

On-Demand with User Control How to Make Content Obey

By Leo B. Willner, Ph.D. with R. Gregory Kalsow
Partners at CMS Derfler Associates

Let's give consumers what they want and what they want is more control over their on-demand entertainment. From the perspective of the electronic media and consumer electronics in particular including the personal computer, advanced set-top box and television, the more the electronic media industry empowers users and consumers to manage advanced media in all varieties of new and interactive ways, the more growth and profit there will be. To do so will require breaking some of the hidden shackles that now bind and limit what the consumer is able to do. And that is the opportunity we address here. The beneficiaries will be Sony, Intel, Motorola and all the rest including Microsoft, Charter Communications and many others. If only they will turn their minds in the new direction we propose. It all starts with on-demand and quickly morphs into issues of personalization, ad hoc usage and interactivity. So stay tuned.

Can we agree that we all desire a bit

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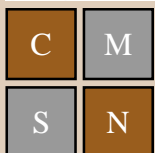
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"It all starts with on-demand and quickly morphs into issues of personalization, ad hoc usage and interactivity."

more control over our electronically enmeshed lives and the devices and systems in them? Certainly we want and expect dominion over our digital gadgets including our PCs, cell phones, TVs, DVD players, home entertainment centers and cable or satellite systems. Especially when it comes to keeping our personal files and other private e-assets out of the hands of strangers and commercial interests as we use them for our private purposes. Also when we buy or borrow content from others to access new information or as an entertainment we require effective control over its parts in order to extract

CMS NewsLine

"Validating the Middle Ground"



CMS NewsLine
CMS Derfler Associates
Lake Forest, CA 92630
Tel: +1.949.584.0989
www.cmsderfler.com
newsline@cmsderfler.com

maximum use and value from it. What we need is the equivalent of a commercial grade capability over its use in order to manipulate what is electronically in our midst but not necessarily in our grasp — in ways that protect privacy while maximizing its utility and convenience to us. Indeed what good is a piece of electronic content if we cannot do with it what we want? Yet the way the system works today what we can and cannot do is actually quite limited, say as compared to driving a car, reading a magazine or playing with a Frisbee.

The old science fiction TV series *The Outer Limits* began the show intro with the phrase “We (meaning they) control the vertical and the horizontal...” — that is, they kept all control away from us as we were left to watch passively. For an even more exaggerated metaphor of zero control recall the movie *The Matrix* wherein human slaves, while living a media-rich fantasy life, are actually harnessed to an electric power grid as living batteries to serve an energy starved world of master beings. Indeed it is in the very nature of early stage technology, with all its arcane systems, jargon and complexities, that the user or consumer is forced to simply tag along, with little or no control over what is going on. Think for example of the first man-in-space orbiting the planet. Here an astronaut harnessed into a capsule is hurled into space with little or no control — just going for a ride. A bit reminiscent of

the early days of TV, or to a lesser degree of the PC and the media player — wherein the consumer was basically asked to go along for the ride. Years later such empowering tools as the remote control, the VCR, the Windows interface and other means came along to give the user a far better viewing experience, access and control.

Nowadays on-demand access to every kind of digital content is the exciting new capability that has the big buzz, wherein today’s media consumer is able to get what he or she wants when they want it in their PC, TV, DVR, DVD and VOD systems and other devices. Or so it may seem — while in actuality the degree and extent of such access and control is quite limited and the empowerment something of an illusion! This raises the question: How far greater and more granular does the access and control have to be so that viewers can indeed

do with digital content all they may wish? Is on-demand access to an entire file enough, or is there a need for a much deeper, richer experience in which interactivity, choice, varieties of usage, navigation, editing and the like are fully enabled to meet what users really want? Only time will tell, but all indications are that the public wants a lot more, as long as it can be served up with ease and convenience at a fair price.

