

The background features a dark, textured surface with a glowing blue sphere in the center. The sphere has a white Apple logo on its top. A purple ribbon is wrapped around the sphere. In the background, there are faint images of a typewriter and a pen holder with several pens. The text "Worldwide" is written in a golden, serif font with a slight shadow effect.

Worldwide

Developers

Conference



# **AV Technologies**

***Steve Bannerman***

**Sr. Product Mgr.**

***Greg Joswiak***

**Sr. Product Mgr.**

# Agenda

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- **Mainstream AV technologies**
- **AV authoring technologies**
- **DVD**
- **Q&A**



# Mainstream AV Technologies

- **Video in**
  - 320 x 240 at 30fps with expansion to 640 x 480
  - Supports composite, S-video, DAV S-video and broadcast TV
- **Video out**
  - NTSC/ PAL encoder with programmable timing and scaling
  - Supports composite, S-video
- **Audio**
  - Three analog input/ output ports: DAV, TV, RCA, and CD, mini-jack, and comm slot



# Next Generation AV Authoring

- **Analog video**
  - PAL, NTSC, S, Composite video
  - Upgraded A/D converters
  - Scalers with sub-pixel accuracy
  - CCIR601 sampling (square or rectangular pixels)
  - Color space conversion (YUV)
  - Hardware A/V sync
  - Genlock
  - Full duplex DAV
  - Analog audio SNR to 90dB (up from 70 dB)



# Next Generation Authoring AV

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- **Digital video and compression**
  - Dual 100Mhz TriMedia TM1s
  - Serial digital video (D1) in and out
  - Digital audio (AES/EBU) in and out
  - FireWire (6 pin IEEE 1394)



# TriMedia TM1

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- **Why TriMedia?**
  - Programmable
  - Better tools
- **Apple CODECs**
  - DVC encode (5:1) and decode
  - MJPEG encode (2:1–25:1) and decode
  - MPEG1, and MPEG2 decode
  - DVD video\*

