



Interview with Dan Macaluso, Managing Partner at WAVE Corporation

Dan Macaluso

is a managing partner at WAVE Corporation and is responsible for all product architectures, project management, customer support and engineering service operations at WAVE. His areas of emphasis include software development, technology assessments, solution feasibility and system design. Dan has guided WAVE through the integration area of the 1990s and was instrumental in WAVE's transition back to a product development company in 2000 with the acquisition of MediaBank and subsequently B.media. Dan earned a degree in Computer Engineering Sciences from the University of Florida. Throughout his career, Dan has published numerous papers and spoken on various topics including application design, digital asset structures, workflow efficiencies and realistic ROI opportunities.

Keywords: WAVE, MediaBank, DAM, ECM, B.media, Macaluso

Abstract Today, ever increasing demands on basic functionality in Asset and Content Management systems have pushed vendors to deliver applications that are better than ever. Hot button issues concerning inter-operability, digital accessibility, searching, rights management and multi-channel delivery are some of the wide-ranging issues being solved now. WAVE Corporation will give their unique insight into how they are successfully tackling these issues and more.

Journal of Digital Asset Management (2008) 4, 52–59. doi:10.1057/dam.2008.6

MM: If we could start with your name, title and a little background on your company.

DM: This is Dan Macaluso. I am a managing partner at WAVE Corporation. We've been in business since 1987 and started out as an engineering company by designing products from initial concepts. In the 90s, we evolved into an engineering services and consulting company with an emphasis in the print and publishing industries. Since 2000, we made several acquisitions and have gone back to our engineering roots by developing two enterprise-level software packages and providing full engineering services including consulting, training and support.

Our two major products are MediaBank, an industry leading digital asset management (DAM) package, and B.media, an enterprise-level content management system (CMS).

We were one of the first integrators and consultants on the MediaBank application. WAVE was installing, consulting and training

MediaBank systems throughout the US and western Europe. In 2000, we had an opportunity to acquire MediaBank and its assets, and we did that. We've been developing it and growing our customer base ever since.

We had a similar opportunity with B.media. In 2003, we acquired B.media and its assets and have since fully developed and advanced B.media as well. We felt strongly that the acquisition of B.media was strategic and would complement our existing technology and pay great dividends to our product offerings in the future. We believe our customers are now seeing the returns on these efforts.

Most importantly, throughout the years of growth, WAVE has maintained its culture as a technical services provider that excels from the relentless commitment to and compassion for our customers' challenges.

MM: As I recall when I first started working with Archetype, back in what would now be called the formative days of DAM, the

Dan Macaluso
615 Crescent Executive
Court, Suite 100, Lake
Mary, FL 32746, USA
Tel: +01 407 585 0250
Fax: +01 407 585 0257
E-mail: danmacaluso@
wavecorp.com

MediaBank product was one of the industry leaders. Specifically, in the printing and prepress and OPI press operations and so on. It was really one of the first stable, effective DAMs that became part of the workflow, as opposed to simply just an after-the-fact bit-bucket or storage system for work-in-process and content.

How has DAM, as an enabling technology, evolved from the initial days of basic functionality, workflow, and workflow systems for the print-and-publishing to now virtually every industry?

DM: The expected base functionality and offerings of asset management packages has really increased tremendously from what MediaBank was back in the early '90s. We've seen the basic functionality that's desired to be pretty much seamless interoperability between different applications and silos, not only from a technical workflow capability but from a business point of view too. From targeted marketing campaigns, web accessibility and portals to users' searching expectations and increasing asset types to name just a few. Today, these evolved minimum requirements have forced DAM architecture to account for this at the application's core logic and structure. Without this core design accountability, the DAM applications are not able to truly deliver what has become a requirement now in our space.

MM: In the publishing industry, how has DAM evolved from this creative workgroup and/or Marcom function? How has it enabled or driven publishing firms to exploit new opportunities? Then, we'll get into other verticals later.

