A digital media asset ecosystem for the global film industry

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Abstract This paper is addressed to business and technical decision-makers in the filmed entertainment business worldwide. Based on an analysis of recent and impending changes in the media and entertainment market, it presents the rationale for enterprise-wide digitization in the film industry, proposes that readers view the future from a broader, end-to-end "solutions" perspective rather than from a "products and packages" one, and suggests guidelines to keep in mind while using this information to implement IT systems for the unique needs of the organizations they represent. Tata Consultancy Services Ltd is an independent and neutral IT consultant. This paper therefore avoids making specific mention of the names of software and hardware vendors.

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INTRODUCTION

Some characteristics of the filmed entertainment industry don't seem to change — the hallmarks of creativity, quality content and consumer focus. No wonder the media and entertainment

(M&E) industry, according to PricewaterhouseCoopers (PwC), is at its strongest now and will enjoy a window of opportunity for the next five years, if not more.¹

One characteristic, however, has been

changing over the years: how human and technological subsystems representing the creative, content generation and consumer interaction functions communicate with each other.² Today, the touchstone is “anytime — anywhere — any mode.” This is revolutionizing the industry and beginning to affect larger supply chain issues from film production to distribution.

A CHANGING LANDSCAPE

The new landscape is being shaped by six global developments. Technological convergence is opening up alternative possibilities for the film industry’s growth.³ Some of these lead to mergers and acquisitions (M&As) which, in turn, call for collaborative work styles within and between the merging businesses and their potential partners.⁴ What’s more, stakeholders in the distribution and delivery of content are using technologies that have opened consumers up to exploring new spending streams.⁵ This has caused release windows to shrink.⁶ While developed-world markets mature, those in developing countries are waiting with their vast population base.⁷ And, in many economies, which are relatively less exposed to mass entertainment content, two parallel cultural brands coexist — Hollywood, and local film and video.⁸

SEGMENT ACTIVITY

During this period, the global filmed entertainment market, according to PwC, is predicted to grow at a 7.1 per cent compound annual rate (CAGR) to \$119 bn in 2009. Interesting opportunities will emerge in four closely related segments — internet advertising and access spending, video games,

television networks and television distribution. Over the past five years, internet penetration, through broadband and related access spends, has grown more than 22.8 per cent, after the world discovered the power of the medium in 2000. Globally, the video games market grew at 12.4 per cent in 2002 and, last year, at 11.1 per cent, and will show 16.5 per cent growth from now until 2009. As for television networks, except in Canada (which has registered positive growth throughout), all regional markets, after a three-year convalescence, recorded very promising growth figures in 2004 and have set a positive trend — a CAGR of 6.0 per cent — that will last at least until the end of this decade. For the period 2005–9, the 7.4 per cent growth of the global television distribution market will be marginally lower than this year’s 7.7 per cent.

FUNDAMENTAL CHANGES

In short, filmed entertainment is experiencing change at three fundamental levels: technology, business conditions and consumer behavior. While technological advancements manifest themselves in the phenomena of digital transformation and convergence, business conditions are being forced to change because of collapsing release windows, new paradigms in retailing practices and globalization. And, as the ubiquity of immersive experience and the use of customer–consumer analytics to map relationships become ubiquitous, consumer behavior demands a close watch.

INDUSTRY TRENDS

We foresee some critical industry trends:

- Collapsing release windows will continue, leading to synchronized releases to cinema and home entertainment networks in different parts of the world. Worldwide day-and-date releases will similarly grow.
- Enhanced movie experiences in the form of digital cinema will add a new dimension to theatrical projection.
- New avenues and modes of distribution will be devised that will offer the consumer multiple options for experience of entertainment.
- Advertising and marketing campaigns will shift from a mass media approach to highly personalized.
- Advanced digital home technology and a digital media explosion will make entertainment content prone to piracy.
- Lastly, a number of independent production houses will emerge.
- The retail segment will derive maximum revenue share. Margins, however, will keep declining.
- Filmed entertainment companies will find near-real time coordination in marketing activities and swift distribution of marketing material around the world a must-have.
- Consumer relationship functions will need to practice sharp-shooting. Measuring and forecasting customer preferences through deep-mined decision support systems will require constant, dedicated effort.
- Business support systems with improved workflow, content management, coordination, and openness for emerging and future digital media technologies will be a key IT driver for the industry.