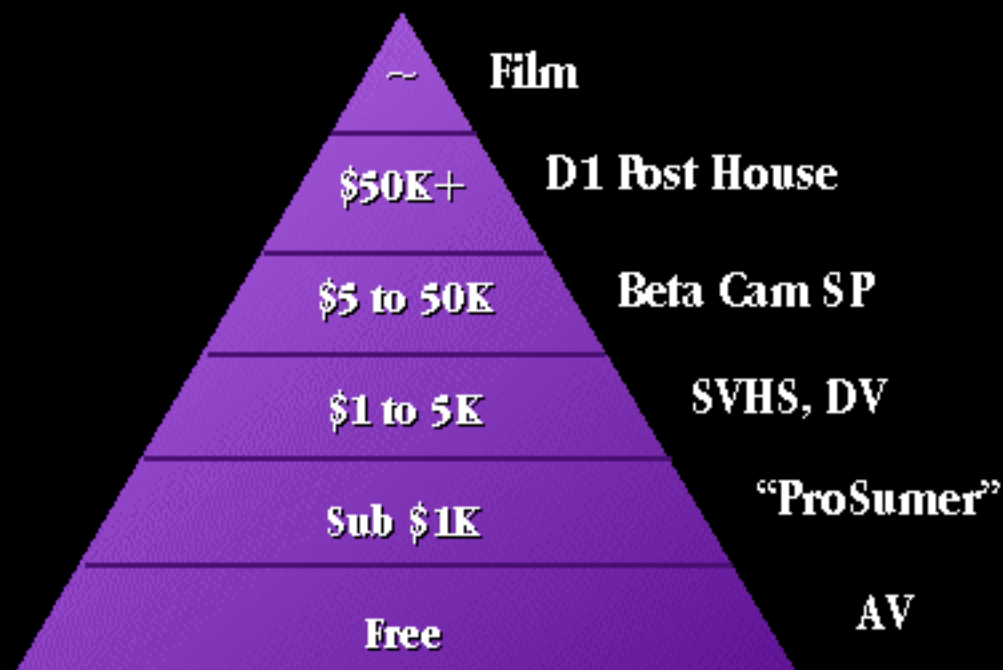




Demo

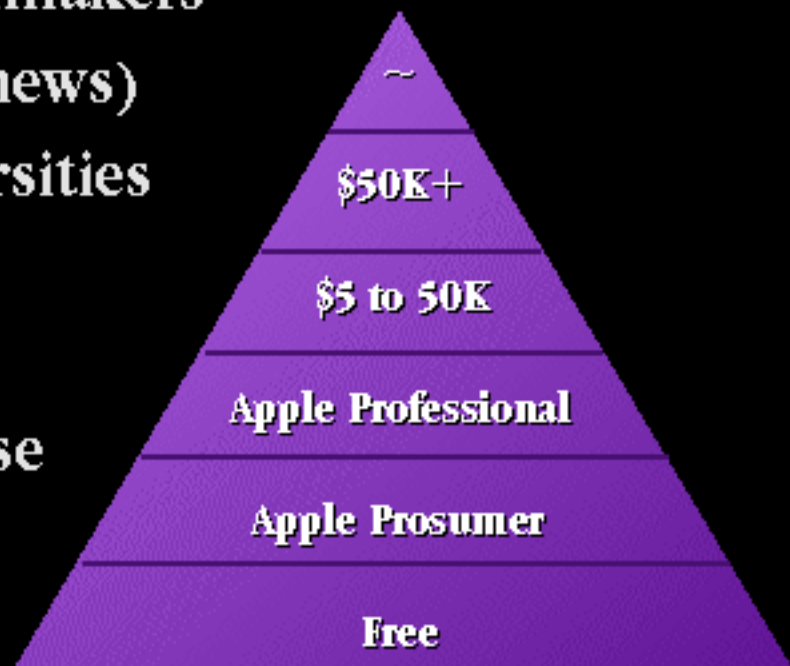


# Today's AV Market



# The Apple AV Customer

- **FireWire (SVHS to DV migration)**
  - Creative storyboarding
  - Independent filmmakers
  - Field capture (news)
  - Teaching universities
- **D1 (Betacam SP migration)**
  - Entry post-house single stream
  - Service bureau



# Developer Opportunity

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- **QTML is the application API for media acceleration**
  - Flexible acceleration engine
  - No application changes required if you call QuickTime
- **CODECs**
- **QuickTime 3.0 components**
  - Effects track
- **[Trimedia@apple.com](mailto:Trimedia@apple.com)**





# Macintosh DVD

*Greg Joswiak*

**Power Macintosh  
Product Marketing Manager**

# Macintosh DVD

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- **Macintosh DVD Goals**
- **Customers and Developer Opportunity**
- **Mac Plan of Attack**





# Macintosh DVD Goals

# Macintosh DVD Goals

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- **Prepare for DVD as a long term opportunity**
- **Mac DVD playback as GOOD or BETTER**
- **Ensure Mac DVD content creation is the BEST**
- **Prepare and launch in '97, Get big in '98**





# Customers and Developer Opportunity



# Customer Value of DVD

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*Fear of obsolescence drives “future buying”*

- **A Better CD**
  - Much higher capacity than CD-ROM
  - Superset of CD (Audio CD, CD-Plus, CD-ROM)
  - Higher transfer rate
  - Eventually same cost as CD-ROM
- **Delivery vehicle for next generation content**
  - DVD movies can play on computers
  - High quality video and audio will more commonly be integrated into applications



# What Would Compel You to Buy...

*Source: IDC Survey, 1996*

*[http://www.tacmar.com/dvd\\_results.htm](http://www.tacmar.com/dvd_results.htm)*

