOB VIDEO_TS.BUP | Video Manager (VMG) menu Backup of IFO file (VMGI) VTS Menu | | | | | |
| VTS_tt_0.IFO/.BUP VTS_tt_0.VOB | Video Title Set Information (VTSI) - VTS Menu Video Objects (VOB) - VTS Menu Title Sets (01 - 99) | | | | | |
| VTS_tt_n.IFO/.BUP VTS_tt_n.VOB | Video Title Set Information (VTSI) Video Objects (VOB) - 1 - 9 per title set | | | | | |
| AUDIO_TS | DVD-Audio | | | | | |
| DVD_RTAV | Recording | | | | | |
| JACKET_P | Jacket Picture | | | | | |
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| — D | VD Technology — | | | | |
|-------|---------------------------|---------------|-------------|--|---|
| | | DV | DD | ata Streams | |
| • | Overall maxim | um bit rat | e - | 10.08 Mbps, including control information | |
| • | Maximum stream bit rate - | | e - | 9.8 Mbps for video, audio and subpictures | |
| • | Average video bit rate - | | | 4.7 Mbps, for 133 minute playing time | |
| • | Stream Types | | | | |
| | Data type | #Streams | Max rate | (Mbps) Coding Format | |
| | Video | 1 | 9.8 | MPEG-1 or MPEG-2, including stills | |
| | Audio | 8 max | 6.144 | | |
| | Subpictures | 32 max | 3.360 | 2 bits/pixel run length encoded | |
| | Still pictures | | | | |
| | Navigation | 1 | - | Program Chains (PGCs) for interactivity | |
| | Video - MPEG-1 | or MPEG-2 | 2 - standar | d MPEG elementary stream | |
| | | | | d MPEG elementary stream | |
| | PCI & DCI - MP | | | | |
| | Subpicture and | all other auc | lio - MPEG | e private streams | |
| • | Stream Rates | | | | |
| | Stream type | Min Rate | Typical | Max Data Rate (Kbps) | |
| | MPEG-2 video | ~1500 | 3500 | 9800 | |
| | MPEG-1 video | ~900 | 1150 | 1856 | |
| | PCM audio | 786 | 1536 | 6144 | |
| | Dolby digital | 64 | 384 | 448 | |
| | MPEG-1 audio | | 192 | 384 | |
| | MPEG-2 audio | 64 | 384 | 912 | |
| /2005 | 0 | | Develop Di | ixon, All Rights Reserved - www.manifest-tech.com Page | - |

