Key Trends in Multimedia Development – 1996 to 2000

Reader Notes

Prices collapse
- Authoring and development tools go from $5,000 to $50
- "Good enough" media production and editing drops from $3,000 to $300
- MPEG playback goes from $500 to $0

Enabling software technology becomes ubiquitous
- High-quality video playback APIs embedded in operating system
- New media types subsumed into standard desktop publishing and presentation graphics
- New media authoring and editing tools become cross platform by design, including WWW, music recordings and set-top boxes
- Database technology moves from simple BLOB support to content-sensitive multimedia support

Enabling hardware technology becomes ubiquitous
- Impossible to buy non-multimedia-enabled desktop system

Massive vendor consolidation
- Authoring, development and editing providers

Massive vendor proliferation
- Content providers

High-quality multimedia applications as pervasive as desktop publishing in 1995
- First wave of formally trained generation enters workforce

Multimedia applications required to match competition or survive, not "leapfrog" the competition

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From publishing interactive CD-ROMs, to implementing desktop videoconferencing, to deciding how and when to create interactive TV applications, to selecting development tools for commercial and corporate applications, Gartner Group's Multimedia service provides strategic planning frameworks and hard-hitting tactical advice on how to best prepare for and leverage this exciting new set of technologies. The Core Topics of the service include: multimedia industry dynamics; multimedia-enabling technologies; commercial interactive media and production; corporate multimedia authoring, production, and delivery; and real-time multimedia collaborative applications.

Key Issues

Reader Notes

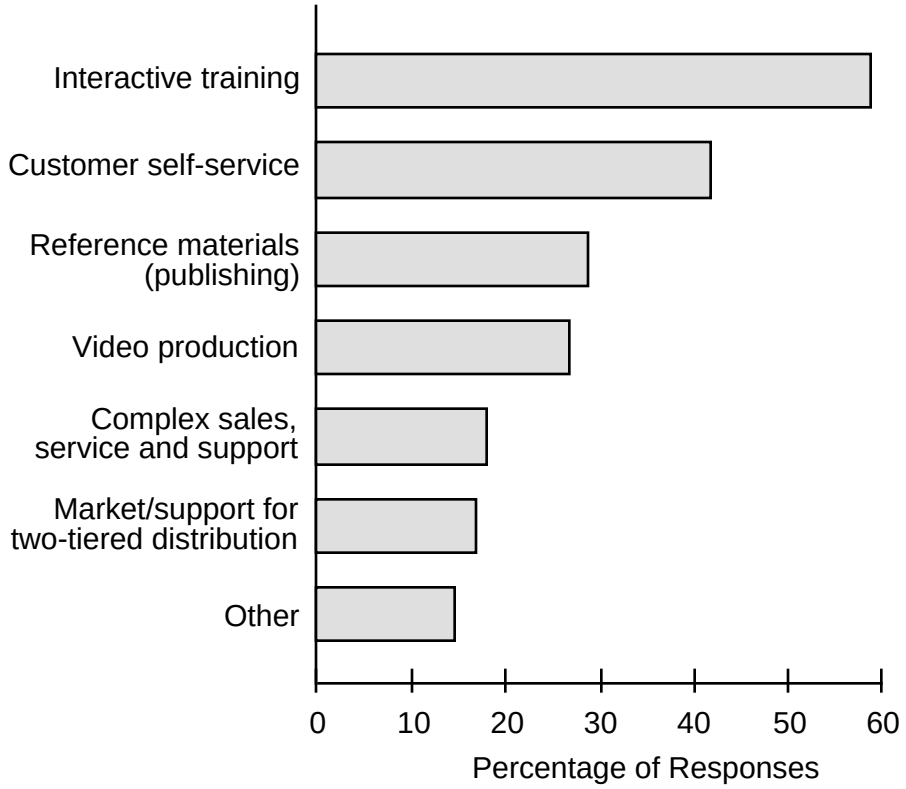
1. **What key trends will affect the authoring, production and delivery of corporate multimedia applications during the next five years?**
2. What new corporate applications will emerge enabled by advances in multimedia authoring, production and delivery?
3. **What technologies will enable quantum leaps in the authoring, production and delivery of corporate multimedia applications?**
4. How can vendors maintain profitability as multimedia function is subsumed into basic application types and tools?
5. **Which best practices and processes should be used to develop corporate and institutional multimedia applications? Which should be avoided at all costs?**

While multimedia represents a significant opportunity for IT professionals, developing multimedia applications will present a host of challenges. New processes, skillsets and tools will be required to develop image, animation, audio and video content and to incorporate that content into applications. This presentation will highlight the challenges and offer guidance to developers of these new applications to maximize the results of their efforts.

What key trends will affect the authoring, production and delivery of corporate multimedia applications during the next five years?