Greater control and more granular access is a hard handhold to grasp in electronic media as the technologies

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that are required are closely held in the hands of technology and media companies and service providers who are not inclined to share. The fact of the matter is that with on-demand we as users need greater access to the control substrate that underpins the major electronic systems. That is access to the software command structure that actually powers up the modern lifestyle, by taking digital content and making it available over the public and private media networks and devices to consumers and other users. So what is one to do? With Microsoft, HP, Verizon and Comcast in charge of these systems and their controls, any effort on our part to gain even a modicum of greater access over the push buttons that control the media is at best like chasing the wind. Consequently it isn't easy for any end user to optimize his or her experience with digital content whether it is owned, rented, leased or purchased. In counterpoint, the commercial and government institutions, with their dominion over the media 'pipe' and its technologies are enriched and empowered by the fact that they assert great control over the electronic media while we do not. It is all an upside-down-cake with very little frosting left over for the individual consumer or small firm. One part of the answer is clear, in an on-demand world the individual user must be able within limits to access and control some of the so called 'metadata' on the basis of which audio, video, text and telephony

are indexed, parsed, marked, stored, searched, modified, transmitted and presented around the home and the office. Metadata is truly a big part of the answer and the part of the puzzle we shall explore in this article.

No need to be put off by metadata jargon as you read this piece, as there will be little of it included here. Indeed we will avoid technical convolutions almost entirely — like considering the details of metadata creation or how to manipulate digital files. Much too far afield for our purpose and a bit boring too — so we will skip it. Instead we shall examine the role metadata plays and how it can be used to greatly enhance the media experience in the emerging on-demand media world — especially for the consumer.

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What we need to ponder is how to employ metadata to place greater control into our individual hands so that we may have a richer, better, more efficient and more fun experience with all variety of

content housed on various media platforms. To do so we will need more metadata, or data about data, to help identify, locate, change, use and navigate the exciting electronic sky. For metadata the Library of Congress *Core Metadata Elements* lists the three main types as descriptive, administrative and structural forms. In simple term these represent: 1) what the content is, 2) who owns it, sells and guards it, and 3) what are its component parts, as in scenes or

chapters. In a primitive way a 3M 'Post-It Note' is metadata too. So is a 'bookmark' on a file or a sign in a bookstore. So are the electronic markers placed within a digital file that allow the system to detect scene changes or the right place to insert ads into a TV show or a video. The trouble is that most of the metadata in use today is there for the sole advantage of the commercial interests and is out of reach to the legions of users and consumers. That said it is important to note that some of the newer commercial user interfaces or UIs, especially those conforming to the newest standards such as MPEG-7 and MPEG-21, do utilize metadata to drive viewer or user options. Nonetheless, you the user remain locked into the UI with no access of your own to that same metadata. That constraint should be removed for the benefit of all.

A good place to begin is to look at what we do with written text and other non-electronic content to make it easy and convenient to work with. All of the markings, annotations, labels, bookmarks, table of contents, indexes, glossaries and the like we use with books and other documents are indeed data about data, or metadata. In the digital world content creators and media houses commonly bookmark and index files for later search, retrieval, editing and use, and all of that is just more metadata. Even highlighting or underlining a section of text can be

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considered as metadata. So in fact is your name. In that sense we live in a world of 'objects' or content that we identify, characterize, label and index so that we may find and use them effectively and easily. In electronic media the same conditions and requirements apply, although the content is not as palpable, materialized or at hand. Yet, as with an attic full of old books, the very nearness of what we want does not mean that we can readily put our hands on it. What we require for efficiency in locating and accessing what we seek is metadata that points the way and provides the keys to proper use. As stated above

we also have a business constraint in the fact that some commercial firms like Comcast or Microsoft would prefer that we keep our hands off 'their' metadata and also not have the means to create and deploy our own meta tags. As to the metadata itself, like a Post-It Note it just rides along; in this case as an HTML, XML, MPEG-7 or other gobbledygook file that hangs with the content. What we could really use in our PCs, set-top boxes and media centers is a way to create and employ metadata of our own choosing. At times we also need access to the metadata already in the stream, i.e. the control and descriptive elements of an upstream party such as a cable MSO head-end or TV Network.

The end user is generally looking for an easy to use system, including some degree of interactivity with the content

and the ability to use media in a variety of new ways — of his or her own choosing. The most common example in PC usage is in the ability to edit, enhance and crop digital photos. For other electronic media, suppose that a viewer rented a set of Robin Williams comedy videos for a social occasion and wished to prepare a twenty-minute show featuring some of Robin's best gags for a one-time viewing. Is there an easy way to manage and repurpose such archived content in this way without making a federal case out of it? Not really. The metadata approach, were it available to users, would employ a little metadata along with a search capability and the means to tag and assemble the material of interest so that a little editing can get it ready for the evening's entertainment. Of course this process has to leave the original videos intact so that they may be returned undamaged to their owner. No copyright infringement here as we have a case of 'fair use' as long as it is for a group's private non-commercial viewing enjoyment. In actuality without good metadata this straightforward little task requires advanced video editing equipment, lots of software and a good deal of time and trouble — and is thus an activity most of us would prefer to avoid. Yet this is a simple case of managing the content in a few archived video files in order to prepare a simple compilation or retrospective for a one-time viewing. No joy in Mudville here, just a lot of work — so we would

just forget it. On the other hand, if a simple metadata application were available, it could easily do the job without much fuss and we would prize the outcome.