BUSINESS CHALLENGES

Film and television companies will face business challenges in six major areas: operational efficiency, content protection, retailing, coordinating marketing and distribution, consumer attention and business support.

- Improving operational efficiency and reducing cost from production to distribution will be a prime factor on organizations' maps. Today, many of these organizations may be near the bottom of the corporate governance ladder⁹ and, without financial discipline, a high-tech industry like M&E could find financiers shying away from investing in them, as they did with telecoms.¹⁰
- Effective anti-piracy and content protection measures will impact revenue and profitability significantly, especially in international markets.

ANTICIPATING THE CHANGE

These developments will decide what M&E players should do about their marketing and distribution functions, content delivery, release windows, digital media asset rights management, business models, operational efficiencies, financing and branding. The way for a film production house to start this journey — of what Venecia Liu, Gartner principal analyst, Media & Communications, calls “understanding current and future needs leading to an extensible open-standards approach for enabling new applications” — is by ensuring that IT seamlessly integrates its content management systems with the management of workflows, storage, management information, customer relationships, rights management and supply chains — in sum, to set up what Gartner has called an “ecosystem” for digital media assets).¹¹ (To express ideas as simply as possible, for the rest of this

paper we will call these “digital assets” or “digital media assets.”)

TAKING CUES FROM THE EXTERNAL ENVIRONMENT

For business users to decide on an IT ecosystem for the organization’s digital media assets, therefore, a company’s management needs to decide on its target markets, cultural contexts, country regulations, organizational alliances, distribution channels and business models. These help define the critical stages of the lifecycle through which the media assets of the enterprise typically pass. Technology proves its efficacy as an enabler, once the company’s business strategy is known. An organization can then go about determining the IT strategy best suited to its needs.

MOVING FROM SILOED TO REAL-TIME SYSTEMS

Many filmed entertainment companies have at least two things in common with knowledge organizations. Their bread and butter come from “soft” assets. Yet their vital information is scattered¹² and not controlled, more often than not, in desktop PC folders, emails, spreadsheets and text documents; filing cabinets filled with paper printouts; standalone high-end workstations, etc. Why? Simply because their IT systems don’t work together in real time: verticals (motion pictures, television distribution, home video, etc) operate in silos. Pan-enterprise integration, however, not only nudges up the top line (revenues) but reduces the bottom line (costs) as well. It enables collaboration through automated

processes that let management, employees, suppliers, partners and customers interact seamlessly — a business enabler that research shows is increasingly critical.¹³

THE “PACKAGE” APPROACH

Current thinking in IT systems for digital asset management (DAM) follows package implementation. However, this approach, although simpler to execute at face value, allows organizations to automate only certain functions, eg content creation, storage, and cataloguing. Some questions are never answered, such as: “How do I repurpose the same footage for theatres and mobile handsets in one go?”, “Why can’t editing staff bookmark stills from the trailer for the ad campaign while they’re at it in the studio?” or “When we know how big the televisions are, how come our cable guys complain that the subtitles go off the screen?”

THE “INTEGRATION” APPROACH

Other questions have traditionally not been asked. “Can I forecast cash flows for next year, based on the last three years’ data on payments and receivables?” (Yes, you can.) “I have a feeling this director and this studio are overcharging me.” (Sure. Your workflow should log time-spends on footage, and your database queries should show you computed dues.) Spreadsheet-based tallies take intensive effort to be made comprehensive. Database applications that come bundled with small-office software suites and are made for individual users on a company intranet do not cater to the multiple

needs of a medium-sized production house, far less the gargantuan ones of a conglomerate. Clearly, the package approach hinders decisions on larger issues, which can sink or save millions. It assumes that departments in the same company don't need to communicate collaboratively but only one-way, as the content moves from shoot to studio to home video to the networks.

CREATING FRAMEWORKS

DAM ecosystems are derived from the technology frameworks undergirding the strategies and operations of the organization that is treated as a single enterprise. The frameworks constitute the architecture, design, programming, implementation and support of the IT solution built and, in instances where legacy systems must be factored in, reengineering and migration components also.

ENTERPRISE DAM

The real value and return on investment from enterprise DAM can be estimated when assets are tracked at every stage of the DAM eco lifecycle. What's more, the valuation is not limited to content alone; it can be extended to include linkages and derivations between rules, rights, usage and financial value at each point. Companies that have invested in business process management (BPM) software reasonably expect to achieve greater efficiencies, higher productivity, improved service, reduced costs, increased agility and adaptability.¹⁴ To these benefits, M&E companies looking to use BPM software should add the ability to keep pace with new regulatory requirements, hitherto a deterrent for such investments.