Reader Notes

User Survey: Targeted Multimedia Applications



Source: Gartner Group

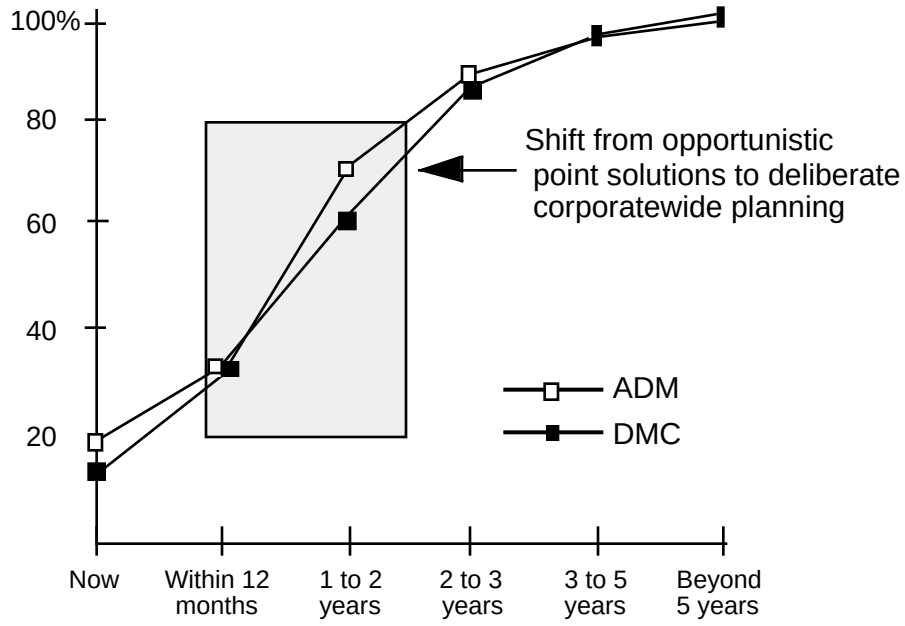
In our survey of senior application developers, interactive training was by far the largest category of application targeted for multimedia development, followed closely by customer self-service (i.e., customer-oriented kiosks) with multimedia publishing and digital video production. Not coincidentally, these four leaders also are most clearly linked to tangible monetary benefits.

Multimedia applications with significant financial benefits are spurring many end-user BUs to investigate and invest in multimedia-enabling technologies and applications development. The IS organization has an important role to play in these efforts which, if properly managed, should result in a win-win situation for IS and for business people.

OS advances, maturation of cross-platform tools, and hardware commoditization all position mid-1996 is the inflection point for the penetration of multimedia into corporate strategic planning initiatives (0.8 probability).

Reader Notes

User Survey: Multimedia as a Factor in Strategic Planning



Source: Gartner Group

Key Issue: What key trends will affect the authoring, production and delivery of corporate multimedia applications during the next five years?

At two Gartner Group conferences, the Applications Development & Management Strategies (ADM) conference and the Document (DMC) conference, we asked attendees: "When do you expect multimedia to become a factor in strategic planning in your corporation or government agency?" The attendees' responses to our survey question support our assumptions as to when multimedia will infiltrate the corporation from the bottom up (similar to the way LANs did in the mid- to late-1980s). As a point of comparison, a recent survey of our client base, sponsored by the Advanced Technology and Applications (ATA) service, indicates that 24 percent of clients surveyed had already deployed multimedia, 38 percent were investigating the technology and another 22 percent were intending to do so within two years.

Regardless of application class, application planning must factor in a shifting base of target platforms, and inevitable migration from stand-alone to integrated, networked multimedia (0.75 probability).

Reader Notes

Trends in Multimedia Applications by Class

Application Class	Trends
Interactive training	• Analog to digital video • Stand-alone to networked • Tight coupling with mainstream applications (electronic performance support systems)
Document management/ workflow	• Compound documents in workflow environment • Multimedia annotation to central data type
Portable presentation (mostly sales/marketing)	• Integration with back-end systems • Demonstration only to “automation”/support of sales process
Publishing (reference)	• Combine best of text-centric applications (search/retrieval) with multimedia data types
Publishing (consumer titles)	• Stand-alone to front-end with online access • “Edutainment” to information access
POS/public kiosks	• Analog to digital video • Stand-alone to dumb terminal to full network access to back-end systems • Incorporation of real-time video for support
Interactive TV	• Pure technical trials to limited deployment • Set-top platform consolidation by 1996 or 1997

Source: Gartner Group

Key Issue: What key trends will affect the authoring, production and delivery of corporate multimedia applications during the next five years?

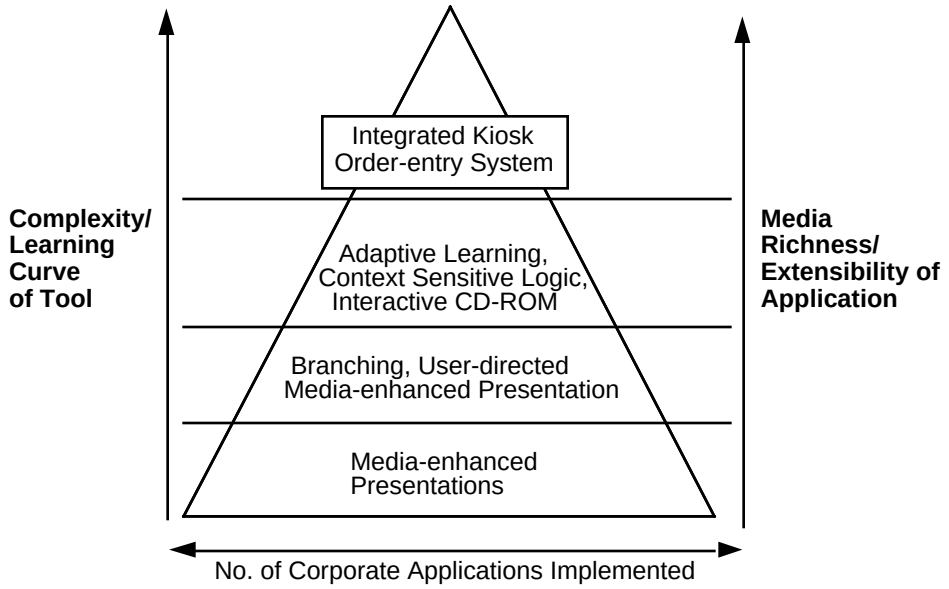
Dominant trends:

- Analog to digital video
- Stand-alone to multimedia front-ends
- Multimedia annotation to integrated multimedia documents

Which technologies will enable quantum leaps in the authoring, production and delivery of corporate multimedia applications?

Reader Notes

Multimedia Business Applications Model



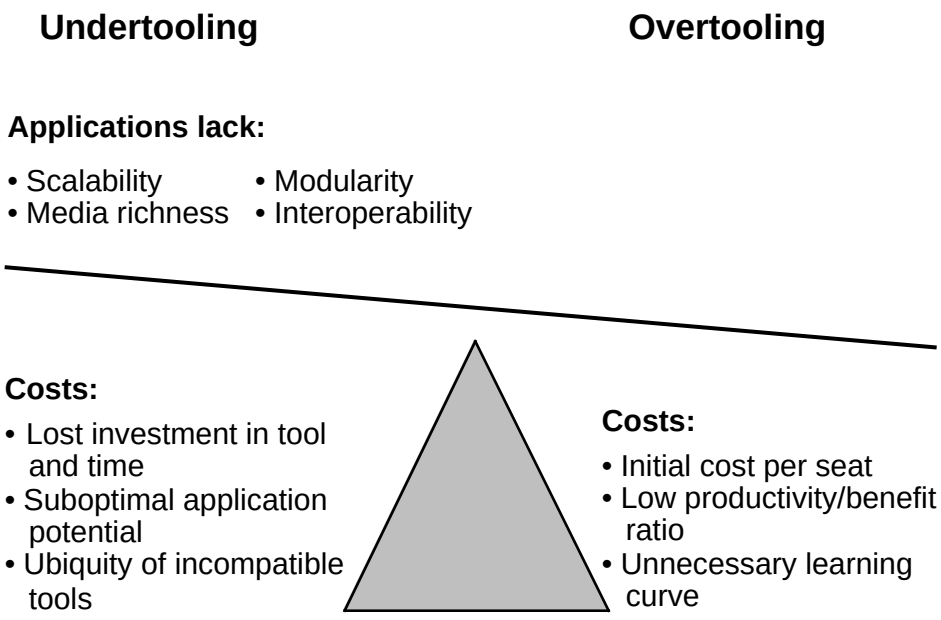
Source: Gartner Group

Dominant trends:

- New media (audio, video) playback in standard presentation packages
- Exponential growth in development seats
- Low-cost development tools ubiquitous by 1996
- Confluence of multimedia and mainstream application development
- Critical need for "tool diversity control" and central guidelines

While both "undertooling" and "overtooling" are inefficient, corporate and institutional developers favoring "overtooling" are more likely to develop reusable assets at lower costs over time (0.8 probability).

Reader Notes



Source: Gartner Group

Key Issue: Which technologies will enable quantum leaps in the authoring, production and delivery of corporate multimedia applications?

Just as the definitions of multimedia span a huge range of technologies and applications, the capabilities and complexities of multimedia authoring environments range from simple presentation packages to C++-based development tools. Selecting tools too far along the continuum in either direction can be quite costly over time.

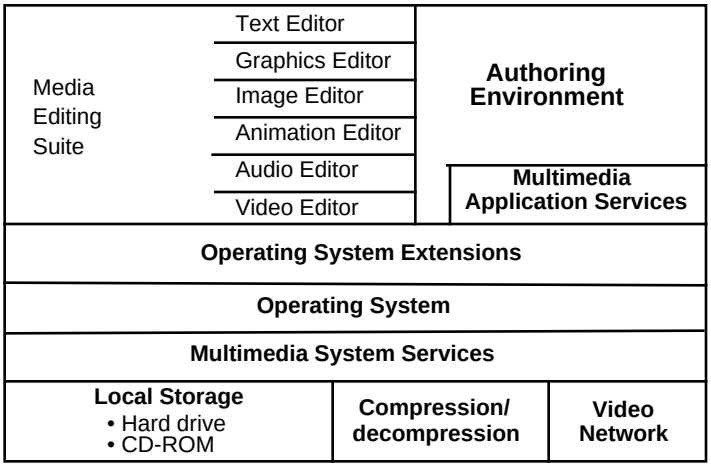
Finding the proper balance in multimedia application development has more to do with a tool's suitability to the task and the resulting cost over time than with whether a tool can functionally satisfy a given need. At this stage in the deployment of multimedia, most corporate applications focus more on the presentation of new media types than on totally new application types made unique by creative use of interactivity. As new media types become commonplace in corporate presentations, and are supported by mainstream presentation applications, the demand for today's high-level authoring tools will be based more on their interactivity capabilities than on their integration of multiple media types.