Hopefully this little example helps to illustrate the need, the problem and the potential benefit of a consumer oriented metadata system. The fact of the matter is that people regularly want to use content of all sorts in a variety of ad hoc ways that cannot be pre-programmed. As much of this will be for one-time use, the idea of undertaking complex storyboarding then reassembling the material into a

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new piece of content is generally out of the question. Indeed we are often faced with what amounts to an improvisational need to prepare or repurpose content on-the-fly. Say to assemble a collage of photos for a tenth

wedding anniversary party out of a number of family videos. Via the metadata route we have little need to alter the original content, as all that is needed are the metadata tags that ride along with the content. Efficient video indexing is a good part of it, while reformatting and editing may also come into play, and voila what we needed is transformed into what we want. In this way we can personalize content for a great variety of interesting and valuable uses — that is repurpose it nearer to the heart's desire.

Mind you, much of the metadata that

is needed is likely already in place in train with the content, it having been inserted earlier on by (say) the creative or production department, the editing room, the distribution house, the network, a service provider, an advertiser and the like. In that case, as long as the metadata conforms to some known standard and access to a system for searching out its tags and information is at hand, it is possible to program the content in any desired nonlinear form. In the case that some elements of metadata are not in place, a search tool could be used to locate the missing segments of content. When any such a point in the stream is found, the user might enter new metadata of his or her own choosing; given that a suitable metadata technology is also at hand. Nonetheless, all of this only makes good sense when in Toto it is easy and convenient to do — which unfortunately is hardly ever the case today. So what we need is an elegant easy-to-use system for carrying out the meta tagging personalization of content in such a way. Also required is some agreement from any copyright and other rights holders to grant access to their metadata under reasonable and practical conditions. Today this is unfortunately only a Wizard of Oz dream without a return ticket to Kansas. On the other hand were the industry to show real interest, such a system could readily be developed and would surely become a big hit with all concerned!

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Before we go any further it would be helpful to focus on some of the purposeful ways one may wish to personalize public or private electronic media content. Beyond the metadata already attached to a video file by its creators, a partial list of items consumers might wish to include as user metadata might be annotation:

- To set navigation paths within a piece of electronic content
 - For indexing an electronic file with ad hoc material
 - To provide a personalized description of the content
 - To identify the context of the content at a point in time or space
- To setup special hooks for personalization and interactivity
- To provide tags and means for external search engines
- To link the material or integrate it with other pieces of content
- As identifiers for subsequent editing and parsing
- To annotate the content for an AV presentation
- For taxonomy and knowledge management
- For a statistical analysis of form and content
- For pedagogical purposes
- For an ad hoc creative use of the material
- To set markers for testing procedures
- For TV ratings and counting methodology

- To interface with other media or formats
- To categorize genre, type, class and the like
- To subdivide the material
- For digital rights management.

While it is certain that the folks on the MPEG-7 and MPEG-21 Standards Committees and other such bodies, charged with the task of devising standards for metadata for video and its indexing, are way ahead of the rest of us, they are also primarily concerned with enabling and protecting the commercial business model for video content.

Thus, the movie industry, Library of Congress, TV networks, cable and satellite systems, the RBOCs, the CE companies, the application providers and purveyors of services on the Internet all have a somewhat different agenda than the public when it comes to the need for user access to metadata. Yet in an electronics denominated media world, where valuable knowledge and information is encrypted in zeros and ones on hidden diminutive magnetic fields, those who have little real access soon become powerless. Think if you will of the factors that led to the Middle Ages in Europe, when only the Aristocracy and The Church could read or write or were allowed access to documents and books or even much knowledge of antiquity beyond the roots of Christianity. These are a few of the reasons why those centuries came to be known as the dark ages.