DAM IN FILMED ENTERTAINMENT TODAY: THE NEW PARADIGM

The "anytime — anywhere — any mode" paradigm in filmed entertainment has resulted in significant changes in the film and television industry (Figure 1), which begs exploring multiple business avenues for content. Hollywood is rapidly going global. Sizeable revenue shares in cinema releases now come from the international market. Home entertainment is at the top of the charts. With fatter broadband pipes and higher-speed mobile networks, new distribution mechanisms are falling in place. Digital media are fast carving a mainstream position in Hollywood. An examination of the restructuring in the filmed entertainment industry obviates the need for enterprise-wide DAM solutions by which media content, whether video, audio, still image or text-based, may be securely ingested, processed, cataloged, archived, managed, preserved, distributed and integrated with different enterprise-wide systems so that IT yields the maximum pay-offs.

YESTERDAY'S POINT SOLUTIONS

DAM used to constitute point solution-based implementation, ie independently done by different departments within the same enterprise. Most digital asset initiatives were the lookout of the IT function of the department. The starting point would willy-nilly be small, tentative package implementations. The result was that multiple DAM systems coexisted, sometimes with overlapping features.

Figure 1: The “anytime — anywhere — any mode” schema in filmed entertainment

TODAY’S LACK OF INTEGRATION

Most current DAM products are more self-contained and have most enterprise content management- and rich media-related features. Automation in the M&E industry, however, is a very recent initiative. Therefore, no functional product implementation demonstrates true integration with other enterprise-wide systems such as rights management, marketing and advertising campaign management, customer relationship management, royalty accounting, etc — the DAM ecosystem.

ISSUES THE ECOSYSTEM OPTION ADDRESSES

A digital media asset ecosystem approach deals with five key areas:

- 1 Multiple DAM packages, instances and technologies, which show up in broken workflows and semi-automated processes. How does one improve operational efficiency and reduce cost?
- 2 Lack of digital rights management (DRM) system interoperability in the face of multiple DRM systems and players in the market. How can new technologies be leveraged quickly and efficiently?
- 3 Industry consolidation through a corporate merger or acquisition. Every M&A initiative means adopting new sets of IT and business processes and systems. How can we quickly bring other IT systems and business processes into the mainstream of the parent company?

- 4 New business models to cope with compressed release schedules and emerging distribution channels such as video-on-demand, digital cinema, and broadband access and mobile streaming which, in turn, lead to new players and more business models to strategize for. How securely and quickly may these new opportunities and models be incorporated into the organization's practice?
- 5 The pressure to stay competitive, innovative and cost-effective. How do you effectively manage, re-purpose and value-integrate among different enterprise applications like market analysis and advertising, rights management, creative services and production, and sales and distribution?

AN ENTERPRISE DAM ROADMAP FOR FILMED ENTERTAINMENT

Rather than looking at a single product or package as a panacea, companies need to look at solutions that encompass the enterprise. M&E organizations would logically examine classes of subsystems: software components including shrink-wrapped and custom-built applications, operating systems, interfaces, middleware and databases; hardware components such as workstations, servers and peripherals; and networking components such as cables, routers, etc.

THE ECOSYSTEM ARCHITECTURE

We propose a four-layer architecture (Figure 2) that is tuned so that the DAM ecosystem drives operational efficiency,

Figure 2: The DAM ecosystem architecture

collaboration, business intelligence, a wide range of value-added delivery services, rights access and protection of digital media content:

- 1 *The DAM repository and storage layer.* This layer comprises structured and unstructured repositories: the core where media assets and data reside. The repository could be a sophisticated centralized or a distributed system. The key function of this layer is to support content integration (enable disparate content sources to look and act as a single repository) and long-term archival strategies.
- 2 *The core DAM service layer.* This is key to the overall solution map. It determines how the organization should try to expose core DAM services. This layer is created by combining implementations of shrink-wrapped products, custom-built packages or solutions developed on external, third-party services, eg transcoding, mobile distribution, digital certificates, etc.
- 3 *The application services/enterprise business systems layer.* This layer is the backbone of the studio's business applications. It encompasses real business systems and uses core digital asset services, and services from other enterprise business systems.
- 4 *Lines of business.* Hollywood studio businesses are based on revenue-supporting models — motion pictures, domestic and international theatrical releases, home entertainment, eg DVD, VHS or Blu-Ray, domestic or international television including ad sales, syndication, cable, pay and subscription television, and new

digital media and emerging business, eg online content, gaming, consumer product licensing, etc.