Strategic Planning Assumption

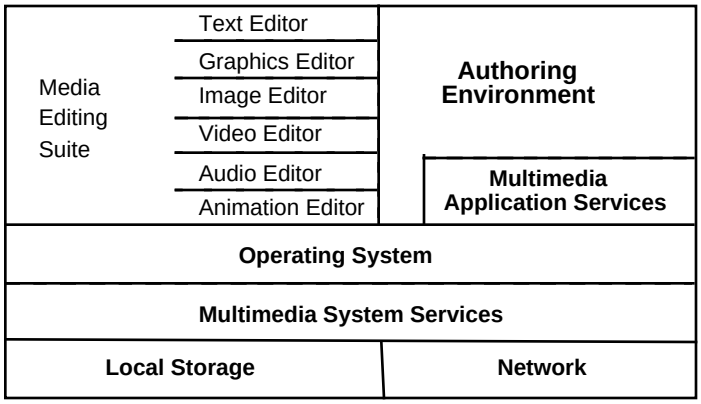
On the desktop, the discrete components enabling multimedia will be largely subsumed into mainstream tools and platforms by 1996 (0.8 probability).

Reader Notes

Multimedia Application Development Desktop Environment: 1994



Multimedia Application Development Desktop Environment: 1996



Source: Gartner Group

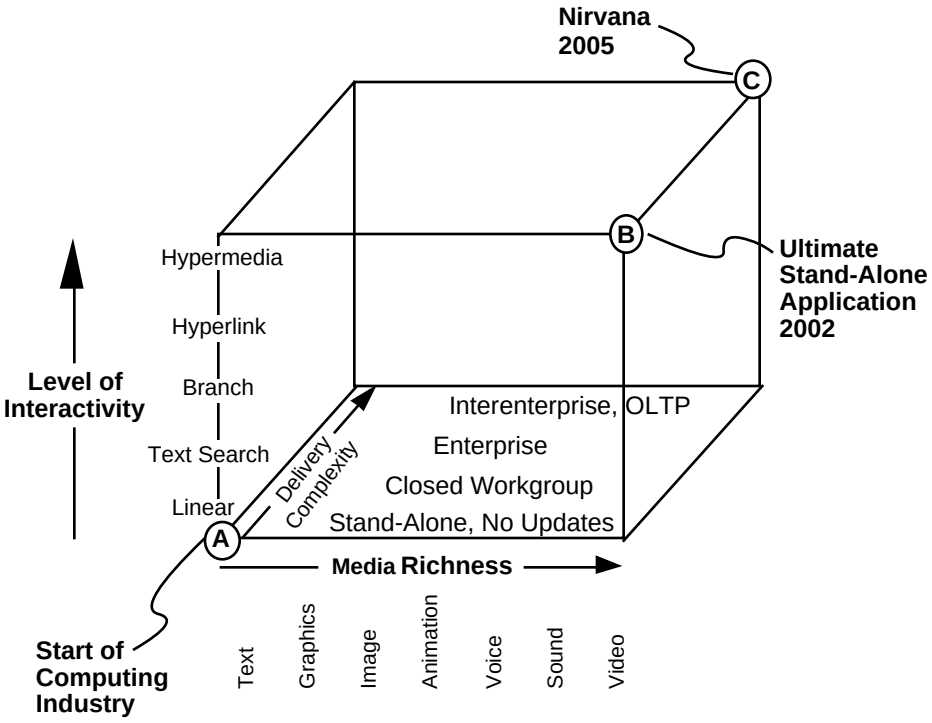
Key Issue: Which technologies will enable quantum leaps in the authoring, production and delivery of corporate multimedia applications?

Dominant trends:

- Integrated media suites
- Extensions incorporated into operating systems
- Expansion of multimedia system services (e.g., file services, codec, video NOS, guaranteed class of service)

While mainstream authoring tools exist that are optimized for one of the three axes on our Multimedia model, vendor focus and competition will slow the introduction of a "do everything" tool (0.75 probability).

Reader Notes



Source: Gartner Group

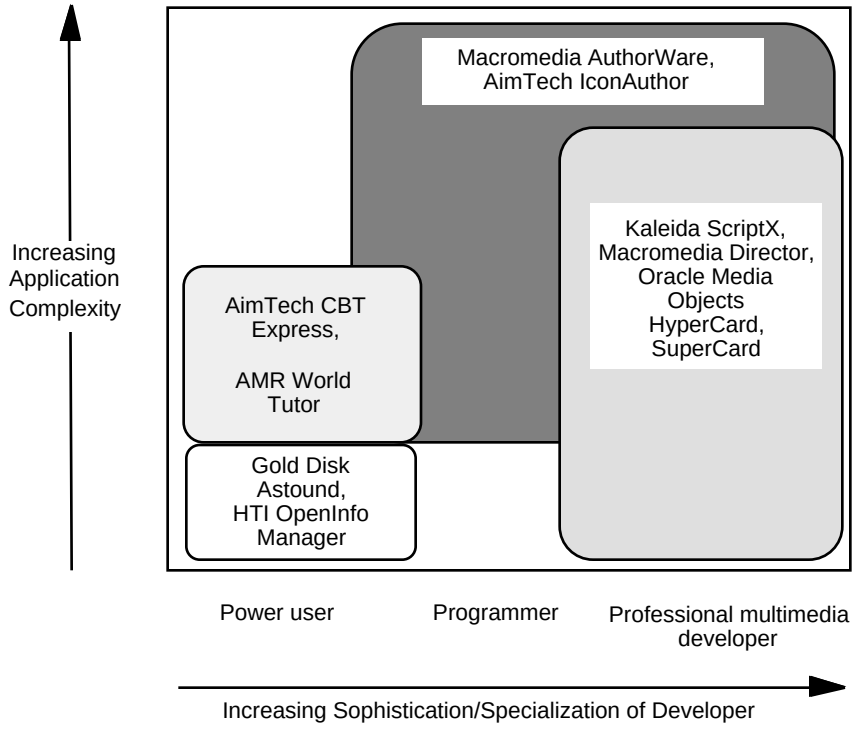
Key Issue: Which technologies will enable quantum leaps in the authoring, production and delivery of corporate multimedia applications?