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These days we seem to once again have just such an out-of-kilter situation, as important standards and modes of operation and regulation of technology are oftentimes debated far away from the public. Say at a congress of politicians, industrialists and academics in (dollar denominated) private chambers — no government in the sunshine here. Surprise, surprise as there is seldom a sighting of a private citizen, or the sounding of private views at these conclaves. To take a topical news item of the day, that may be one reason why we have in recent years gone from twenty US flu vaccine providers down to only two. Now we are told that one of these firms is incapable of maintaining sufficiently sanitary conditions to produce safe vaccine. Or, similarly, one reason why so little privately funded work is underway to develop new antibiotics or vaccines at a time when we are at the last line of defense against deadly microbes and viruses. It just does not follow that private and commercial interests always run in parallel as these two examples illustrate. In the case of information technology, society is very rapidly moving away from text to video and audio. Thus the public needs to have a say and a play in the creation and the use of metadata on the Internet in its PCs, TV Set-top Boxes, PDAs, Cell Phones, DVD Players, Game Boxes and Media Centers. Otherwise it is disenfranchised

away from the means of managing its information, art and entertainment, and this will surely have serious unintended consequences.

Mind you, with the possible exception of a 'Bill Gates or Brian Roberts' oligarch or two, there is no reason whatsoever to suspect a pattern of purposeful exclusion of the public from the development and use of metadata. Not at all, yet circumstances have led to a situation wherein the great advances made over the past ten years in metadata for video and audio have mostly gone unseen and unnoticed by the body public. That is, progress has moved rapidly forward while the vast majority of the public remained unaware of these developments or of its importance. Since the metadata is the means of access to the detailed information it contains, the absence of such access and control prevents users from making interactive and other complex use of video files. Access to vital information is indeed power, and in a Jeffersonian sense such access and control must never be recklessly withheld from the citizens if we are to sustain and grow democracy and freedom. Metadata and its uses, as benign as it may seem at first glance, is such an issue. Access is power and for digital media metadata is its means.

With that in mind we should consider the role of metadata in this light and modify our approaches by adopting a more user-centric lens. The users and

creators of the video files at all levels in the chain of creation, production, distribution and final use should all have access to some if not all the metadata in train. Further a metadata management system is needed by which metadata can be entered, modified and employed in conjunction with the content portion of the video file. Of course every step must also be taken to protect copyright, patent rights and other private interests in the process. Yet this can easily be done by keeping some parts of the metadata in encrypted form so that it is unseen, or is read only, or copy only once or any of the rest of the jargon by which such intellectual property is managed and protected these days. None of that should limit the ability of the public to take a video file for private use and employ it in the same way it would a piece of film, a written document, an audio tape, a magazine, periodical or book or even a scrap of parchment. As to the possibilities of stealing and misusing the content, that is a subject for law enforcement and the courts, not a proper topic when one is discussing legal access by the public.

Metadata is how you get down to the segments, sequences, scenes and individual shots and frames of a video. When we are able to do so with an effective system, we will be in a position to maximize its utility for our own enjoyment in a way that is on-demand and highly interactive. As to the commercial interests, the history

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of technology is ample proof that greater consumer involvement with any media leads to its growth and to the enrichment of the firms that empower it. In the case of video, as already demonstrated by the DVD, the greater the interactivity the greater the appeal, the greater the appeal the greater the commercial success.

As to the practical business aspects of how to make this consumer vision of a metadata-enabled society a reality, that is really for the business folks and their experts to work out. On an economic level it seems clear that Oracle, SAP, IBM, Microsoft and the other software application houses, acting in competition with one another, can be expected to devise the necessary software and do it with great skill and imagination — that is once the financial and marketing benefit this will bring in train is in sight. Software to empower an individual user to create, modify or simply employ existing metadata for his or her private purpose to control all aspects of navigating, accessing and interacting with rich digital media. Such a commercial venture is sure to lead to a great deal of further growth in electronic media and greatly enrich those commercial enterprises that lead the way to this new Eldorado. Here we would also include the prospect for business growth on the part of CE houses such as Sony, Panasonic and Samsung along with set-top box makers such as Pace, Scientific-Atlanta and Motorola.

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In conclusion, it is very much in the interest of many folks in the food chain to participate in bringing out new products and services that enable a new age of metadata controlled digital media wherein the consumer plays an active role. Metadata that is put in place to empower greater user interactivity and customization for the private use and enjoyment of the vast libraries of personal, enterprise and public video content. That dear friend is the right way to have On-Demand with User Control so that everyone becomes a winner — especially the media houses. Please vote yes on this referendum at a media house near you — and tell your friends that you got this insight from CMS Derfler.