BENEFITS OF THE DAM ECOSYSTEM

- Improved operational efficiency and collaboration. Reduced internal costs, effective IT infrastructure usage.
- Flexibility — options: buy, rent, develop in a phased manner, develop based on business priorities, etc (an advantage of service-based systems).
- Integrate with other enterprise systems. Constantly increase the value and versatility of digital content.
- Bring agility to the enterprise by adding new business services (eg mobile distribution) and technologies (eg DRM interoperability).

HOW DO YOU DECIDE?

Choosing the right ecosystem for your digital media assets depends on your business goals and strategy, and determining the “as is” status of your organization vis-à-vis its “to be” state. This requires analyzing your business and operational needs, which are then interpreted in terms of functional and technical specs, including the evaluation of all computer-related equipment and the assessment of vendors. Because a detailed analysis would be beyond the scope of this paper, we present key objective criteria only, ie excluding subjective criteria such as look and feel.

FUNCTIONAL AND TECHNICAL ISSUES

- Management and administration of the media asset lifecycle, eg coverage, degree of granularity, extensibility, ease of importing content from (or exporting

to) related enterprise or other applications and subsystems.

- Architecture (languages and platforms used, subsystems supported, servers, middleware and interfaces required, etc).
- Scalability, in terms of both processing power and extension of the network.
- Performance, eg built-in optimization, availability of toolsets to enhance performance without additional hardware procurement.
- Security (existing frameworks that can be applied with nominal customization, encryption algorithms, etc).
- Implementation, including testing, maintenance, enhancements, training and support.

VENDOR EVALUATION

- Financial stability.
- Customer references.
- Existence of global operations (if Yes, does the vendor operate in your target markets?)
- Degree of technological expertise on different platforms.
- Delivery model and cost, ie whether onsite, offsite, nearshore, offshore or a combination of these.
- Acceptance of guarantee, warranty and penalty clauses in contracts envisioned.
- Client servicing and relationship management ability.
- Use of tools in automating software engineering aspects of the work.

CONCLUSION

Halfway through the decade, the M&E industry around the world, and Hollywood in particular, has recognized the three ways in which the landscape is changing — technology, business and consumer preferences. Rather than fragmenting the filmed entertainment industry, this has caused consolidation.

Research¹⁵ indicates that digital technology will change the production process but not destabilize today's power structures. In distribution, it will also continue to outweigh costs.

Attempts at automation have addressed specific functions in the M&E industry till date. As filmed entertainment companies beef up their strategies for the next round, existing computerization can be leveraged by consultants seasoned in large-scale, multi-location IT system integration. Components that vendors have created need mere leveraging in the larger framework of a digital ecosystem for film and television media assets.

Hollywood has never lacked innovation. As PwC puts it, one of the marks of the M&E industry is that it reinvents itself and capitalizes on new forms of consumer spending. In Viacom Chairman and CEO Sumner Redstone's words, "technologies are always changing. And we will adjust, as we have in the past, to every new technology. The fundamentals will remain the same, though. What drives our industry is content and creativity."¹⁶ It's time once again to look at how film and television studios can harness technology to glean a rich harvest from the promise of the future.

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- 1 Information attributed to PwC in this paper is based on: PricewaterhouseCoopers LLP (2005). "Global Entertainment and Media Outlook: 2005–2009".
- 2 See, for instance, Saul Berman *et al.* (2004) "Media and Entertainment 2010" IBM Institute for Business Value Report.

