Criteria for Adoption of a Media Management System

Tactical and Strategic Considerations Surrounding Defining a Roadmap

October 18, 2000

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Technology and Business Adoption

Overview

- High Level Challenges today
- Technology and Solution Adoption Trends
- Detailed Pain Points and Recommendations Today
- Considerations for moving forward in Adoption of technology realize business goals based upon Risk / Cost
- Example five year breakout of Adoption based upon Risk / Cost / market adoption
High Level Challenges

• Integration of diverse and distributed production resources
  - people, systems, media and workflow

• Changing economic relationships between content owners, networks and affiliates - across different types of media
  - Photos, Video, Audio
  - Rights and clearances for use and to sell media

• Complex systems environments for broadcast delivery support
  - Integration with Automation systems, Storage, Access, Media Center

• Ingest / cataloging of complex media and relationships

• Extension to Digital infrastructure for full digital distribution throughout the media life-cycle (acquisition thru to delivery)

• Multiple distribution avenues introduce diverse and not well integrated production and delivery environments
  - Cable channels, magazines, new media, cable in the classroom, etc.
Vision looking out 3-5 years

- Find and Access to Media any time any where
- Digital (Tapeless) Production through Distribution
- Integrated workflow from Media acquisition through Distribution
- Company wide Approvals and Collaboration anytime, anywhere
- Desktop content authoring
- Reduced production time and greater quality providing a greater competitive advantage
- Use of company wide media management to drive Programming at reduced costs
- Support for new types of Business Models and Channels
Technology and Business Challenges: Changing Business Requirements

• Competitive Pressures
  - Greater Competition - need faster, better, more efficient production
  - Rapid response to change
    • New Services and Channels, Video on demand, cable modems / Internet, Interactive TV, datacasting / multicasting, new media
    • New Revenue opportunities (projection: in 5 years 1/2 of revenue from new services)
  - Rights and Consent Management
    • Legal risks and revenue opportunities
  - Multiple and more rapid distribution avenues
    • Multi-platform distribution - Digital cable, traditional cable, web casting, etc.
    • New distribution avenues changing the definition of production and content creation

Evolving a 50 year old production process with New Media and Consumer products plus a more Complex Infrastructure
Organizational Considerations

- Adoption includes evolutionary change in the organization
  - Corporate strategy and vision
    - strategic vision with near term tactical application with proven return on investment.
  - Corporate infrastructure expands to support needs
    - Production and workflow infrastructure
    - Media and programming management and distribution strategy & infrastructure
    - Organizational infrastructure to support strategic vision
  - Corporate and Staff roles evolve, education required and collaboration improves
  - Adoption path for a company depends upon Risk/Reward tradeoffs
Common Pain Points

1. Scattered Media and Metadata
2. Recreation of Media
3. Inadequate Library Systems
4. No strong management of the Production Workflow
5. No Easy Screening of Available Media
6. Duplication and Dubbing of Media
7. Infrastructure
8. Approvals and Accountability
9. Rights and Clearances
Media Asset Management
Years 1-3

Archive and Production Focus Recommendation

• Single point of entry for Media meta data
  - Install MAMS including managing Rights
  - Provide digital preview quality during Production

• Production and Post Focus
  - Digital previews into and out for MAMS

• Media Management Infrastructure
  - Meta data & Content
  - Workflow w/ **Rich** Media production
  - Internal Bandwidth (intranet and LAN)

• Initial Integration
  - Multiple internal Databases
  - Avid - OMM & Unity (with backbone)
  - Graphics / Proximity
  - Scheduling

• New Revenue Opportunities
  - (New Distribution opportunities, Catch Servers, Webcasting, Pull Models (PVD’s, web)
Enabled Opportunities Over 1 to 3 years

- Support for Digital and Physical media management w/ foundation
  - able to manage and find any video, audio, graphics, stills, etc.
  - User View: Single point to find, search and catalog media
- Integration of disparate systems
  - Improved communications and productivity
  - Single point of entry
- Support for Production workflow integration with media mgmt and post infrastructure
  - Improved media tracking and mgmt
  - Automated tracking of media use and approvals
  - Recognized value of media and programming
  - Access and rough cuts of production media from the desktop+ = improved productivity
- Tracking of Rights and Clearances against media
  - Reduced liability and new revenue opportunities (reuse+)
- Media under mgmt can be better repurposed and distributed
  - new revenue opportunities
Media Asset Management
Years 3-5