Good luck!

(Leo Willner and Greg Kalsow contributed to this issue. In order to discuss any of these points with the authors, please e-mail them at: leo@cmsderfler.com and greg@cmsderfler.com)

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—Georgia Pech, Editor]

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KALSOW'S BACK-CHANNEL: "Validating the Middle Ground"

■ Verizon and the triple play is no longer just a forecast or an illusion, it is indeed the harbinger of a dark shadow being cast over the future of cable and its domination of services into the home. Now that Verizon has signed-on Motorola and other technology houses to build the infrastructure, the battle royale is underway. All of that bragging on the part of cable at the NCTA and CTAM conferences about their bigger and better pipe has convinced the RBOCs (Baby Bells) that the triple play is the right play for them as well. So they are now investing for real to duplicate the cable infrastructure and compete head on against Cox, Adelphia, Time-Warner, Comcast and the rest of cable. Of course these telephonic folks know very little about entertainment so they are as likely to stumble all over themselves in the process, as the cable MSOs have been doing for the past few years in the process of bringing out voice over the Internet, better known as VoIP. Thus we are in for a protracted period of destructive marketing with cable and its puffery under fire all at once from satellite providers, telephone companies and media content houses. The latter seeking to deliver its valuable product over the Internet so as to bypass cable and other costly service providers. My goodness, it seems as though the cable geniuses have figured out a way to turn their product and marketing advantage into one big headache. Congratulations and kudos to Brian Roberts and his little brethren – nice going guys – and please do not claim to your mystified shareholders that this result was inevitable; as it is indeed a somewhat self-inflicted wound. Can you hear us Mr. Armstrong?

■ A reading of the recent for-the-cognoscente IT publications such as *Info World* and the like is a quick teach on the fact that all is not yet right in the information security world – no matter what you may hear from vendors and IT service providers. To start with even Microsoft acknowledges that incorporating its *Service Pack 2* into a business running various computer systems and applications under Windows XP can be a big problem. Indeed they admit that it may take up to six months to get over the bumps and grinds along the way. Such humility from Microsoft is hard to take. Next thing you know IBM will cop a plea for a past crime or two and the Pentagon will admit to a degree of uncertainty. Yet this is the reality on the IT security fence today.

For example, just a few weeks ago the main computer system at the University of California Berkeley was robbed of one and one-half million social security numbers. Alarm bells should be ringing everywhere. For a bit more insight and a broader view of data and information security issues taken from a management perspective, perhaps you should read the CMS NewsLine of June, 2004 issue wherein you will find: *With Insecurity for All* – available on our Back-Issues page at: www.ad-assoc.com/news_services.htm

■ With Google and Yahoo all the rage and Microsoft and IBM moving into the search business to take it over, one might be inclined to come to the conclusion that search is the primary way the public will be getting its information and entertainment resources in the future. But hold on a moment. While it is certainly true that the automated ‘intelligent agent’, the artificial intelligence system and the more simplistic search engines will indeed play an important, even a critical role, in serving up the information needs of the public, this way forward is but one part of an overall solution. Long ago the wise heads at RCA, CBS, MGM and elsewhere conjured up the idea of programming and networks as a nicely packaged approach to doling out information and entertainment resources. After all, they made it so easy and convenient, just sit back in the car or in the easy chair and pick a channel. Nothing has changed as for many purposes this is still the way the public will sometimes prefer to be spoon-fed. Yes it may be a slower and more clumsy way to find the car to buy then say with Cars.com, but the prepackaged newspapers, magazines, radio and TV stations and cable networks do a great job of gently prodding the public toward what are oftentimes acceptable solutions. That is without undergoing the trials of search or the rigors of using an eBay. Indeed the old ways and the new ways will come to coexist as a packaged solution in a new version of an access to information and resources paradigm for the consumer.

[Your mileage may vary. –RGK]

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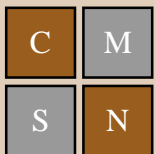
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Silicon Valley: +1.831.325.5008

Los Angeles: +1.949.584.0989



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CMS Derfler Associates
Lake Forest, CA 92630
Tel: +1.949.584.0989
www.cmsderfler.com
newsline@cmsderfler.com

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