DM: Relatively new technologies and devices are continually generating new opportunities for the collection, modification, and retrieval of information, or metadata. One example is encryption methods via Digital Rights Management and Digital Object Identifiers, which are becoming increasingly popular within the industry. Additionally, many of our customers have implemented processes whereby data are automatically exchanged between an external device, like a digital camera, and an asset management system through tagging streams, including XMP, IPTC, EXIF and XML. All of this information is then associated with the appropriate asset, job and project, within the asset management system that reduces efforts and speeds time to market.

MM: How have you seen, for example, in those creative workflows — how have you seen things like Adobe Creative Suite and other sorts of things like that — accelerating the development of metadata? And perhaps even things like Adobe Bridge or Adobe Q, as part of an overall mix of technologies enabling the creation of well-profiled assets?

DM: Most of the file types that are commonly used in workflows have the ability to inherently retain metadata information, based on who created them, how, and when. As those assets/files move through either different applications or different stages in the workflow, they invariably get back to a central asset management package that will gather this metadata information. The data will then be put it into a management database system so that it can be centrally searched, managed and reported on.

This last point is very important, as we have heard discussions promoting the idea that metadata should be kept in files only. To be frank, this concept is shortsighted and fails quickly. The entire concept of managing information (files and metadata) in a central repository inherently maintains consistency, correctness, synchronization and the validity of information. To promote the idea that metadata within files distributed to random locations and modified by any number of random applications will duplicate what a central database repository has to offer is reckless.

Having said that, "some" managed metadata information may be appropriate to be "put back" into file assets as they are retrieved or leave the DAM control. This may include static metadata information that does not change, like the asset's originator and some DRM information.

MM: How have some of your more advanced users begun to harvest a lot of activity data and asset metadata, in terms of some advanced analytics or business process analysis?

DM: Yes. We see many of our customers trying to tackle the various issues of rights management and usage analytics. For example, finding out who is looking at their assets, the searches used, when the asset leaves their system and how it was used. Determining the correct and proper rights or permissions for the assets based on the intended purpose.

The use of digital object identifier (DOI) and other types of marking technologies that are transparent and relatively persistent (ie hard to spoof or tamper with) are becoming more desirable with some of our publishers. These technologies are being integrated within DAM packages, like MediaBank, to provide the identification of remotely located assets and to prevent the possible re-introduction into the repositories.

WAVE customer's, like the USGA, USTA and the PGA, are creating thousands of digital images at weekly sporting events. To save countless hours of manual data entry, it is very important to ingest the inherent image metadata to help manage the access, distribution and purchase rights of these photos in an accurate and reliable manner.

MM: Have you or any of your customers integrated their DAM with any kind of external or complementary rights management systems or online surveillance systems that spider the web and look for instances of use of their brand logos or product photos, etc?

DM: Yes. Our customers have many avenues at their disposal to extend MediaBank's delivered ability. They will find that MediaBank's core logic is such that it is very open and inviting to seamless integration with third-party packages, including rights management or identification.

MM: Any in particular that your customers use?

DM: Several come to mind, but a good starting point may be <http://www.digitalwatermarkingalliance.com>.

The pricing models we have seen offered from the viable DOI vendors have made it a difficult choice for our customers. The DOI lease/usage pricing models have limited the opportunities for customer implementation. Considering that the required functionality is far simpler than DAM as a whole, DOI packages still have some catching up to do when compared to the pricing of a system like MediaBank.

Another DRM concern from a customer's point of view is the idea of persistent security. When it comes to asset billing and copyright issues, the solution must be 100 per cent reliable 100 per cent of the time. Implementing DOI in an enterprise production environment still leaves more to be desired with regards to scaling, color spaces, compressions, etc. The fact that customers

are, however, actively pursuing and using this technology in spite of these technical and pricing issues underscores its relevance in the industry.

MM: How have you seen your customers use MediaBank and/or the B.media product in the retailing sector? For example, to start off, just to name a couple companies that you have. Then, generally, what sort of things have you seen?