Full Production and Media Lifecycle Focus

- Pushing out into other areas
  - Programming
  - Sales
  - Scheduling
  - On-Air
  - Corporate Infrastructure
  - External (Internet & WAN)

- Expanded Infrastructure
  - Shared and Distributed Content

- New revenue opportunities +
Determine what Risk/Rewards you are willing to Take

- Use the **Right Technology** for the **Right Client** at the **Right Time** to achieve a **Business Goal** with the appropriate amount **Risk/Reward** tradeoffs

Reference: Geoffrey Moore, *Crossing the Chasm*
Technology Adoption Life Cycle

Are you both Early Adoption & Early Majority?

- **Innovators**
  - Pursue new technology aggressively - technology centered

- **Early Adopters**
  - Visionaries in companies. Appreciate potential competitive advantage of technology to their business. No well established references available.

- **Early Majority**
  - See value of technology but very practical. Want to see well-established references before investing substantially. Vertical.

- **Late Majority**
  - Similar to early majority but require established standards in the technology area.

- **Laggards**
  - Extremely conservative view. Only fully proven technology acceptable
Technology/Solution Sectors for Discussion to Impact Adoption

- **Media Management**
  - Physical libraries, digital media archives, digital production media mgmt, rights mgmt, duplications, raw stock mgmt, research mgmt, etc.

- **Production**
  - Non-linear editing, new media web production, production workflow, approvals, collaboration, consent and release, rights and clearances acquisition, etc.

- **Distribution**
  - Digital delivery to edit bays, Streaming media, Intranet/internet, tape sneakernet, Hosted services, ASP Stock Footage, Spot Delivery services, etc.

- **Infrastructure**
  - Storage, Networks, Video Servers, etc.

Adoption of MAM has dependencies and affects on each layer.
Trends: Media Management Adoption

- Web - intranet / internet supporting
  - Web Casting / Multi-casting
  - Digital media availability - preview quality over the web
- Hosted Services for Stock Footage - Stills and Video
- Migration to a Digital Infrastructure for studios and production houses
  - Digital capture thru to digital delivery -> Tapeless
- New revenue opportunities leveraging existing media
- Legal implications for Rights and Clearances as well as new revenue opportunities for selling outbound rights
- Media management throughout the full production lifecycle
- Complete tracking of elements - from acquisition to play to air to sales
- Delivery of companion material to over-the-air programming supporting backend management of related media
- Access on-demand to previously aired media as part of media-rich programming
Media Management Adoption - Broadcast Today

Still Image Management
1 Physical Stills Management
2 Digital Stills Management

Document Management
3 Physical Document Management
4 Digital Document Management

Graphics Management
5 Digital Graphics Management

Project / Program Workflow Management
6 Project/Program Workflow Mgmt

Video and Audio Management
7 Physical Audio and Video Management
8 Digital Audio and Video Management for Archive
9 Digital Audio and Video Management for Production

Rights and Clearances Management
10 Consent and Release management software
11 Acquired media rights management software
12 Sold media rights management software
Media Management Adoption - Broadcast 2002

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Media Management Adoption - Broadcast 2003

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Innovators
Early Adopters
Fifty Majority
Late Majority
Laggards

Legend:

- Physical Stills Management
- Digital Stills Management
- Physical Document Management
- Digital Document Management
- Digital Graphics Management
- Project/Program Workflow Management
- Physical Audio and Video Management
- Digital Audio and Video Management for Archive
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Trends: Production / Post

- Movement to Digital Media Management (still have tapes!)
- Goal to become a ‘Tapeless’ environment
- Desktop rough cut editing - decentralizing editing process
- Collaborative Reviews and Approvals w/ accountability tracking
- Integrated Production Workflow
- Integrated Edit Bays with Graphics, image, etc. network.
- Production for new media - the Web.
- More timely Acquisition of source source material - from Catch Servers for spots, the internet, etc.
Production/Post Production Solution Adoption - Broadcast