A distinct market for multimedia authoring tools has evolved to address the requirement to manipulate complex, multimedia data types — the Z axis in our model. These tools tend to be fairly rudimentary in their ability to manage complex application logic as well as in their support for client/server application architectures. On the other hand, "traditional" client server tools, which are strong at complex and enterprisewide interactivity, are incorporating multimedia capabilities, albeit at a rudimentary level. Today, therefore, a fundamental dichotomy exists between those tools that can handle complex logic (non-multimedia-specific, or traditional applications development tools) and those tools that can handle complex data type manipulation.

Tool selection must represent a compromise between long-term requirements for application extensibility and short-term media manipulation capabilities.

Reader Notes

Multimedia Development Tool Classification



Source: Gartner Group

Key Issue: Which technologies will enable quantum leaps in the authoring, production and delivery of corporate multimedia applications?

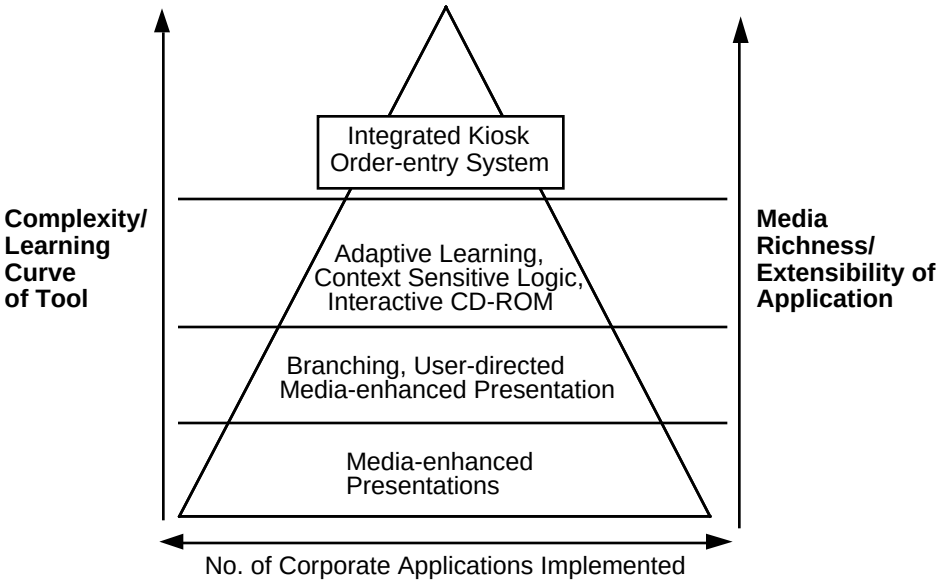
- **Low-level presentation authoring tools.** Suitable for simple presentations and storyboards with limited interactivity; standard presentation packages are evolving toward this functionality (e.g., Gold Disk Astound, HTI Open InfoManager, HSC Interactive).
- **Application-specific authoring tool templates and shells.** Authoring tool subsets packaged to target interactive multimedia training development; bundled with course templates (e.g., AimTech CBT Express).
- **Scripting-language-based authoring tools.** Midlevel and midpriced authoring tools based on proprietary scripting languages; most suitable for specialized, professional multimedia developers (e.g., Macromedia Director, Apple Media Kit).
- **High-level multimedia authoring tools.** High-end, extensible authoring tools encompassing a wide range of applications and initial skillsets (e.g., AimTech IconAuthor, Macromedia AuthorWare).

Which best practices and processes should be used to develop corporate and institutional multimedia applications? Which should be avoided at all costs?

The proliferation of multimedia-capable packages and tools will drive an explosion in the development of incompatible and unleverageable multimedia assets (0.8 probability).