- If important software was on DVD—73%
- To play DVD movies on my computer—62%
- If favorite game was on DVD—54%
- If favorite educational software on DVD—31%
- Want latest technology—31%



# Why Mac DVD?

- **Macintosh is a great platform for new technology**
  - **Mac users rapidly adopt multimedia technology**
    - **Disproportionately large early share (e.g., as with the Internet and CD-ROM)**
  - **Internet Mac/Win applications seized the standards, momentum, and marketshare**
    - **e.g., NetScape, RealAudio, NetObjects, etc.**
- **Leverage Mac and Windows development**
  - **Media assets (e.g., MPEG-2 files) are cross-platform**
  - **Hybrid disks expected to be common**



# Opportunities for DVD Developers

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- **Change brings opportunities**
  - Early adoption is key to success
  - Ride the DVD hype wave
- **Enhancing current titles**
  - Multiple-language versions
    - Reduces the number of SKUs to manage
    - Increase market appeal of products
  - Increase the amount and quality of content
  - Transfer speed and playback quality increases
  - Consolidate multi-disk content
- **Something Totally Different!**



# Something Totally Different!

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## *New levels of performance and storage...*

- New types of games with radical interactivity
- Reference works that come alive
- Travel guides that make it like being there
- Museum tours that make it better than being there
- Internet companions to ease the bandwidth issues
- Training that dazzles and captivates
- Virtual tech support that lowers costs
- Education: Opening the doors of discovery





# Mac Plan of Attack

# Industry: 1997 DVD Introduces

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- Early summer '97 first generation drives emerge
  - Incompatible with CD-R, PhotoCD
- DVD significantly more expensive than CD-ROM
  - Hardware assisted decoding will initially offer better playback quality
  - Total price premium of \$150 to \$300 expected
  - Price premium and lack of titles will slow '97 industry penetration
- Software decryption licensing still an industry issue
- Initial (summer '97) industry target: early adopters
- DVD really ramps up to big volume in '98



# Mac Plan of Attack

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- **Target first Mac DVD solution in late 1997**
  - Second generation drives
  - DVD-ROM and DVD-Video linear playback
    - Hardware assist for better playback quality
  - Lay DVD groundwork
  - Work with ISVs to develop solutions
    - Developer kitchens, cookbooks
- **Beyond '97—Make DVD pervasive on Macintosh**
  - Interactivity—beyond just playing movies
  - QuickTime integration
  - Emphasis on authoring, content creation and tools
  - Support and integration of writable devices
  - DVD pervasive in product line





# DVD-ROM/Video Timeline

Late '97

1998

## Launch

- Limited volume
- Mid-range only
- Technical preparation
- Market development
- DVD-ROM
- DVD-Video liner playback
- Hardware assist

## Mainstream

- Multiple SKUs
- Entry, mid-range, PBs
- Hardware and Non-HW assist options
- QuickTime interactive integration
- Enhanced playback