**Non-linear Editing**
1. Suite based (Avid, Media100)
2. Integrated / Networked Non-Linear Suites
3. Rough Cut Desktop editing
4. Tapeless Digital Production

**Infrastructure for Tapeless Production**
5. OMM w/ MAMS
6. Networked Storage integration (Unity)
7. Scheduling System integration
8. Digital Content formats (See Distribution)

**Graphics Production**
9. Full Digital Graphics Production
10. Graphics Networked into Post Production

**Interactive/Online Production**
11. New Media Production (Web, etc.)

**Production Management**
12. Project / Program Workflow Mgmt
13. Electronic Collaboration
14. Approvals Management

**Digital Media on Demand**
15. Trans-coded on the fly
16. Digitally delivered to the selected location
Production/ Post Production Solution
Adoption - Broadcast 2002

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Trends: Media and Program Distribution

- Emerging digital distribution technologies
  - Catch Servers from Agencies to Production/Broadcast houses
  - DTV, DBS, Digital Terrestrial Cable, Internet video streaming
- Internet age broadcast services
  - multicasting, datacasting, interactive TV, webcasting, pull model
- Hosted Services for Stock Footage - Stills and Video
- ASP Services introducing Service based support for Store and Forward models
Digital Distribution - Broadcast

Emerging Digital Distribution Technologies
1. Catch Servers
2. Digital TV (DTV)
3. Digital Broadcast Satellite (DBS)
4. Digital Terrestrial Cable
5. Internet video streaming

Broadcast services - Internet Age
6. Multicasting
7. Datacasting
8. Interactive TV
9. Webcasting
10. Pull model

Hosted & ASP Services
11. Stock Footage
12. Stock Images
13. Catch Server Services
14. ASP to manage Transmission Services for Store & Forward

Digital Video Format Standards
15. Preview resolution
16. MPEG2 Rough Cut
17. High Resolution Digital Video

Centralizing Broadcast operations
18. Central Broadcasting
19. Store and Forward (Catch)a
Digital Distribution - Broadcast

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Trends: Infrastructure

- Broadband and the Web
- Digital Content & Distribution Capabilities - including Storage
- Gigabit Ethernet
- Store and Forward Support - Catch Servers
- Connections between production, post and advertising agencies for digital delivery and review of media
- Personal Video Recorders (TiVo, ReplayTV) w/ preference engines
- Improved compression encoding and delivery technology - MPEG2
- Move to Digital distribution - 12 to 1 compression ratio over analog channels
Infrastructure Adoption - Broadcast

**Today**

**Digital Media Storage**
1. Shared fixed storage (rotating media) - peer
2. Shared fixed storage (rotating media) - server
3. Storage Area Network nodes (rotating media)
4. High capacity magnetic tape and CD
5. High capacity read only DVD
6. High capacity read/write (CDR)

**Networks**
7. 10 Mb Ethernet
8. 100 Mb Ethernet
9. 1 Gb Ethernet
10. VPN (bandwidth TBD)
11. WAN
12. LEO (Low Earth Orbit) VPN

**Video Server / PVD**
13. Catch Servers
14. Streaming media (24 Kbps - 200Kbps)
15. Streaming media (200 Kbps - 500Kbps)
16. VOD MPEG1 - MPEG2 (1 MBps - 10 Mbps)
17. VOD MPEG2 (10 MBps - 50 Mbps)
18. MegaVOD (15MBps) HDTV

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**Innovators**
17 12

**Early Adopters**
5 3

**Early Majority**
10 14 13 16 6 2

**Late Majority**
4 8 11

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1 7

**eMotion Confidential**

**jeg**
Infrastructure Adoption - Broadcast

2002

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**Example Recommended Adoption Path**