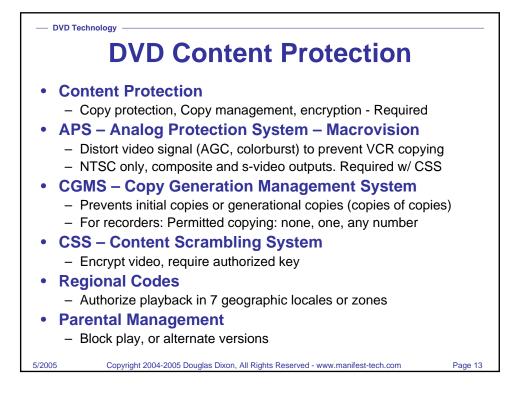


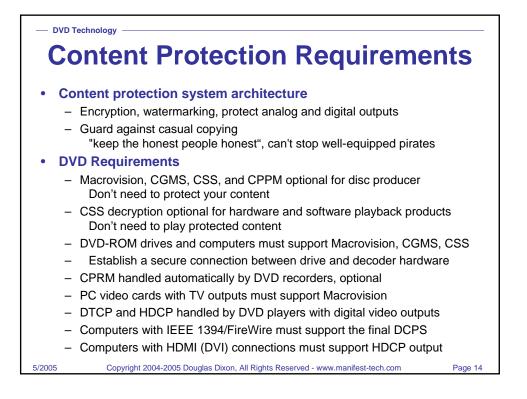


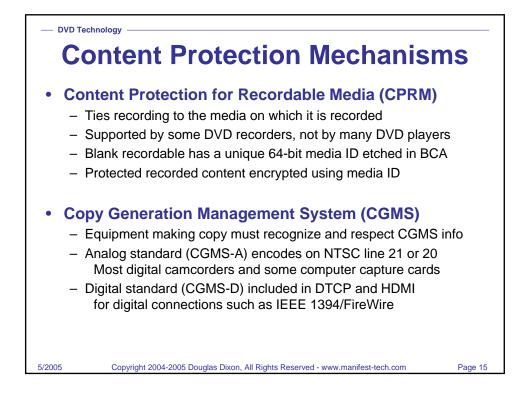


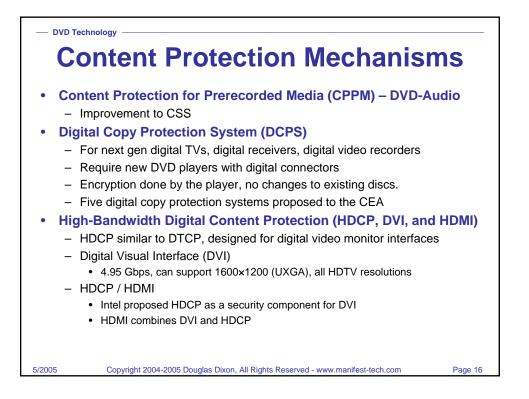


| DVD Technology | |
|--|--------|
| DVD Navigation | |
| Title Menus | |
| Title (top) menu of title (in first VTS, with submenus) | |
| Submenus: Part of title (Chapter) submenu; Audio (Audio/language) submenu Angle (Video angle) submenu; Subpicture (Subtitle/language) submenu | |
| Remote Control Menu Keys | |
| "Title" of "Top" menu – Disc menu (VMGM, not current VTS) | |
| "Menu" or Root or Digest menu – Local hierarchy (current VTSM) "Poture" or Colling – Book/Provide percent menu, or surrent title | |
| "Return" or Go Up – Back/Prev to parent menu, or current title Buttons | |
| Up to 36 rectangular buttons (18 / 12 for widescreen modes) Highlight with subpictures - Color and opacity (can be invisible) Normal – Selected – Activated | |
| Four directional links – Arrow keys | |
| One command – Link, or to dummy PGC with more commands | |
| Auto activate; Idle out – timeout – forced activation | |
| User Operations (UOPs) | |
| Can restrict user's navigation options | |
| Nested scope to disallow: Title, PGC, VOBU (PCI) | |
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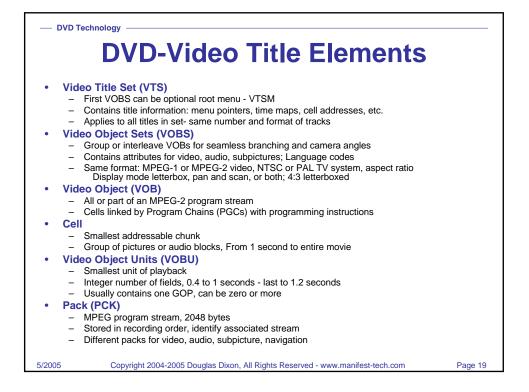








| • Disc Structure | | | |
|--------------------------------------|-----------------|-------------------|-----------------------------|
| – VMG | Video M | lanager (optiona | I VTS) |
| – VTS 1 [- n] | Video T | itle Sets (title) | |
| Disc contains | multiple Video | o Title Sets (VTS | 5) |
| Optional first \ | /MG title set - | Main menu, title | e menu, top menu |
| • Disc Hierarchy | | | |
| Video Title Se | t (VTS) | 99 per disc | - Title, Tracks same format |
| Video Object | | • | |
| – VOB | | | 3S - MPEG-2 program stream |
| – Cell | | 255 per VOB | |
| Video Object | Inits (VOBU) | • | - Smallest unit of playback |
| Pack (PCK) | (1000) | 2048 bytes | |
| Packet (PKT) | | 2010 0 100 | |
| | | | |



| DVD Technology | viscotion Controlo |
|---|---|
| DVD Nav | vigation Controls |
| Control Format (NTSC/PAL) Language Audio stream Subpicture stream Parental management Karaoke | PGCI Search (jump to menu) Title (disc menu - VMG) Root (local menu - VTS) Audio (Audio/language submenu) Subpicture (Subtitle/language submenu) Angle (Video angle submenu) |
| Karaoke Display mode and aspect | Part of title (Chapter submenu) Presentation Data Search |
| Navigation General parameters System parameters Navigation timer Buttons | Title Part of title (chapter) Program (next/previous) Time Angle VOBU (trick play) |
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