DM: An often overlooked aspect of our customer base is that we have hundreds, if not thousands, of indirect customers by virtue of businesses who use our products as a hosted solution for their clients. Perhaps the most prominent example of this is R.R. Donnelley. Their Premedia Services division has standardized on MediaBank so that any company working with R.R. Donnelley Premedia is benefiting from MediaBank and WAVE. Additional retail customers that we work with regularly are Reader's Digest, AAA, Publix, Cabelas, Mary Kay and Wal-Mart, just to name a few.

MM: Cabelas is a large retailer of outdoor gear?

DM: Yes, the world's foremost outfitter with an emphasis on premium quality and customer service. They not only print and distribute their catalogs, but also directly drive their web content, ordering, specifications, etc to have consistent content and branding. MediaBank gives them the opportunity to achieve this branding and consistency in their product offerings and present them to their customers in a variety of marketing channels.

Many of our retail customers are also looking at producing variable data marketing material for products, such as focused direct mailings, leaflets and mini-catalogues or special brochures that are targeted by various collected data.

MM: One of the things that Cabelas had done where they led the industry... They represent the first catalogue or publishing firms to capitalize the development of their photographic assets. By that, they amortized the costs to scan and digitize their photos, and put them on their balance sheet as a new class of assets.

Have you seen any other companies to follow in the footsteps pioneered by Cabelas?

DM: Yes. Many medium to larger sized companies are making a concerted effort to take control of their digital assets and treat them as valuable core intellectual property. They realize

that doing this affords new opportunities and possibilities such as achieving successful branding, high impact marketing, improved efficiency ratings, and bottom-line profits. They are also realizing how much each of these aspects is related to and depend on one another.

When a customer makes the decision to manage their digital intellectual property, we immediately receive a flood of requests to quantify them. The challenge here is that each customer, and their customers, have different views on where the value of their content lies. This requires our solutions to provide the ability to personalize the access, distribution and delivery of assets for each individual customer. Again, this is an area where the fundamental design of a content management solution is so critical because it requires extensive permissions, branded web portals, robust searching and access, event modification tracking and more.

MM: One of the interesting developments that we've seen is creating DAM ROI dashboards. These dashboards have taken just that kind of activity data that you referenced. Then in a dashboard it says, "Okay. We have 32,589 assets under management — 1,429 of them have been reused more than 5 times this year. Total amount of download reuse has saved the organization 17,00 hours of creative services. Representing \$400,000 of soft-dollar productivity savings."

These downloads have accelerated overall business processes by N-number of days per product launch, and have contributed to the following partners, in terms of sales people, training people, etc. Ultimately rolling up into a high-level thing called, "What has this DAM thing given us in terms of economic returns?"

So there are efficiency gains as well as overall process acceleration.

Have you seen any of your customers develop aspects of that kind of ROI dashboard?

DM: Yes. The key here is the applications ability to gather the required information in a granular fashion that allows the data to be produced in a meaningful manner. We have many customers in different industry verticals, so we focus on functionality that gathers and stores information that is then easily collated as desired by the customer. As an enterprise content management developer, we are always concerned that customers, and even the business units within

them, need to view and report on information from various angles.

Along these lines, MediaBank now offers the quantization of data in a configurable interface that includes this kind of capability through system activity tracking, job tracking, defined user roles, individual asset tracking, XML- and XLST-based configurable reports.

MM: What kind of reporting engines does MediaBank support other than its own internal things? Are there particular software applications that seem to fit well in collating that data?

DM: From a practical perspective, we can extract data for reporting in a broad array of formats including text, XML, HTML, PDF and JDF, which allows us to incorporate all sorts of reporting engines into a customer workflow. Internally, MediaBank produces branded and configurable XML-based reports that are geared towards common needs, like a contact sheet for example.

MM: JDF is Job Description Format. Right?

DM: Yes.

MM: That would be metadata. Usually technical metadata associated with a PDF. Specifically, it would be the technical specifications that a printer would need to understand about how to process a PDF according to an agreed-upon specification.

DM: That's correct. Yes.