<table>
<thead>
<tr>
<th>Topics</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Media Management</strong></td>
<td>- MAMS – Nesbit Replacement w/ Rich media support (Physical and Digital)</td>
<td>- Digital Media Mgmt integration with non-linear (OMM)</td>
<td>- Traffic &amp; MAMS integration</td>
<td>- Scheduling System Integration</td>
<td>- Intelligent staging of Media where needed (store &amp; forward, pull, etc.)</td>
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<tr>
<td></td>
<td>- Basic Consent, Rights &amp; Clearances (R&amp;C)</td>
<td>- Traffic &amp; MAMS integration assessment</td>
<td>- Approvals Support against Media</td>
<td>- Sold Media R&amp;C (Optional*)</td>
<td>- Residuals R&amp;C integration (Talent)</td>
</tr>
<tr>
<td></td>
<td>- Media Transfer Support (physical and Digital)</td>
<td>- Extended R&amp;C</td>
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<td>- Extended Rich Media Logging</td>
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<td></td>
<td>- 'New Media' Project Support</td>
<td>- High Resolution Media Mgmt during Production (Start)</td>
<td>- ScheduALL integration</td>
<td>- Extended Rich Media Logging</td>
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<tr>
<td></td>
<td></td>
<td>- Transcoding on the fly for Digital Delivery (low/med res)</td>
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<td>- Transcoding on the fly for Digital Delivery (high res)</td>
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</tr>
<tr>
<td><strong>Production</strong></td>
<td>- Analysis of production workflow w/ Projects and Programs</td>
<td>- Rough cuts on the desktop</td>
<td>- Digital Approvals*</td>
<td>- Tapeless digital Production (Video and Graphics)</td>
<td>- Digital delivery and Transcode of Media where needed</td>
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<tr>
<td></td>
<td>- Unity integration w/ AVID</td>
<td>- New Media Desktop Production</td>
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<td></td>
<td>- Graphics Mgmt</td>
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<tr>
<td><strong>Distribution</strong></td>
<td>- MAMS at the Desktop</td>
<td>- Catch Server support for Promos</td>
<td>- Electronic Review &amp; Collaboration outside (low &amp; med)</td>
<td>- Electronic Review &amp; Collaboration outside (High Res)</td>
<td>- Pull Model support for Programming and Rich Media</td>
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<td>- Low &amp; Med res preview distribution</td>
<td>- Webcasting for ‘New Media’</td>
<td>- Webcasting extended</td>
<td>- Interactive TV support via ‘New Media’</td>
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<td></td>
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<td>- High Resolution Video Destinations from MAM (internal)</td>
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<tr>
<td><strong>Infrastructure</strong></td>
<td>- Gb Ethernet in Production/Post</td>
<td>- Gb Ethernet in internal</td>
<td>- Broadband connectivity outside</td>
<td>- HSM Storage extended</td>
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<tr>
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<td>- Unity Storage</td>
<td>- SANs Storage</td>
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<td>- Connectivity Extended (ex: Store and Forward support)</td>
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<td>- Continued HSM Storage</td>
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*Note: This assumes firewall to play to air operations other than digital content preview + ref.*  
*Note: Assumes Sold Media Support Available*
Staging Recommendations: MAMS for 2001

• Install the foundation for digital and physical media management in support of the following areas:
  - Enable people to find media from anywhere:
    • Media Center - Evaluate and replace Nesbit, Vault, homegrown tape system - getting all media under management immediately.
    - Enable the management of physical and digital media of all types
    - Migrate the existing media from multiple sources into a single source
    - Integrate information from the existing databases and new databases to provide enough Meta Data to Find the media (integration vs. replacement)
  - Production Workflow
    • Enable the collaboration between production staff by providing Program and Project workflow Via the MAMS.
    - Begin with managing all their media and status during production
    - Evolve to layer Collaboration and Approvals
    - Evolve to desktop roughcuts and rough cut EDLs
  - Evolve the Infrastructure for Production to support digital delivery from MAM to non-linear and graphics bays.
  - Leverage digital proxies to jumpstart digital content for previews as infrastructure and staff allow/support

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1. Scattered Media and Metadata

- Scattered media is difficult to find.
- Hidden databases and libraries of media make reuse and repurposing often impossible.