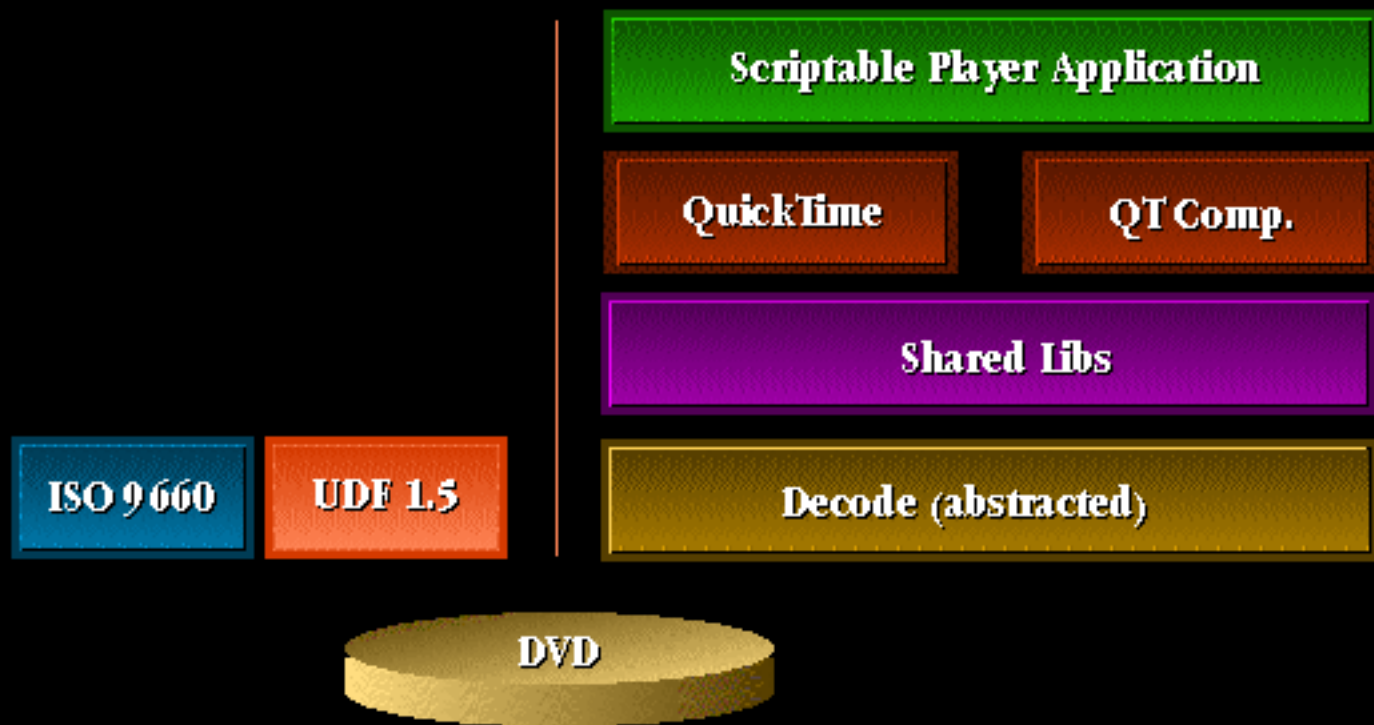
## Pervasive

- "75%+ SKUs"