Reader Notes

Multimedia Business Applications Model



Source: Gartner Group

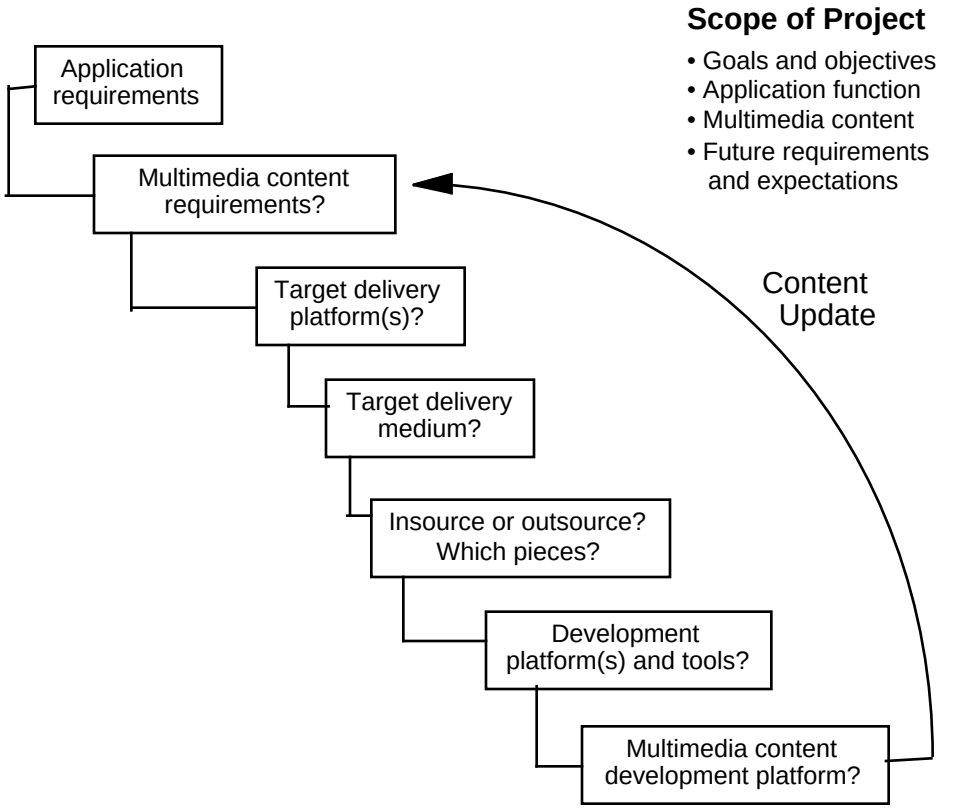
Key Issue: Which best practices and processes should be used to develop corporate and institutional multimedia applications? Which should be avoided at all costs?

The question of *whether* multimedia will make an impact on the applications and infrastructure of an enterprise is no longer relevant; the real issues are *when* will the impact be felt and *how* can users prepare themselves. While multimedia implementations would initially seem to be simple questions of technology and platform readiness, more fundamental questions of "Why introduce new media types?" and "How much multimedia is enough?" must be addressed first. For example, finding the proper balance in multimedia application development has more to do with a tool's suitability to the task and the resulting cost over time than with whether a tool can functionally satisfy a given need. *At this stage in the deployment of multimedia, most corporate applications focus more on the presentation of new media types than on totally new multimedia application types made unique by the creative use of interactivity*. As new media types become commonplace in corporate presentations, and are supported by mainstream presentation applications, the demand for today's high-level authoring tools will be based more on their sophisticated interactivity capabilities than on their integration of multiple media types.

For corporate and institutional multimedia development, the long-term effect of proper processes far outweighs the immediately obvious technical considerations.

Reader Notes

High-Level Process Overview for Multimedia Development



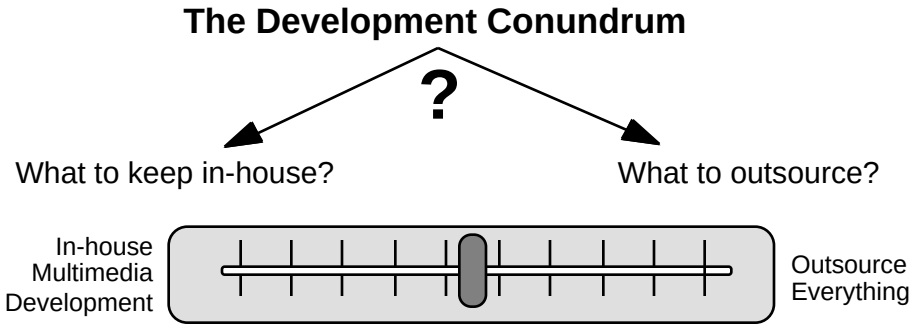
Source: Gartner Group

Key Issue: Which best practices and processes should be used to develop corporate and institutional multimedia applications? Which should be avoided at all costs?

One of the first things many people focus on when tasked with a multimedia development project is to select video and sound editing applications as well as an authoring tool. While these are indeed vital considerations, they should be addressed after a great deal of planning and organization has taken place, for two reasons. First, without completely understanding the applications requirements and the longer-term plans for updates and maintenance, it is only through luck that an appropriate set of tools will be chosen. Second, rushing into tool selection and deployment has the unfortunate tendency to lessen the likelihood that appropriate storyboards and structure or content planning will take place.

While initial multimedia applications should leverage the skills and experience of an outsourcer, the greatest danger of outsourcing lies in the external developer's ability to dictate platform, tools and even media content (0.85 probability).

Reader Notes



Pros
- Total control over:
  - tools
  - target platform
  - content
  - updates
  - matching BU request to delivered output

Cons
- Steep technology learning curve
- Costly and specialized hardware and software
- Artistic expertise is required as well as technology
- Initial applications may be slow to develop

Pros
- Pre-existing knowledge and experience
- No investment in hardware or software
- Artistic and technological expertise assumed
- Application delivery negotiable

Cons
- Potential loss of control over:
  - tools
  - platform
  - content
- Updates, complex or simple, require additional fees
- Costly over time

Source: Gartner Group

Key Issue: Which best practices and processes should be used to develop corporate and institutional multimedia applications? Which should be avoided at all costs?