Generally, people are most familiar with JDF as a backend protocol to communicate to a device on the way out, such as a printer. The JDF associated with a PDF drives a print process in a particular way such as color, profile, ink density, etc. But JDF has a great deal of potential upstream as well. A central repository can utilize JMF communication during the collection of product information from an ERP or PIM application and the distribution of marketing content to a web publication system. The JDF can literally follow the content throughout the entire workflow process as it enters and leaves the CMS to obtain the same kind of efficiency and consistency benefits that are already recognized from a printing perspective.

MM: A PIM system in this context would be a Product Information Management System?

DM: Correct.

MM: Where you'd have data that's specific to the SKU, the product description and other

technical data that describes one particular product. Is that right?

DM: That's correct. Yes.

MM: And the PIM then is a specialized database that would ultimately drive both the publishing of that data to a website, as well as publishing one version of the product through to a catalogue or a direct mail piece. So that PIM is an editorial or technical specification DAM system.

DM: A PIM solution can be very helpful in passing product and other technical specification data to external business, content management and web publishing systems, but a PIM solution alone does not have the capability to handle editorial, marketing and publishing content in a production environment. It is unfortunate when companies are convinced that one application can do the work of many, only to find out that the product under delivers after years of wasted investment.

At WAVE, we have a special opportunity to see how many different companies approach asset and content management solutions. The businesses that prove to be most effective are typically those who dedicate the appropriate resources, approach the overall goals with task milestones, and utilize the strengths of multiple applications in a seamless manner.

MM: What are some of the PIMs that you've seen by vendor name that your customers have used? Trigo?

DM: Oracle, IBM (Trigo), FullTilt and others.

MM: Anything from SAP as their master data management offering?

DM: SAP as well, Yes.

MM: I would suspect that in some cases, that might exist in a supply-chain management or a product lifecycle management system.

DM: Yes.

MM: You were saying that these data's being created upstream. In some cases, you're taking data out of a PIM or other production data systems, and integrating it to the asset — either as metadata or as content.

DM: Again, these types of systems have their own specialties and do various things well; there's not going to be one system that does absolutely everything well. So, what's important is to focus on what each system does best and then seamlessly integrate the related systems, like a PIM or web application. The goal in most

cases is to produce multi-channel output.

Although PIM applications have the ability to publish to the web, they are heavily focused on product information and are clearly not the best avenue to publish creative marketing content.

This is why CMS, like B.media, are so valuable. They gather and manage all of the information that goes along with a product in a form that is format-neutral and thus reusable for publication. B.media seamlessly inter-operates with ERP, PIM, copy editing, image editing, page layout and web applications to provide a single source for data entry and a platform to quickly and easily distribute your content to the desired output channels. In B.media, we store this format neutral information in what we call "blocks".

MM: How about if we talk about how DAM has evolved in the catalogue operations?

DM: Sure.

MM: Cabelas is an example. What other kinds of prominent companies that our readers might know of in the catalogue operations?

DM: Some are Summit Racing, Nalgene, Fastenal, Raymond Geddes, School Specialty.

MM: How has DAM functionality evolved in that particular vertical of producing catalogues?

DM: Catalog publishers have led the way in implementing Enterprise Content Management (ECM) systems largely because of their focus on efficient reuse of marketing and product information. Today, other publishers are also beginning to realize that ECM applications can revolutionize their businesses as well.

In this way, WAVE's strategic acquisition of B.media is really paying dividends in that content management users are begging for full asset management functionality and likewise asset management users are progressively looking for enhanced content management capabilities. WAVE is in the unique position to meet these needs from both directions.

MM: In the context of that, if you were looking at a catalogue page, there would be a picture or a headline or maybe a caption. Descriptive information. Then a table of data. Is that what you mean by a "block?" Or is it more of a page?

DM: Very simply, a B.media block typically represents a product offer and consists of at least one SKU, some copy and usually one or more images. These components are grouped and organized in a format-neutral environment that

then exposes multi-channel publishing tools for electronic and print publication. All print and web content is dynamically linked back to the B.media blocks so that as pricing, copy and image edits are made, the changes are automatically incorporated in the appropriate publication(s).