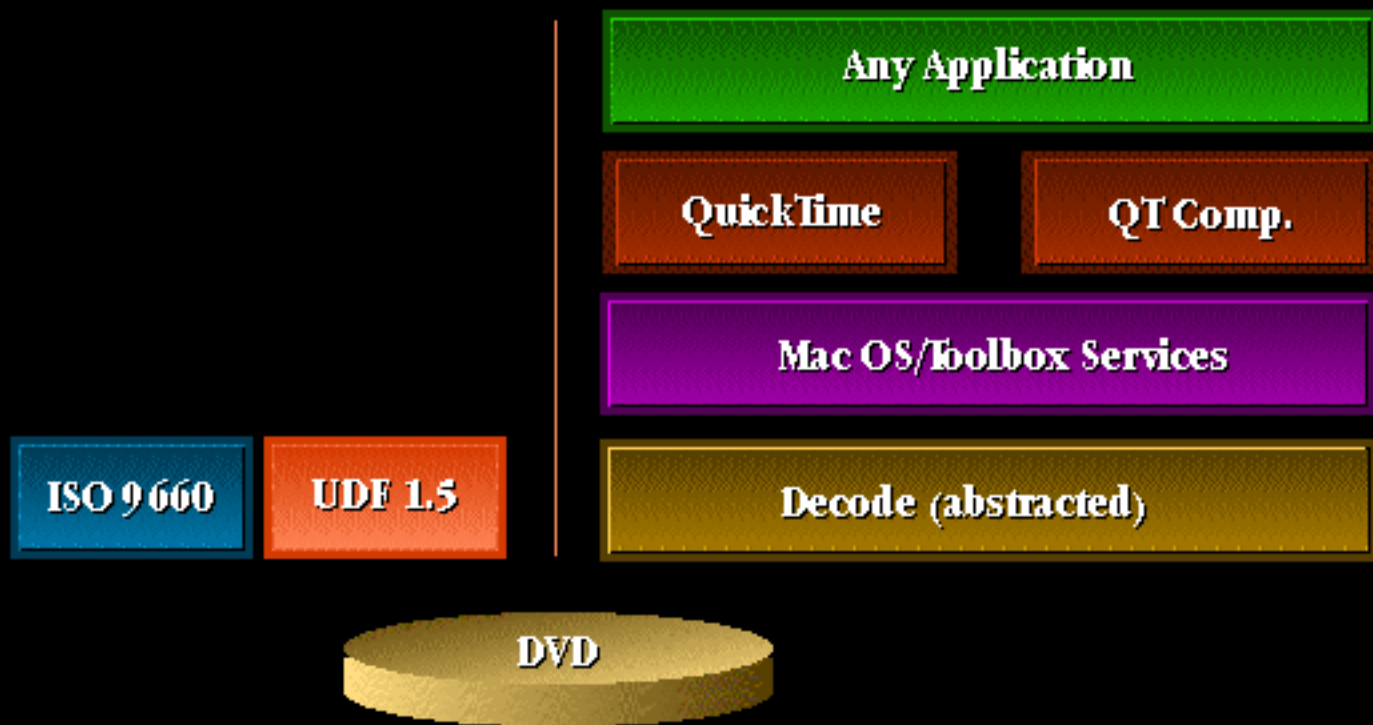
# Initial Deployment (Late '97)

- DVD as a big media device (UDF 1.5, ISO 9660)
- Traditional decoding available through QT (e.g., MPEG1)
- DVD Video (MPEG2/AC3) linear playback available from scriptable player application



# Mainstream (mid '98)

- DVD as a big media device (UDF 1.5, ISO 9660)
- Toolbox services and full Mac OS integration
- MPEG2 and traditional decoding available through QT



# Conclusion

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- DVD is a long term opportunity
  - 1997 is the year of preparation and launch
  - 1998 is the year of ramp up and volume
  - Macintosh provides excellent DVD opportunity
- 
- We're looking for a few good titles:
    - Content that highlights DVD and the Macintosh
  - U.S. Contact:
    - Didier Diaz ([dda@apple.com](mailto:dda@apple.com), (408) 974-3789)
    - Serious inquiries only





Q&A

The background of the image is a collage of various items: a magnifying glass with an Apple logo on its handle, a green pen holder with several pens, a globe, and some papers. The text is overlaid on this background. The word "Worldwide" is in a gold, serif font. The word "Developers" is in a white, serif font and is enclosed in a white rectangular border. The word "Conference" is in a gold, serif font.

Worldwide

Developers

Conference

The background features a dark, textured surface with a glowing blue and purple sphere in the center. A white Apple logo is positioned at the top of the sphere. The text "Worldwide Developers Conference" is overlaid on the image. "Worldwide" and "Conference" are in a gold, serif font, while "Developers" is in a white, serif font inside a white rectangular box. The overall aesthetic is futuristic and tech-oriented.

Worldwide

Developers

Conference

# Today's AV Vendors



Quantel Henry V8, Edit Box

DL Flame, Quantel Hal, Henry V6

DL Flint RT

DL Flint

M100 XS HDX, SDX, Media Composer

M100 XS, Targa 2000 RTX, MCexpress

M100, Targa 2000 DTX

M100 QXC, Targa 2000 Pro, VVS Pro

M100 QXC, Targa 2000

M100 QX, Targa 1000, VV Studio

Miro DC 30

Miro DC 20

Miro DC 10

8500 AV