As corporations and institutions begin to develop multimedia applications, they quickly find that as daunting as the technology may appear, an entirely new set of business practices, policies and procedures need to be addressed as well.

One of the most immediate and pressing considerations when planning a corporate multimedia implementation is deciding how much of the effort should be done in-house, how much should be outsourced, and which elements belong where. While we recommend that nearly all organizations outsource their initial production application to see how it's done, the ramifications of giving away too much control to an external provider can be serious. As we depict above, a proper balance of internal production and outsourced expertise must be found.

Minimizing the risks of application outsourcing can be accomplished by rigid adherence to an RFP and subsequent contract, or by achieving the benefits of outsourcing by purchasing pre-prepared application structures and logic.

Reader Notes

Multimedia Application Development Request for Proposal

Sample Technical Elements

Target Platform

- Processor
- Operating system
- Display resolution and colors
- Memory
- CD-ROM drive speed
- Sound card
- Communications

Authoring Tool

- Graphical environment
- Scripting-, iconic- or page-based
- Extensibility
- Speed of application playback

Media

- Exactly match storyboard layout
- "New" media support (i.e., video and audio)

Outsourcing Hybrids and Alternatives

- Contract development plus tools
- Use of a development template
- Training film conversion
- Hands-on development workshops

Key Issue: Which best practices and processes should be used to develop corporate and institutional multimedia applications? Which should be avoided at all costs?

Organizations facing their first multimedia development projects encounter a difficult balancing act — using externally supplied expertise while not losing control of the application structure and content. In addition to traditional RFP and stringent contract specifications, many creative hybrid alternatives exist:

Contract Development Plus Tools Approach. In this case, the application developer specifies, as a part of the contract, that it will supply commented source code, a licensed copy of the development tool, as well as training on the use of the tool, design of the application, and maintenance and update of content.

Use of a Development Template. Here, predeveloped structures or blank applications are used, delivered in the form of templates, much the way prepared macros can be used for use with popular spreadsheets. Although the application itself is not outsourced, the development of the basic foundation as well as the specific structures themselves are developed externally.

Training Film Conversion. In this method, vendors take existing training courses on laser disk, video tape or even film and convert them into interactive CD-ROM-based training modules.

Acceptable and desirable media production values will continue to vary dramatically by application type, content life and audience. Determining what is "good enough" is a critical compromise (0.8 probability).

Reader Notes

Sampling of Design Characteristics by Application Class

Category	Interactive TV	"Public" Kiosks	Document'n, Publishing	Business Presentation	Interactive Training
Target Platform • Hardware • OS and Ext.	Cable system Set-top boxes Mix & match video servers	Optimized platform "Ruggedized" HW &SW	Least common denominator CD-ROM for delivery	MM portable or luggable Specialized projection	Desktop PC or Macs Training Station
Multimedia Requirmts. • Data types • Quality levels	Hollywood production values Content rights, ownership	Full-screen, full-motion video Professional level of quality Multilingual	CD-quality video (up to quarter screen, 15 fps) Search/retrieve	Wide spectrum of video qual. Reuse Tailorability	Video optional? Wide range of quality tolerance
Connectivity Requirmts.	Extremely application specific and diverse	WAN link for content update and database access	Potential networking of CD-ROM apps. for access	Shared server for reuse of templates, multimedia elements	From shared server for media and reporting to none
Development Environment and Tools	Production studio-grade tools; generally proprietary	High-end content development High-performance authoring tools	CD-recordable workstation Hypermedia & retrieval tools	High quality video prod. Slide-, time- or icon-based presentation package	Screen capture, templates pkgs., "camcorder" video
Critical Design Issues • Interactivity • Interface • Navigation	Optimize for one system or "mediocritize" for all	User interface design Durability and day-to-day maintenance	Ease of navigation Consistent access to multiple CDs	Consistent corporate look-and-feel Simplicity of design	Navigation, reporting, modularization **RE-USE!!!**

Source: Gartner Group

Key Issue: Which best practices and processes should be used to develop corporate and institutional multimedia applications? Which should be avoided at all costs?

Key decision points:

- **Target Platform**
  Is the target platform fundamentally controllable or not?
  Is cross-platform support required?
  What is the optimal delivery medium?
- **Multimedia Requirements**
  Which data types are absolutely fundamental to the application? Which are "nice to have"?
  What production values are required?
  Will the target platform support the multimedia data requirements?
- **Connectivity Requirements**
  Which elements will be stored locally vs. shared over the LAN /WAN?
  How will information be updated in remote sites? What bandwidth is required?
  How will the requirements for connectivity translate into the design of the application?

Building a set of reusable multimedia assets will decrease the total overall cost and time-to-market of subsequent multimedia applications by as much as 70 percent (0.7 probability).

Reader Notes

Reusable Multimedia Assets

Content structure
- Linear and hierarchical relationships; hyperlinks
- "Applets"/"granules"

Content
- Required data elements
- Standard formats, compression, color, etc.