Recommendations:
- Deliver a fully implemented MAMS with the supporting infrastructure integrating systems and information.
2. Recreation of Media

- The knowledge of particular media throughout a company is not well shared. Similar media often recreated as a result

**Recommendations:**
- Provide a single point of entry for media searching and requests,
- Support the ability to preview low-resolution proxies
- A MAMS to focus the overall management of the media within a signal organization, helping to provide an infrastructure for the effective cataloging and sharing of media.
3. Inadequate Library System

- Current Physical Media Library System typically will not:
  - Scale to support the large amount of media under management.
  - Manage the diversity of physical and digital media that is now part of any modern production company.
  - Support integration into the overall production workflow
- Many homegrown databases exist internal to a company that holds essential media information

**Recommendations:**

- Managing and controlling all of the media related information through a single point of entry
  - Create a single point of entry for all diverse and media related information
  - Analyze the various databases and hidden libraries
  - Define the points of integration between MAMS
  - Define standards: cataloging, nomenclature, etc.
  - Begin to establish an infrastructure that can support the digital collaboration and sharing of media
4. No Strong Management of the Production Workflow

- Production workflow and media lifecycle not managed
  - Many different pieces of media and versions touched by many people during the creative process.

Recommendations:

- Manage the media throughout the full production / project lifecycle - track requests, fulfillment and versions.
  - Define / Refine production workflow from point of creation/access to media through post.
  - Understand what near term workflow capabilities can be enabled through media management vs. through process
    - Refine internal production workflow to capture media information along the process
    - Migrate to a Media Management system capable of managing the information:
      - Deep Archive / Hosted Services
      - Production Media Manager(request/fulfillment and workflow based model)
      - Collaborative Media Management offerings
5. No Easy Screening of Available Media: Many Different Formats and Locations

- Screening of material requires finding it and requesting a format available for review.

**Recommendations:**

- Support searching and requesting media from different formats and sources from the desktop via a MAMS.
- Define the appropriate types and resolutions of media for the different needs/uses (see infrastructure)
6. Duplication and Dubbing of Media

- The cost and time associated with the creation of Duplicates and Dubs across the organization can be minimized.
  - Protection of the original master media from loss, overuse, and breakage
  - Reduction of contention for media

**Recommendations:**

- Desktop delivery of low-resolution, proxy media
  - how much storage for digital content do you have/want?
  - what resolution of media is good enough for different tasks.
    - Selection of a scene for a new or edited production.
    - Review for standards and practices
    - Approval of the edited product.
    - Review for editing to select initial rough cut segments for post-production.
    - Issue: How do you get it all digitized to be accessible?
7. Infrastructure

- Difficult to share and view digital media at the desktop and during production within and between organizations.
- Different output formats are utilized that cannot be shared.

**Recommendations:**

- Ensure that media can be effectively searched, accessed, and distributed as needed throughout:
  - Generation of digital proxies from in process and finished material
  - Creation of low resolution previews (or proxies) from raw footage and other media formats
  - Define creation and encoding requirements
  - Stage management of medium resolution and high resolution digital content
- Initially, for high-res media, manage only during the production process only due to storage, infrastructure and management.
8. Approvals and Accountability

- Layers of individuals slow down the production process.

**Recommendations:**

- Reduce time and ensure accountability with a capability, with supporting workflow, to manage the approval information with the associated approver directly with the digital media.
- Provide an ability to manage ‘versions’ of the media being approved electronically.
- Define more effective collaboration methods that enable digital approvals.
  - Define the set of tools that will be used for managing approvals - email, collaboration tools, shared storage locations, a MAMS.
  - Define the workflow against the MAMS - annotations, projects, etc.
  - Define a longer term approach for how approvals will fit within the larger production and MAMS workflow.
9. Rights and Clearances

- Not well evolved rights and clearances management infrastructure today so not able to effectively define risk or leverage rights and revenue

**Recommendations:**
- Associate and view the rights, clearances, consent, and release with media
- Support rights and clearances directly with media and acquired programming
- Provide tools to staff within the legal department to associate the rights and clearances information directly
- Manage Talent and Property consent information directly against the media and programming.
- Enable the production and content creation groups to digitally request media and obtain the rights to use the media – tracking this information directly against the media (Work Order Request / Fulfillment Model)