B.media offers so much more in regards to multi-channel publishing, it also includes many workflow-enhancing tools such as the ability to use formatted block snippets and digital whiteboards for pickup, pagination and page creation. Automatic image transformations and XML exports eliminate costly repetitive manual processes while simultaneously reducing errors. When producing a print and online catalog, building and managing product tables is another cumbersome aspect of catalog publishing that is virtually eliminated with B.media's exclusive table building capabilities. It has been very encouraging to see some of the remarkable things that our customers have accomplished with the B.media product.

MM: That nicely parallels what we've seen over in the educational textbook market. They refer to this as an "independent learning object." Or in some of the [DOD Scorm]. They call that a networked object or a networked learning object. That's great.

This block, also then, I would suspect lends itself well to a localization process. People take this block as a logical unit of assets and content, and then submit it to some sort of localization or translation process.

DM: In order to gracefully handle all of the different versions of language, pricing and copy that can be utilized by a cataloger or retailer, B.media has what we refer to as depth. Users can define an unlimited number of asset types within the system, such as a product shot, group model copy, product kits and even workflow tracking assets. Furthermore, an unlimited number of attribute fields, metadata, can be associated with each of these asset types to store multiple languages, pricing, image and copy versions. The range of scenarios that a worldwide publisher has to deal with is truly extensive which makes a powerful and flexible system like B.media a requirement to remain competitive.

MM: One of the things that would be interesting in terms of the analysis of these

blocks — a very common practice in catalogue marketing — is what they call "Page Profit Analysis."

DM: Yes.

MM: That entails a merchandiser looking at a particular catalogue page. They say, "Okay. Our starting inventory position was X. Our sales out were Y. Our returns were Z. Our gross revenue was A. Our net profit after returns was B." They do that every time they do a catalogue page.

As a function of having this block now, they can do a block profit analysis by medium or channel.

DM: That's correct.

MM: You have customers doing that.

DM: Yes. This is a fundamental extension of the way that B.media utilizes blocks and dynamic links. Essentially, the B.media application is completely aware of all of the content that is used on each page. Within B.media, you can view, search and report on this page usage for square-inch analysis, sales projections, vendor negotiations, etc.

Merchandisers also merge B.media block information with sales records from previous catalogs to determine the desired size and location of an offer on a page for future publications. Incidentally, this same functionality is used in B.media to automatically generate indexes that reference the products, their categories and what page they are displayed on.

MM: Yes. A lot of catalogue companies have partners to whom they sell space in their catalogue — or mention — at various kinds of page positions. Then on things above or below the fold, on websites and so on.

DM: That's correct.

MM: It seems to me that this block — this notion of an independent catalogue block — or an independent sales object — would lend itself well to then co-op advertising and other forms of monetizing that piece of real estate.

DM: Absolutely, let me give you an example of a customer that's doing that now with B.media.

CMI is a company in Canada that produces virtually all of Wal-Mart Canada's advertisements that you find in stores and newspapers, often referred to as circulars. Within Wal-Mart there are hundreds of buyer resources that are constantly negotiating with and gathering content from vendors. Utilizing a web portal that exposes B.media blocks and digital

whiteboards in a simple intuitive interface, Wal-Mart buyers are able to directly place and edit product offers themselves. CMI then utilizes the dynamic B.media links to automatically flow these placements and changes onto pages.

Think about it, vendors are unknowingly reaching into B.media and placing their own ads (offers) correctly and ahead of schedule. Because of B.media, the content is assured to be correct, up-to-date, readily available, secure and tracked for change management.

MM: One of the things that we've seen happen in the retail sector as it relates to DAM and related workflows are really two things. One — retail. The profitability of retail really comes down to how many times you can turn your inventory.

The merchandiser or buyer of merchandise really is almost a black art in terms of how many pieces of something to buy. And then watching sales receipts almost on a daily basis. And then doing a progressive striptease of markdowns, so as to move it out before the season ends or before the new model comes out.

It's managing the end of a product lifecycle, or the end of a sales season in terms of inventory closeouts. That lends itself well to special mailers and discount offers for very specific sizes and/or very specific customer groups who specifically want to buy end-of-lifecycle goods.