- 3 Technological convergence among the information technology, telecoms and M&E industries has become a phenomenon to reckon with. Potent digital film and video content, storage, workflow, distribution, delivery and rights management technologies are mushrooming. A few of these are MPEG-21-enriched MPEG-4 compression, high-density DVDs, storage area networks, broadband access, streaming, P2P, 3G, WiFi, WiMAX, Voice Over Internet Protocol, IPTV, triple-play (TV, broadband and telephony services), and quadruple-play (triple-play with cellular services). This, according to Ernst & Young (2005) "Three Industries — One Home?," is bringing new players into M&E, spurring established studios to seek additional routes for growth and making collaborative work styles and business models imperative. Three years ago, Saul Berman forecast that megabrands would leverage their reputation in other markets. (See IBM Institute for Business Value, "Ten Strategies for Survival in the Attention Economy.") This is coming true. According to *The Economist* (2005) "The War of the Wires"; 28th July, companies like SBC, British Telecom, Verizon, India's VSNL and others may strike deals with Hollywood in a bid to get out of a tight corner created by the likes of Comcast, Skype, Tele globe and mobile phone operators.
- 4 As Walt Disney, Time Warner, Viacom, News Corp, New World Entertainment, DreamWorks SKG, MCA and Universal — and, most recently, Sony-acquired MGM — show, M&As have characterized the M&E industry in the USA since the late 1980s. Together, these media conglomerates represent Hollywood's film business and extraordinary political, economic, social and cultural clout. The technological convergence in the telecoms, communications and entertainment industries could stimulate further M&As. Mergers could take the vertical integration and corporate diversification routes. Merging companies will need to capitalize on certain trade-offs: unifying the production, distribution and purposing of their media assets but leaving room for experimentation, variation and diversity; improving profit margins but satisfying the needs and aspirations of groups and individuals through their media products; and fulfilling their own international interests but keeping local cultural sensitivities in mind. (See Douglas Gomery on M&As, in the Museum of Broadcast Communications website, and Parker, N. (2003) "The 30-Hour Day: On Demand for Media and Entertainment" IBM Institute for Business Value Report.)
- 5 New spending streams are getting stronger. Subscription TV, home video, the internet and DVD sell-through brought mass entertainment within everyone's reach, thanks to Hollywood, always the world leader. And while these streams will continue to be considerable, others that have made inroads include online and wireless video games, online subscription-based film rentals and downloads, licensed digital music and video distribution to mobile and fixed-phone users and video-on-demand. PwC predicts that these new spending streams will make up a significant part of the 12 per cent increase in global M&E spending in the next five years.
- 6 Going by recent box office launches by Paramount, Fox and Warner Bros of a series of films like "War of the Worlds," "Star Wars Episode III: Revenge of the Sith," "Mr & Mrs Smith," and "Batman Begins," international day-and-date releases, wide releases and holiday weekend releases are becoming a trend with Hollywood majors. (The Indian film industry has staged nationwide releases for

- some years now.) The advantages, says PwC, are several. Chances that pirated copies will cannibalize box office revenues are limited. International box office spending could be stimulated. Receipts are generated sooner. Theatrical runs are shorter, and films enter the home video rental market sooner. There are fewer bad word-of-mouth fallouts, and poor results in some markets have less adverse spillover in other markets. Hollywood's international day-and-date releases have worked well in Europe, the Middle East and Africa. In Mexico, a wide-release strategy proved successful in 2004.
- 7 PwC finds consumer spending in the USA slowing, while in Eastern Europe, Latin America and developing countries in Asia, it will more than double in the next five years. Technology is pushing prices down. Developing economies are thus becoming promising destinations. Investment in cinemas is increasing in EMEA (Italy, Russia, Israel, and Denmark), Asia/Pacific (India, Japan, Malaysia, China, South Korea, and Singapore) and Latin America (Mexico, Brazil, and Argentina). Asia/Pacific is expected to be the fastest growing M&E consumer base for the rest of the decade — and the proactive economies mentioned are in fact investing in digital or high-end screen infrastructure. Ernst & Young (E&Y) notes that the middle classes in India and China, for instance, who are consumer markets, are rapidly swelling to 200 million and 60 million, respectively. (See Ernst & Young (2005) "Promoting Entrepreneurship and Investment in the Emerging Markets.")
 - 8 Marketing established brands in these growing economies, say PwC and E&Y, is pragmatic. Native companies in China, Russia, India, Brazil and other countries are quickly evolving into global competitors who cannot be ignored. Although piracy and intellectual property theft in those geographies will continue to affect business adversely, their governments are taking legal and technological measures to stem it. (In fact, large multinationals are setting up R&D centers in those countries, eg India and China.) China, South Korea and Mexico encourage the Hollywood brand. Local films are making a sizeable contribution to EMEA economies, too — in France, Germany, the UK, Russia, Poland, Turkey, Italy and Ireland. In India, Japan, Malaysia, China and South Korea, local films are already playing a key role. In Singapore and Taiwan, they are being encouraged. Latin America, in general, and Mexico, in particular, encourages local films. This localization is backed by financial incentives from the state in many of these countries.
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