Code
- Separation of content and code
- Reusable "shell"

User interface and navigation
- Standards for MUI
- Appropriate navigation schema

Production processes
- Content creation/editing tools and processes
- Data refresh/application update

Skills
- Required skillsets and available resources
- Skills transfer plan

Key Issue: Which best practices and processes should be used to develop corporate and institutional multimedia applications? Which should be avoided at all costs?

As corporations and government agencies begin to spend considerable amounts of money to develop multimedia applications, the risk of creating "legacy multimedia" applications accelerates. Many organizations have fallen into the trap of relying upon small, often financially unstable, third-party vendors for application updates and additional content development, placing undue financial strain and vendor lock-in stress on the maintenance and enhancement of the application. Each successive "release" of an application should require less investment in time and money than the previous one until the maximum attainable efficiency is reached. The logical endpoint of the development effort occurs when the functional and/or content requirements of the application are hard-coded and stable, when the interface and navigation is user-tested and acceptable, and when the production processes required to deliver the application are stable and repeatable.

The primary responsibilities of IS in any multimedia development effort, insourced or outsourced, are to audit the structure and architecture of the application, and to ensure the cleanness and supportability of the code.

Reader Notes

Key IS Responsibilities

- Separate code from content
- Data refresh
  - orderly
  - ad hoc
  - event-based
- Define data-type standards
  - content requirements
  - compression algorithms
  - file formats
  - resolution
- Define platform requirements
  - controlled deployment
  - "unwashed masses"
- Overall structure of code
  - hooks for future functions
- Clean back-ends

Key Corporate/BU Responsibilities

- Define scope and functionality
- Determine "good enough"
- Corporate look and feel
- Manage content
- Iterative feedback to development
- Supply updated content

Source: Gartner Group

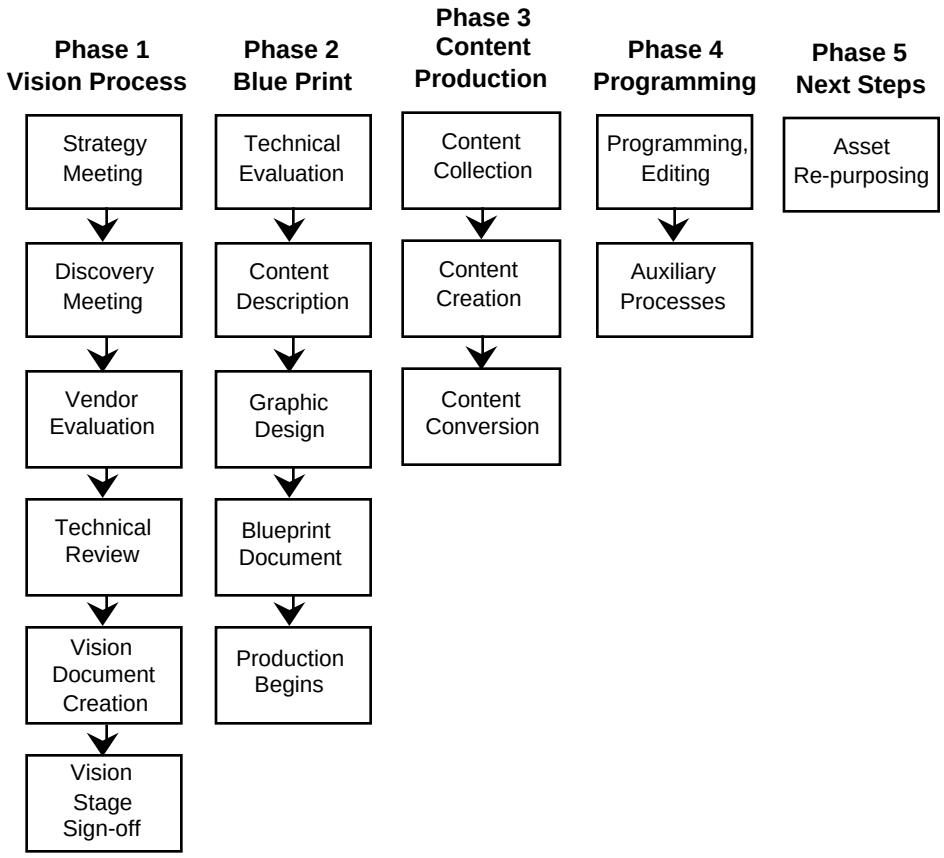
Key Issue: Which best practices and processes should be used to develop corporate and institutional multimedia applications? Which should be avoided at all costs?

The key responsibility of the BU is to have the people who will be writing the checks determining the application's objectives and requirements, while IS' key responsibilities should focus on application structure, schema and mechanics, not content.

The best multimedia applications embody and support business objectives. The Century 21 interactive multimedia sales presentation is an example of this: The application design process was driven by the company's sales process and business goals at every key decision point, under the leadership of the director of international franchise marketing. Thus, the design of the application supports the objective of increasing the effectiveness of the sales force in closing business. Specific features include customization to a prospect's local market conditions, a demonstration of the power of brand-name recognition through a consultative selling approach, objection-handling video testimonials, an assumptive close and flexible navigation.

Multimedia Development "Road Map"

Reader Notes



Source: Redgate Communications Corp.

The above "road map" is an excellent, rigorous methodology for developing multimedia applications. We recommend that users follow this type of framework, especially when developing their initial multimedia applications.