DM: Yes.

MM: Do you have customers that are using the variable data printing or the just-in-time printing, combined with these sales blocks, to create specialized promotions to move very specific inventory or distressed goods?

DM: Without a CMS, the required resources fluctuate greatly according to the stage of the production cycle. Managers struggle to have the right amount of resources to handle the heavy workloads that tend to arise when approaching print deadlines without wasting overhead during slow periods. B.media creates a much more stable workload across the board for merchandisers, product managers, creative staff and page designers.

Along with flattening the production cycle, B.media also substantially reduces required efforts and time to market. Users can intelligently search for and identify offers and layout

templates to be published and then literally click a button and watch B.media construct live page documents automatically. We've had examples of a merchandiser coming in on the weekend and having a 48-page specialized flyer completed by Monday morning. It was given a quick once over and published that Monday afternoon.

MM: It was good to go.

DM: Yes, it's that quick. Without needing to know Quark or InDesign, the merchandiser has the ability to create B.media whiteboards (electronic paste-up boards) used to layout their specialized circular — all by themselves.

It's impressive how much more productive resources can be when the burden of transferring data in multiple formats and applications is lifted.

MM: It would seem to me that that would move further down into the individual store manager, or category manager within a store, to be able to create these specialized circulars or offers or even webpages.

DM: That is an excellent point. In the previous CMI and Wal-Mart example, they moved it all the way back to the Wal-Mart buyers and vendors. CMI simply establishes the general page layout and available offers and then waits for the placement to be completed over the web. We also have other customers like Moen, who use VDP to allow builders to remotely compose customized slick sheets for their particular development.

MM: Moen is MOEN. Right?

DM: Yes, Moen is a leading manufacturer of plumbing products including faucets, kitchen sinks and plumbing repair specialty products. Their need stemmed from builders developing neighborhoods that include multiple option levels of Moen products.

Whenever they want, builders now have the ability to select their desired Moen products to include at certain option levels, choose an approved Moen layout template and dynamically create a slick sheet for their development — all via the Web. The sheets are consistently branded with correct and up-to-date product information. In this case, Moen uses both MediaBank and the Content Suite VDP tool set to accomplish this.

MM: In the few remaining moments we have here, are there any kind of top-level trends or

developments that you'd want to mention here before we move on?

DM: More and more, the evolution of searching is becoming a critical aspect of CMS. We are seeing two distinct camps of searching — specific metadata searches that have historically been utilized in content management packages and generic taxonomy searches that have come to life in the internet age and Google. Each camp has different interfaces, distinct rules and their own technical hurdles and requirements. Yet, both are prevalent, advantageous and used often. WAVE is now pursuing a combination of these two search types to provide an intuitive interface that delivers the best of both mechanisms.

MM: In many cases, MediaBank provides assets to a marketing services or a marketing operations portal. Right?

DM: Yes.

MM: Often times, that portal is its own content-management system that's either using its own in-built content classification and/or taxonomy development search mechanism.

DM: Yes.

MM: Now we're beginning to see the notion of federated search. That is to say, a kind of meta-

search that goes across many different kinds of repositories. That then aggregates and refines the findings. Is that what you were getting to in terms of enterprise search being more common?

DM: Yes, users typically are unaware or indifferent to the underlying technology of the search; they are more concerned with the ease, speed and relevancy of the results. Technically speaking, there is a significant difference between internet content searching on the web and the enterprise searching in CMS. Metadata, taxonomic, full-text and other types of federated searches must come together to produce the query results that users are expecting in a quick, accurate and intuitive manner. Users must be able to get to data quickly, so you are going to see WAVE moving to seamlessly combine these diverse search mechanisms in our continuing quest to enhance the end-user experience.

MM: That sounds like a great place to conclude. The future is going to be more and more focused on end-user experience.

DM: Yes.

MM: And enabling users to find exactly what they want with a minimum of fuss.

DM: Exactly, thank you Michael.

MM: Thank you very much.